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Application of Standardized Model of Financial Solvency Assessment of Local Governments

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Abstract: Local governments in the Republic of Srpska/Bosnia and Herzegovina have used the opportunity to finance themselves by issuing bonds on the domestic capital market. Potential investors, especially institutional ones, had no independent, professional and comparable assessment of the solvency of local governments available when making investment decisions in domestic municipal bonds, as they were not audited by international rating agencies. The paper tests the hypothesis: the standardized model for assessing the solvency of local governments allows them easier access to additional sources of capital and encourages potential investors to invest in municipal bonds. Following the analysis, a standardized interactive model is developed to provide a comparative assessment of the financial solvency of local governments, individually and by development group. The research results show that standardized comparative analysis of local government financial solvency is positively correlated with the level of investor exposure to municipal bonds. On the one hand, the model based on specific financial indicators provides investors with all the necessary information when deciding to invest in municipal bonds, and on the other hand, it provides local governments with all the advantages of financing through the issuance of bonds in the capital market.

Key words: financial solvency, credit rating, financial indicators, municipal bonds, local governments, investments

JEL codes: G11, G23, G24

1. Introduction

In order to improve the standard of living of their residents, local governments have a great need for funding both basic infrastructure projects and development projects/programs. However, in the process of growth and development, local governments face the problem of finding quality and affordable sources of funds to finance infrastructure and development projects. In most cases, the budgets of local governments are modest and burdened with recurrent expenditure, so that the significant projects can very rarely be financed from the municipalities' own resources. Considering the fact that the above-mentioned projects are usually projects of great value, local governments are increasingly turning to the issuance of debt securities on the domestic capital market, in addition

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to traditional financing through loans from commercial banks. In order to make the issuance of debt securities successful, it is necessary to attract potential investors, primarily institutional investors, as well as other economic entities and persons active in the capital market.

The decision of potential investors to invest in local government debt securities is greatly complicated by the fact that local government in the Republic of Srpska, except for its general credit rating (Moody's rating B3 with stable outlook), is not subject to consideration and credit rating by internationally recognized agencies. There is no internationally recognized, independent and expert assessment of creditworthiness and solvency for local authorities in Bosnia and Herzegovina and the Republic of Srpska. The mentioned problem is common for almost all countries of South-Eastern Europe.

Institutional investors, as holders of investments in debt financial instruments, are forced to conduct an independent analysis of the potential investment, which involves consideration of a large number of factors. Since the main concern here is the financial ability of the company to pay downloaded obligations on time and in full, the financial analyzes pay the greatest attention to the assessment of financial solvency and creditworthiness. Financial solvency is assessed using published financial and audit reports, as well as other documents related to the budget and finances of the municipality.

The financial solvency assessment of the se is carried out in the same way as the financial analysis of companies, through the presentation of financial ratios adjusted to the financial reports and documents of the self-governments. The adjusted ratios are used by international financial institutions in assessing the financial solvency of local governments without publishing a credit rating and by the rating agency in assigning a final rating to the respective entity. Ratios must be calculated based on an established methodology so that they are comparable for different subjects.

Currently, in the domestic capital market of the Republic of Srpska, there is an increased interest of local governments in issuing municipal bonds to finance investment projects. The capital market is also characterized by significant liquidity of financial institutions, especially banks. These facts, supported by the assumption that the issuance of bonds is a cheaper form of financing investment projects, constitute the motive for our research (the assumption is based on the stand of The Guide to Local Government Borrowing and Recent Developments in Southeast Europe in 2011, prepared within the NALAS Group, the network of Southeast European local government associations that includes around 9,000 local governments). The contribution of the research is seen in facilitating the process of investment decisions of potential investors regarding investments in municipal bonds in the domestic capital market. A facilitated process of investment decisions would: (1) provide municipalities with a wider choice of funding sources, (2) have a positive impact on the cost of debt, and (3) increase the primary and secondary issuance of municipal bonds in the domestic capital market.

The main research problem highlighted is the inability of domestic and foreign potential investors, especially institutional ones, to carry out the assessment of financial solvency of the observed local government according to a standardized methodology. A standardized methodology of financial solvency assessment can effortlessly provide detailed and comparable results in a short period of time to create conditions and analytical substrates for easier adoption of investment decisions. The main objective of this paper is to create an innovative approach of financial analysis for all local governments in the Republic of Srpska in a comprehensive, practical and representative way, and to represent public disclosure of the analysis results for potential investors.

The structure of the paper, in addition to the introduction, consists of the literature review and hypothesis development, assessment of financial solvency of local governments and the empirical part of the research. The empirical part of the paper includes the research methodology with sampling and setting of the empirical model, research results and discussion. Concluding remarks and a review of the literature used are provided at the end of the paper.

2. Literature Review and Hypothesis Development

2.1 Literature Review and Previous Research

Although the theoretical basis of the work is quite extensive as it covers the concept of local governments, their sources of funding, the concept and allocation of investments and institutional investors, the essence of the research is theoretical and practical methodologies for determining the financial solvency of local governments. Internally developed methodologies from leading global financial institutions are perceived. Particularly important are the methodologies of the major global rating agencies: Standard & Poor's, Moody's and Fitch, the European Rating Agency (ERA) and the American Commission for securities of values (SEC), as well as the methodology developed by the World Bank in cooperation with the government of the state of Austria for self-assessment of the financial position of local governments in the countries of Southeastern Europe.

In the research process, several theoretically accepted and practically used models of assessing the financial solvency of local governments are identified, but for the purposes of the paper stand out: Solvency Test by Wang, Dennis and Tu (2007) and Brown's 10-point test (Brown, 1993). The10-item test was developed by Kenneth Brown in collaboration with the Association of Public Financial Officers in the United States. The aforementioned authors agree that a high quality financial ratio analysis is the best basis for gaining insights into the solvency of the observed municipal units. It has been noted that the issues related to the assessment of financial solvency are studied more by American authors and institutions, in accordance with the American financial system, which is more focused and related to market capital. In the US, the sole purpose of credit rating, the financial solvency assessment and rating agencies, has become more important compared to Europe.

Review of the literature and previous studies identified authors from the Southeastern Europe environment who analyze rating agencies and rating methodologies, such as Kožul (2012) i Pavković & Vedriš (2011). However, national studies directly dealing with the analysis of financial ratios of local governments have not been implemented (this may be a problem considering that the analysis of financial solvency should be adapted to the financial reporting standards applicable in Bosnia and Herzegovina). Accordingly, the main works and studies by foreign authors are: Bhatia (2002), Honadle, Cigler & Costa (2003), Levine, Scorsone, & Justice (2012), McDonald (2017), Beck, Johnson & Parsons (2017), Gorina, Joffe & Maher (2018). These authors have dealt with financial analysis aimed at assessing financial creditworthiness and solvency as well as possible fiscal disturbances in local government, with high quality financial ratio analysis as the key segment.

2.2 Hypothesis Development

Based on the previous research and our expected results, and in the context of the stated problem and the aim of the research, the basic hypothesis is defined as follows:

H1: The standardized financial solvency assessment model for municipalities allows them easier access to additional sources of capital and encourages potential investors to invest in municipal bonds.

In addition to facilitating and improving the process of investment decision-making, the mentioned financial analysis can positively influence the willingness of investors to invest in municipal bonds in the Republic of Srpska and Bosnia and Herzegovina. With a detailed assessment of financial solvency, municipal bonds would become more attractive to foreign investors, which would indirectly have a multiplier effect on the primary and secondary markets for municipal bonds on Banja Luka Stock Exchange. Other effects of greater investment in municipal bonds are reflected in more favorable borrowing terms and increased fiscal discipline by local governments. In addition, a high quality representation of local government financial solvency creates the basic requirements for planning and strategic economic documents, both at the local and state level

3. Methodology for Financial Solvency Assessment of Local Governments

The basic question in solving the research problem is how to determine financial solvency for local governments, that is, for entities for which there are no internationally recognized and used methods. For this purpose, numerous studies, articles and publications in the field of determining the financial solvency of local governments are studied. The methodology used by leading international rating agencies, methodologies developed by other recognized financial institutions and theoretical models are considered in detail. It was found that there is no unique and universally accepted methodology, but the methodology internally created and adapted by foreign rating organizations in relation to the valuation purpose and characteristics of the subject under consideration. In order to identify common key points and criteria of different methodologies and to create one applicable for local governments in the Republic of Srpska, a brief overview of perceived assessment methodologies is provided below.

3.1 Methodology of the Rating Agencies and Other Financial Institutions

The assignment of credit ratings represents a comprehensive, complex, extensive and continuous process based on the consideration of the basic indicators and criteria for the rating. The main rating indicators of the three leading international rating agencies are presented in the following table.

Table 1 Areas of Consideration of the Leading Rating Agencies When Assigning Credit Ratings

Standard & Poor’s	Moody’s	Fitch
Assessment of the Institution	Economic Strength	Structural Characteristics
Estimation of the Economy	Institutional Strength	Macroeconomic Performance
External Assessment	Fiscal Strength	Public Finances
Fiscal Assessment	Susceptibility to Risky Events	External Finances
Monetary Assessment		

Source: Methodologies of the listed Rating agencies: Standard & Poor’s Financial Services LLC (2017), Moody’s Corporation (2018), Fitch Ratings (2018).

While the preceding table briefly indicates the areas of consideration in assigning the credit rating, the process of its determination, within the framework of the indicators described, is comprehensively elaborated and provided with predefined indicators. Each of the indicators is considered separately and given a weighting factor, with the aim of assessing its importance, influence and score in the group composition of indicators to which the specific indicator belongs.

Other financial institutions have developed their rating methodologies for financial solvency assessment. According to the European rating agency (ERA, 2017), the main factors affecting the quality of creditworthiness of municipalities are the macroeconomic environment, administrative structures, legal framework, development of municipalities, economic and demographic characteristics in the region, and the rating of an individual municipality, with ERA paying the most attention to economic and financial indicators.

Factors to consider when evaluating municipal bonds recommended by U.S. Security and Exchange Commission (SEC, 2018) refer to: the type of bond, collateral for the security issue, the financial condition of the issuer, and other sources of funds to repay the debt.

3.2 Recognized Theoretical Models

Brown's 10-item test (Brown, 1993) is one of the best known and most widely used tests for assessing the financial condition of the local government, developed to provide a simple and easy to understand result. The model was developed by Kenneth W. Brown, in collaboration with the Government Finance Officers Association. The test consists of ten ratios divided into five groups: Revenue Structure, Expenditure Structure, Operating Position (Surplus/Deficit), Debt, and Asset/Liability Ratio. Each of the above indicators is assigned a score from -1 to 2 for the quartile to which the indicator belongs in relation to the observed comparable group of subjects. The final score of the issuer's creditworthiness is formed based on the sum of all indicators.

Wang, Dennis and Tu's Solvency Test (Wang, Dennis & Tu, 2007) is a test for assessing the financial position of local governments, which assumes the four dimensions of solvency, which refer to: Cash position, budget, long-term solvency and the repayment capacity. In connection with these dimensions, 11 indicators are developed. The indicators are coherent with:

1) Ratio of cash to short-term liabilities;
2) Ratio of cash and receivables to short term liabilities;
3) Ratio of current assets to short-term liabilities;
4) Ratio of income to expenditures;
5) Ratio of surplus/deficit to population;
6) Ratio of grants and subsidies to total assets;
7) Ratio of fixed assets to long-term liabilities;
8) Long-term liabilities per capita;
9) Tax revenues;
10) Total revenue per capita;
11) Total expenditures per capita.

The advantages of the model are reflected in higher consistency of indicators with financial reporting standards (IFRS), which is one of the research problems that need to be overcome in order to obtain relevant research results. Financial reporting standards are not implemented in the same way worldwide, so the objective ratios require adjustment to the positions in the financial reports of local governments in the Republic of Srpska.

All the previously explained methods served as a starting point for developing the analysis of financial solvency ratios according to the defined research hypothesis. After comprehensive consideration of rating methods, it is obvious that financial indicators and ratios have the greatest relevance and importance in credit rating in comparison with other observed elements in the process. The essence of credit rating lies precisely in the determination of the ability of the reporting entity to fully pay its financial obligations within the prescribed deadlines.

4. Research Methodology

4.1 Sampling

The research methods and instruments are developed with the help of extensive scientific literature adapted to the topic and subject of the research. First of all, it is necessary to investigate the potential of financial markets in Bosnia and Herzegovina in the context of issuing and trading of municipal bonds. Numerous methods of financial solvency assessment of the local governments are considered. The analysis of financial ratios is confirmed as an essential step in the process of perception of financial creditworthiness of the subject, so the proposed solution to the research problem is directed to it.

In addition, the terminological concept of local government is studied, with special emphasis on the legal regulation that defines the organization, functioning and level of development of all 64 units of local government in the Republic of Srpska. The Republic of Srpska is divided into 64 local governments, which are classified as developed, moderately developed, underdeveloped and extremely underdeveloped according to the Republic Srpska Government Decision of the level of development of local governments. In particular, we have studied the sources of financing of local governments and identified significant development needs, according to the document Strategy of Development of Local governments in the Republic of Srpska for the period 2017-2021. We analyze all previous issues of municipal bonds on the capital market of the Republic of Srpska, their initial and secondary trading, as well as the advantages and shortcomings between the issuance of bonds and traditional borrowing through bank loans. All this is considered in order to emphasize the potential of local governments in the Republic of Srpska and the domestic financial sector to increase the volume and frequency of municipal bond issuance and trading on the Banja Luka Stock Exchange.

The next step of the research is to analyze the methodology of assessing the financial solvency of the sovereign, as an independent level of government. The aim of the analysis is to find and explain the main financial ratios that would give a satisfactory level of qualitative assessment of financial solvency. Finally, these key financial ratios are applied to all 64 local authorities in the Republic of Srpska in order to obtain a credit rating and financial solvency assessment.

4.2 Empirical Model for Financial Solvency Assessment of Local Governments

Based on all the outlined methods and the conducted research, the model for financial solvency assessment is created. The model contains the ratios that have a descriptive and comparative character and sufficient importance to significantly improve and facilitate the process of investment decisions for potential investors. In order to meet the qualitative requirements and provide clear and unambiguous conclusions, the ratio analysis must include more financial segments. The model for assessing the financial solvency of local governments is created by defining a total of 30 ratios, which are sorted into 6 groups of ratios.

1) Trend of fundamental budget positions, which lists the most important budgetary items, with the aim of gaining insight into the size of the values in comparison with the rest of local governments.
2) Revenue and expenditure structure indicators, showing the relationships between the significant revenue and expenditure items in the budget compared to the total value of revenue and expenditure. The purpose of this group of indicators is to provide a basis for comparison with other local governments by understanding the structure of revenues and expenditures.
3) Fiscal Autonomy represents the group of indicators that provides insight into realized surplus funds by presenting the ratio of total budget revenues and expenditures. Surplus funds represent the potential to repay debt or invest from own sources.
4) Capital allocations indicate the percentage of the budget allocated to non-financial assets such as local infrastructure, buildings, land, equipment, etc. The indicator provides information on the ability of local

governments to allocate funds from their own sources for capital projects such as improving the quality of life for their citizens.

5) Debt Indicators show the total debt, the amount of principal and interest expended on debt repayment, and the ratio of each line item in the budget to the amount of debt. Some of the indicators in this group are defined by law and have a specific ceiling. The purpose of this group of indicators is to examine the budgetary burden of debt on local government, the ability to repay existing debt from regular budget revenues, and to determine the potential for additional borrowing.
6) Basic indicators per capita is the group of indicators that shows the ratio of a given budget item and the number of residents. The aim of studying this group of indicators is in the additional dimension of the analysis of data comparison for all local governments.

The above groups are was shown in the following table:

Table 2 Name of the Group of Ratio Indicators Used in the Model

No.	Group of Indicators	Name of Indicators
1	Trend of Fundamental Budget Positions (%)	Total budget revenues
2		Total budget expenditures
3		Gross budget surplus/deficit
4		Net expenditures for non-financial assets
5		Budget surplus/deficit
6		Net income from financial assets
7		Net debt
8	Revenues and Expenditures Structure Indicators	Share of tax revenues in budget revenues
9		Share of non-tax revenues in budget revenues
10		Share of current expenditures in budget expenditures
11		Share of expenditures for staff salaries in budget expenditures
12		Share of expenditures based on use of goods and services in budget expenditures
13		Subsidies, grants and remittances in the name of social protection in budget expenditures
14	Fiscal Autonomy	Share of gross budget surplus/deficit in budget revenues
15		Relationship between budget revenues and budget expenditures
16		Share of original revenues (tax and non-tax) in budget revenues
17	Capital Allocations	Expenditures for non-financial assets/budget revenues
18	Debt Indicators	Total debt
19		Debt repayment expenditures
20		Financing expenditures and other financial expenditures
21		Debt repayment expenditures, financing expenditures and other financial expenditures
22		Total debt/budget revenues
23		Total debt/budget surplus
24		Debt repayment expenditures, financing expenditures and other financial expenditures/original revenues (tax and non-tax revenues)
25		Remaining debt on issued guarantees/original revenues (tax and non-tax revenues)
26	Basic Indicators per Capita	Budget revenues per capita
27		Current expenditures per capita
28		Expenditures for nonfinancial assets per capita
29		Debt repayment expenditures per capita
30		Total debt per capita

Source: Author's research based on Brown (1993), Wang, Dennis & Tu (2007), ERA (2017), Standard & Poor's Financial Services LLC (2017), Moody's Corporation (2018) and Fitch Ratings (2018).

The ratios are designed to correspond to the balance sheet items from the budget documents of local government units in Bosnia and Herzegovina/Republic of Srpska, which are the challenges of the research. The data are used from the report on the execution of budgets of local governments. The data on debt are taken from the official proclamations in which the local governments are obliged to publish the data on debt, while the data on the number of inhabitants were downloaded from Republic Institute for Statistics of the Republic of Srpska and the Agency for Statistics of Bosnia and Herzegovina.

For each selected local government, in addition to the ratio indicators for the period 2015-2018, descriptive statistical measures are presented: Maximum value, minimum value, median, average and standard deviation for the last observed year. These measures are provided to provide values for comparison (benchmark) and determination of an individual municipality's position for the observed indicator relative to other municipalities from a related group. The median is chosen as the key statistical measure to provide insight into the position of the observed municipality relative to others in the same development group. The median represents a measure that indicates the middle of the distribution of the data series and is less sensitive to extreme values compared to the arithmetic path. This makes it convenient to represent the irregular and asymmetric distribution of the data, such as the data used in this analysis.

5. Research Results

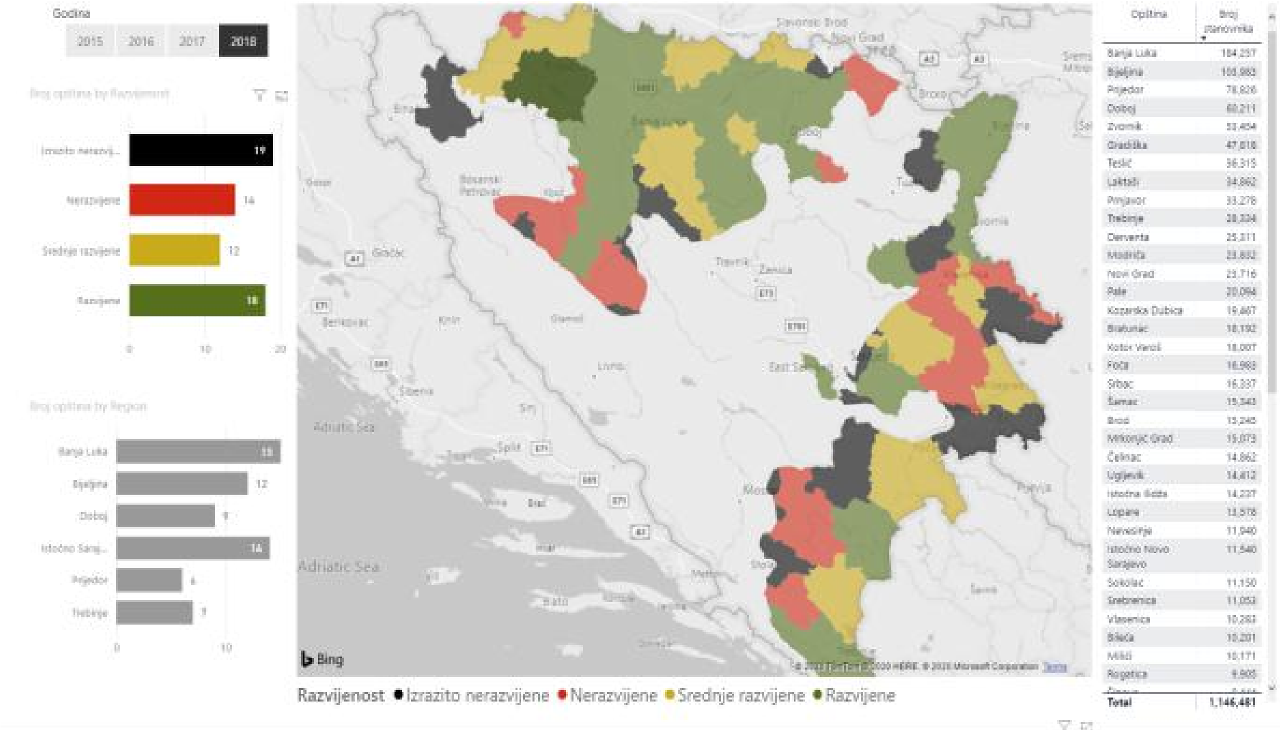
In order to apply all the above theoretical findings and derived conclusions from the conducted research in practice, the continuation of the work shows the previously described ratio analysis of the specific case. It is important to note that the presented model for all 64 local governments in Republic of Srpska is created in the form of an interactive "online" application, with the possibility of searching data for each government separately, for each indicator and each development group, entirely according to individual analytical preferences and needs.

In addition to the values for all 64 municipalities, the model also calculates the minimum value, maximum value, arithmetic mean and standard deviation by development group, as well as the median as the central statistical measure of comparison. Since the display of the above "online" is enabled to visually represent the model, the appearance of each segment of the analysis is shown in Figure 1.

To further illustrate the results of the model and the potential of possible conclusions, the following is an overview of the model with explanations using the example of development groups into which municipalities are divided. This represents only a small sample of the possible models, and due to the presentation limitations in the paper, only the mean by indicator for each local government development group is presented in Table 3.

From the Table 3, we can see the following according to the groups of indicators:

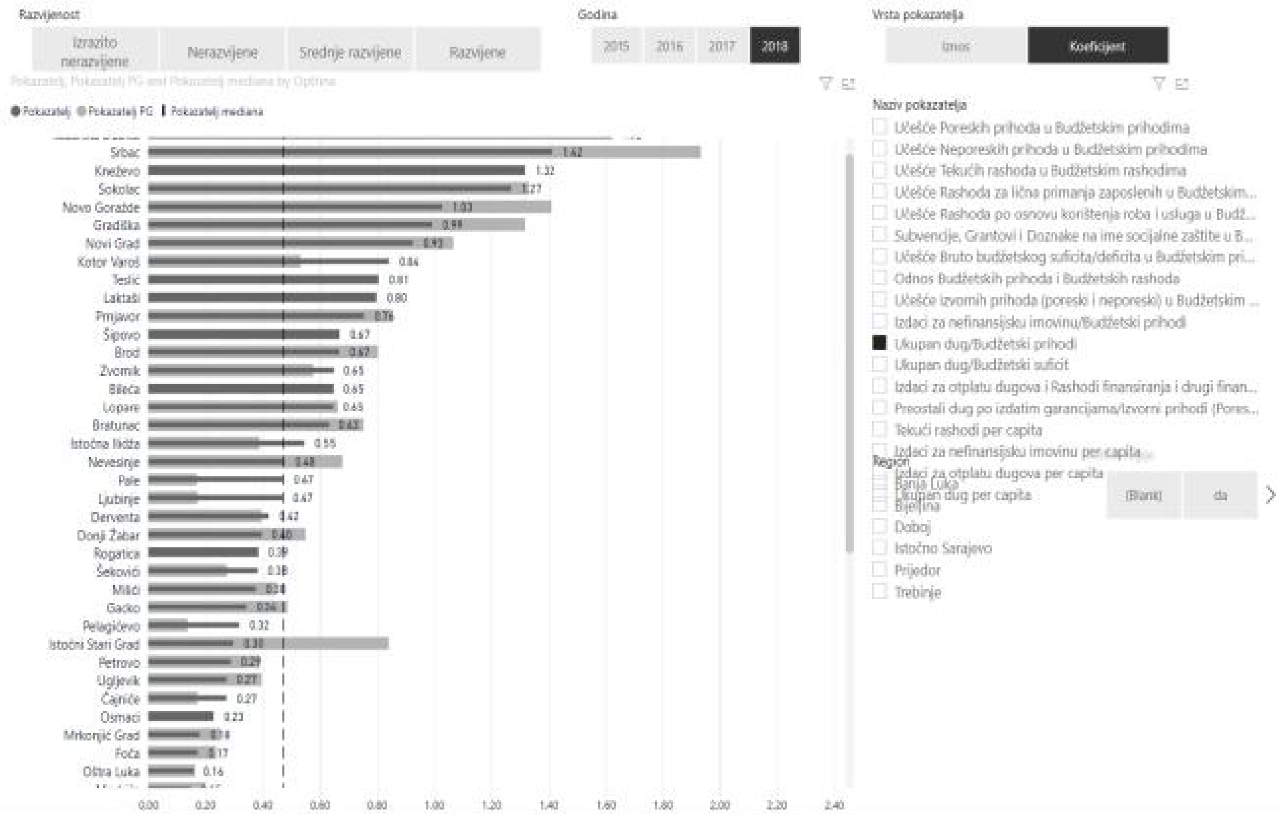
Trend of Fundamental Budget Positions clearly shows that the value of each budget item decreases with the decrease in the level of development of local governments. The indicators of revenues and expenditures structure show that the relative share of non-tax revenues in budget revenues decreases with the decrease in the level of development, which indicates that the developed local governments are financially independent and have a larger volume of revenues from their own sources. It is clear that the less developed the local government, the higher the proportion of current expenditures to total expenditures. Less developed local governments have a higher proportion of expenditures on staff salaries and lower subsidies and grants compared to developed local governments. This suggests that less developed governments are more financially burdened by the cost of local government and have fewer opportunities to invest in capital and development projects.



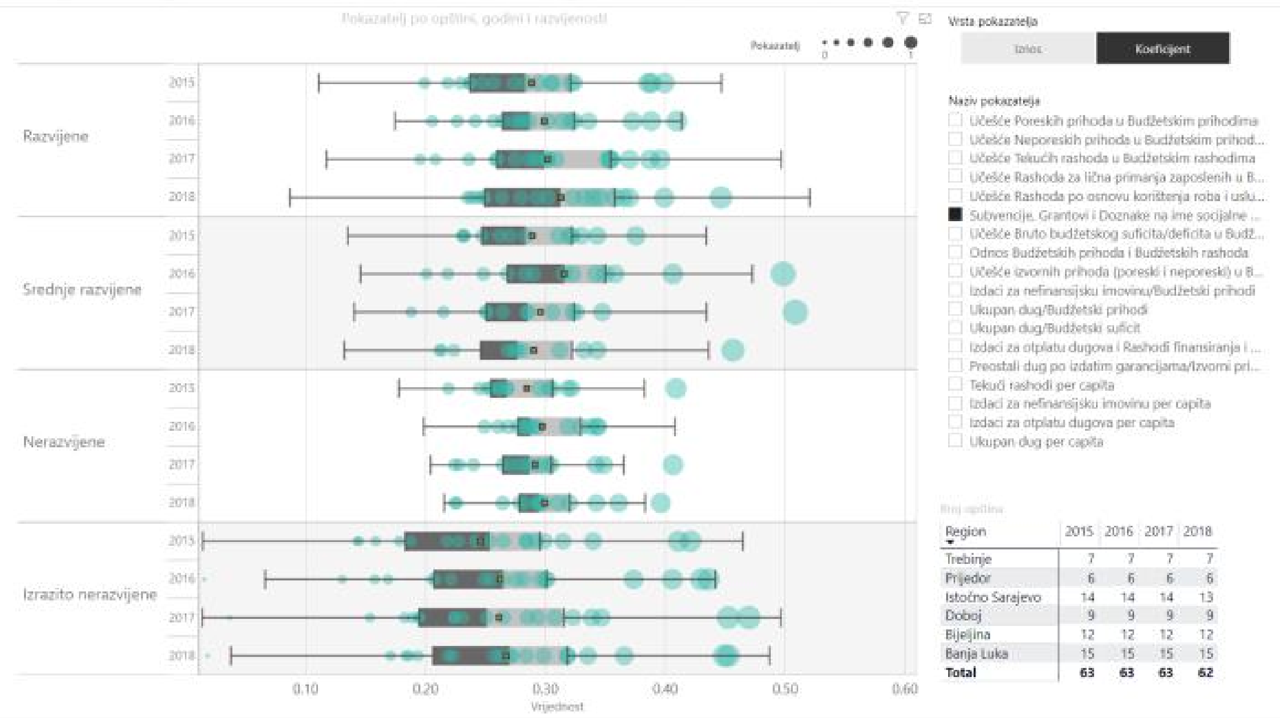
Access to Data by Geographical Location

Godina / Vrsta pokazatelja	2015 Pokazatelj	2015 Pokazatelj mediana	2016 Pokazatelj	2016 Pokazatelj mediana	2017 Pokazatelj	2017 Pokazatelj mediana	2018 Pokazatelj	2018 Pokazatelj mediana
Iznos								
Trend osnovnih budžetskih pozicija (%)								
Ukupni budžetski prihodi	110,753,625.00	5,647,565.00	115,814,415.00	5,934,659.00	121,852,266.00	6,123,696.00	125,192,623.00	6,401,307.50
Ukupni budžetski rashodi	84,999,453.00	4,751,004.00	87,167,343.00	5,195,896.00	87,679,290.00	5,422,077.26	92,254,089.00	5,870,849.92
Bruto Budžetski suficit/deficit	25,754,172.00	849,101.00	28,647,072.00	601,452.00	34,172,976.00	989,480.00	32,938,534.00	1,108,475.00
Neto izdaci za nefinansijsku imovinu	-7,197,697.00	-339,788.00	-16,901,506.00	-459,746.00	-15,109,046.00	-535,277.00	-23,834,687.00	-1,020,881.00
Budžetski suficit/deficit	18,556,475.00	346,673.00	11,745,566.00	118,010.00	19,063,930.00	223,482.00	9,103,847.00	25,991.50
Neto primici od finansijske imovine	40,801.00	486.00	133,810.00	5.00	-14,500,996.00	0.00	-1,766,901.00	0.00
Neto zaduživanje	-11,824,614.00	-325,216.00	-15,482,857.00	-184,982.00	6,756,781.00	-71,502.00	-3,192,037.00	-60,348.00
Pokazatelji zaduženosti								
Ukupan dug	107,216,326.10	3,904,125.99	93,979,199.16	3,333,398.88	100,966,244.60	2,783,049.66	98,636,645.89	4,034,453.63
Izdaci za otplatu dugova	16,626,905.00	375,825.00	20,502,426.00	384,612.00	93,544,059.00	470,045.00	10,932,037.00	355,165.00
Rashodi finansiranja i drugi finansijski troškovi	7,494,006.00	128,069.00	6,601,347.00	121,910.00	5,144,207.00	91,077.00	3,653,247.00	69,567.50
Izdaci za otplatu dugova i Rashodi finansiranja i drugi finan...	24,120,911.00	509,879.00	27,103,773.00	511,433.00	98,688,266.00	587,657.00	14,585,284.00	513,815.50
Broj stanovnika								
Broj stanovnika	181,956.00	10,440.00	182,848.00	10,349.00	183,557.00	10,278.00	184,257.00	10,242.00
Koeficijent								
Pokazatelji strukture prihoda i rashoda								
Učešće Poreskih prihoda u Budžetskim prihodima	0.59	0.68	0.56	0.69	0.54	0.63	0.56	0.61
Učešće Neporeskih prihoda u Budžetskim prihodima	0.37	0.22	0.41	0.21	0.41	0.26	0.37	0.22
Učešće Tekućih rashoda u Budžetskim rashodima	1.00	1.00	1.00	1.00	0.99	1.00	0.98	1.00
Učešće Rashoda za lična primanja zaposlenih u Budžetskim ...	0.42	0.41	0.42	0.40	0.41	0.41	0.40	0.40
Učešće Rashoda po osnovu korištenja roba i usluga u Budž...	0.27	0.26	0.28	0.27	0.27	0.24	0.28	0.24
Subvencije, Grantovi i Doznake na ime socijalne zaštite u B...	0.22	0.27	0.23	0.29	0.24	0.29	0.24	0.29
Fiskalna autonomija								
Učešće Bruto budžetskog suficita/deficita u Budžetskim pri...	0.23	0.16	0.25	0.14	0.28	0.16	0.26	0.20
Odnos Budžetskih prihoda i Budžetskih rashoda	1.30	1.19	1.33	1.16	1.39	1.19	1.36	1.24
Učešće izvornih prihoda (poreski i neporeski) u Budžetskim ...	0.96	0.93	0.97	0.93	0.95	0.92	0.93	0.87
Kapitalna izdvajanja								
Izdaci za nefinansijsku imovinu/Budžetski prihodi	0.09	0.08	0.16	0.13	0.14	0.11	0.21	0.19
Pokazatelji zaduženosti								
Ukupan dug/Budžetski prihodi	0.97	0.50	0.81	0.53	0.83	0.52	0.79	0.54
Ukupan dug/Budžetski suficit	5.78	4.84	8.00	3.17	5.30	4.72	10.83	-2.16
Izdaci za otplatu dugova i Rashodi finansiranja i drugi finan...	0.23	0.11	0.24	0.11	0.85	0.10	0.12	0.09
Preostali dug po izdatim garancijama/Izvorni prihodi (Pores...	1.28	1.11	1.24	1.11	1.37	1.13	1.33	1.21
Osnovni pokazatelji per capita								
Tekući rashodi per capita	466.87	409.74	474.93	449.19	474.25	458.20	492.24	483.61
Izdaci za nefinansijsku imovinu per capita	56.86	37.74	102.27	68.45	96.17	55.06	141.65	107.85
Izdaci za otplatu dugova per capita	132.56	46.79	148.23	52.97	537.64	49.22	79.16	46.28
Ukupan dug per capita	589.24	267.14	513.97	295.59	550.05	236.59	535.32	301.37

Tabular Presentation of Data by Local Government



Statistical Processing and Presentation by Local Government



Statistical Processing and Presentation by Development Group

Figure 1 Graphical Representation of the Segments of the Financial Ratio Analysis Model of Local Governments

Source: Authors' calculation

Interpretation of figure 1:

The terms “Razvijenost: izrazito nerazvijene, srednje razvijene, nerazvijene i izrazito nerazvijene” means:

Development: Developed, Medium Developed. Underdeveloped and Extremely Underdeveloped (for local governments)

The other terms meaning: “godina” - year, “vrsta pokazatelja” - type of indicator, “iznos” - amount, “koeficijent” –coefficient, “pokazatelj” – indicator.

Table 3 The Median of Financial Ratios by Development Groups

No.	Name of the indicator	Developed	Medium developed	Underdeveloped	Extremely undeveloped
	Number of local governments in the group[1]	**19**	**14**	**12**	**18**
1	Total budget revenues	15.573.602,45	8.978.766,00	3.877.417,50	1.745.844,00
2	Total budget expenditures	12.316.532,39	7.559.975,00	2.944.969,00	1.448.787,00
3	Gross budget surplus/deficit	3.095.661,00	1.806.291,00	676.464,50	270.559,00
4	Net expenditures for non-financial assets	-2.941.881,00	-1.511.775,00	-672.351,00	-320.207,00
5	Budget surplus/deficit	171.562,50	302.693,00	51.365,08	21.965,00
6	Net income from financial assets	0,00	0,00	0,00	0,00
7	Net debt	-628.362,00	-425.565,00	-36.329,00	0,00
8	Share of tax revenues in budget revenues	62,29%	60,68%	68,74%	58,37%
9	Share of non-tax revenues in budget revenues	27,08%	25,41%	16,71%	14,61%
10	Share of current expenditures in budget expenditures	99,36%	99,49%	99,80%	99,93%
11	Share of expenditures for staff salaries in budget expenditures	38,99%	39,99%	40,72%	45,07%
12	Share of expenditures based on use of goods and services in budget expenditures	24,40%	23,80%	23,93%	24,00%
13	Subsidies, grants and remittances for social protection in budget expenditures	31,27%	27,67%	29,53%	27,05%
14	Share of gross budget surplus/deficit in budget revenues	21,43%	19,89%	18,91%	17,95%
15	Relationship between budget revenues and budget expenditures	127,28%	124,83%	123,33%	121,87%
16	Share of original revenues (tax and non-tax) in budget revenues	90,16%	87,89%	85,01%	78,64%
17	Expenditures for non-financial assets/budget revenues	20,85%	17,89%	14,76%	12,34%
18	Total debt	11.826.179,28	7.178.831,00	972.128,00	798.891,97
19	Debt repayment expenditures	1.501.671,50	636.822,00	231.013,00	49.156,00
20	Financing expenditures and other financial expenditures	196.537,50	198.649,00	45.547,00	16.328,00
21	Debt repayment expenditures, financing expenditures and other financial expenditures	1.682.258,50	1.146.111,00	267.988,00	73.892,00
22	Total debt/budget revenues	56,27%	84,25%	39,72%	29,83%
23	Total debt/budget surplus	-55,00%	-979,77%	74,74%	-278,83%
24	Debt repayment expenditures, financing expenditures and other financial expenditures/original revenues (tax and non-tax revenues)	10,50%	15,84%	6,73%	6,19%
25	Remaining debt on issued guarantees/original	5,10%	5,76%	0,00%	0,00%

[1] The total number of local governments is 63, because the City of East Sarajevo is not classified by the Decision on the level of development of local government units of the Government of the Republic of Srpska.

	revenues (tax and non-tax revenues)				
26	Budget revenues per capita	490,83	566,08	633,21	789,48
27	Current Expenditures per Capita	381,20	476,81	450,74	638,92
28	Expenditures for nonfinancial assets per capita	115,99	89,23	110,93	119,33
29	Debt repayment expenditures per capita	68,26	62,57	38,14	43,46
30	Total debt per capita	355,46	436,18	248,61	235,46
	Population	30,806	15,053	5,686	2,428

Source: Authors' calculation

The indicators of *Fiscal Autonomy* point to the conclusion that more developed local governments have a higher degree of fiscal autonomy because the proportion of gross budget surplus /deficit in budget revenues is higher and the ratio of budget revenue to budget expenditure is more favorable. The share of original revenue in total revenue, which includes tax and non-tax revenue, also decreases as the level of development decreases, indicating that underdeveloped governments also depend on transfers from the national budget.

Capital allocation indicators decrease as the level of local government development decreases, indicating that the budgets of less developed governments are more burdened with the costs of local government and have no significant scope for investment.

The *debt indicators* show that the items of total debt and debt repayment expenditure decrease significantly as the level of development decreases. Also, debt repayment expenditures, financing expenditures and other financial expenditures compared to initial revenues are lower in less developed local governments. This can be attributed first to the fact that more developed governments invest much more in capital and development projects that cannot be realized without external sources of financing.

Basic indicators per capita suggest that both total budget revenue and total budget expenditures per capita are higher for less developed local governments, while total debt per capita and debt repayment expenditures per capita are lower. Expenditures for nonfinancial assets per capita is at approximate levels for almost all groups.

All of the above is only a small part of the considerations and conclusions that can be derived from using the model, and a full insight can be obtained by using the model according to individual analytical preferences.

6. Discussions

In the process of investment decisions, investors in financial systems and capital markets of developed countries use objective, recognized and understandable assessments of financial solvency of the observed subjects. These estimations are most connected with the assigned rating by international rating agencies. However, no rating agency has dealt with the financial situation of the self-governments in Bosnia and Herzegovina and the Republic of Srpska. The greatest importance in the process of assessing the financial solvency and creditworthiness of a subject has the perception of financial ratios, as well as the analysis of financial ratios as a key segment in the process. By creating a standardized, comparable and understandable model for the financial solvency of local governments in the Republic of Srpska, developed according to the model of internationally recognized and used methodology, the closer picture of their financial situation is presented to potential investors. The model facilitates the assessment of financial solvency in investment decisions and improves the process of investment decision-making, which has a positive impact on the commitment to invest in the issuance of municipal bonds on the domestic capital market.

In this research, it has been necessary to carry out a series of research procedures in order to explain in detail the defined research problem. Firstly, it was necessary to investigate the possibilities and potential of the domestic capital market in relation to the issuance and trading of municipal bonds. This mainly refers to the level of available free liquid assets among domestic institutional investors, as well as the need for additional sources of financing of local governments for the implementation of development programs and projects.

In addition, the process of investment decision-making by institutional investors is considered in order to determine the main segments of analytical procedures used as an information surface in this process. Financial indicators are key factors in the analysis and the analysis of financial ratios is the basis for understanding the financial position of the monitored entity. Since the subject of the study refers to the local governments in the Republic of Srpska, the analysis of financial ratios is prepared for all local governments individually, as well as for the development groups to which they belong. The analysis is carried out on the basis of the methodology of the internationally recognized rating agencies and the theoretically and practically accepted models adapted to the local regulation of financial reporting.

In accordance with the specificity of the research, certain research limitations are identified and overcome, which relate to the applicability of the created ratio analysis to the current balance sheet items in the financial reports of local governments in the Republic of Srpska and the comparison of the obtained ratio ratios for a particular local government, where the median was determined as the central statistical measure for comparison. The limitations of the research that could not be overcome are identified, which are related to the transparency and accuracy of the data collected and used to prepare the respective financial ratio analysis.

In the course of the research, great opportunities for improvement of the financial solvency assessment model for all municipalities in the Republic of Serbia are seen, as well as directions for further research on the topic of the work. These opportunities relate to the deepening of the analysis with the data from the balance sheets for each of the local authorities. There is also a possibility that the model of financial solvency assessment is created in the form of a scoring model, where the final score would be a reliable measure of financial solvency of the observed local government.

We conclude that the transparency and availability of the financial solvency assessment of local governments has a positive impact on increasing their fiscal discipline and can serve as a reliable basis for the preparation of planning and strategic economic documents both at the local and state levels.

7. Conclusions

In modern and developed financial systems, one of the basic requirements for providing additional sources of financing to a entity through the capital market is a published credit rating. However, none of the internationally recognized rating agencies has so far dealt with the credit rating of units of local government in the Republic of Srpska/Bosnia and Herzegovina.

Through the research it is found that there is a significant potential in domestic capital for issuing municipal bonds, but it is not sufficiently used because the number of issues is not significant in relation to the actual needs for the implementation of capital projects. The secondary market is almost negligible. In order to improve the capital market potential and facilitate access to important free funds on account of domestic institutional investors, research focuses on improving and facilitating the process of investment decisions.

In order to increase the interest of potential investors, especially institutional ones, for the market of municipal bonds, the analysis of the financial ratio is prepared for all units of local government in Republic of Srpska individually and also for the group of development to which they belong. The analysis is prepared in accordance with the methodologies of financial solvency assessment of international rating agencies, as well as theoretical and practical models. For all financial ratios, the statistical indicators are calculated for each of the development groups of local governments in order to obtain the comparative value of each government.

The main objective is to facilitate the process of investment decisions for institutional investors and help them to invest more easily and to a greater extent in municipal bonds in the domestic capital market. Increasing investors' interest would mean a higher volume of available capital for the local governments in the Republic of Srpska. This would further have a positive effect on the volume and number of municipal bond issues, the number of capital investments and the terms on which the local government can borrow, the secondary market of Stock Exchange and increased fiscal discipline and transparency of municipal operations.

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