Comparison of Structuring the Interest Rates on Micro Loans in Serbia and Montenegro

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Abstract – **The aim of this research paper is development of comparative analysis of the microcredit sector in Serbia and Montenegro, as well as to carry out identification and analysis of the components that influence the determination of interest rates on microloans in Serbia and Montenegro. Within the comparative study, there will be an analysis of the correlation between the total amount of granted microcredits in these countries and their gross domestic product, by using the Pearson correlation coefficient.**

Keywords – **microcredit, interest rate, valuation, Serbia, Montenegro.**

1. Introduction

Microfinance primarily involves providing financial services to individuals with lower income, especially the poor (who do not have any source of income). The term "microfinance" is used in a broader (commercial) context, referring to micro-credits intended for microentrepreneurs (receiving microcredit in order to establish their own businesses), as well as to individuals who meet certain criteria to apply for this type of loan (i.e., they have sources of income, as a guarantee for repayment timeliness taken microcredits).

The goal of research is to define the interest rates on microcredit and developing models for analysis of interest rates in the microcredit sector in Serbia and Montenegro. It is planned to, within the designed analyze model, isolate four basic components: operating costs, financing costs, the amount of loss and the expected profit (margin). The work would analyze a number of sub-components of influence. When it comes to operating costs, the sub-components that would be analyzed are: the representation of the field work, the scope and content of the required documentation when applying for a microcredit, the effective length of the duration of work of individual microcredit demands, type of collateral required from potential mikroloaners, the degree of modernization and the implementation of information technology, salaries height and bonuses of employees, the cost of accounting and auditing, and marketing expenses. When it comes to financing costs, an analyzed sub-component would be: price of external financing i.e., the explicit cost. When it comes to expected loss, the analyzed sub-components would be: the level of problematic microcredits and the influence of gender on the likelihood and timing of repayment of microcredit [8]. When it comes to the expected profit (margin), analyzed sub-components would be: banking orientation to a type of work / products, the level of competition and concentration, the discount rate, risk-free rate, beta coefficient, the market risk premium and the minimum required rate of return.

Before presenting a hypothesis, it should be noted that the same definition was conditioned by the available information and personal assessments at the time of their formulation.

Basic (general) hypothesis H_0: interest rates on micro-loans in Serbia and Montenegro are unjustifiably placed at a very high level (higher than 25 percent annually). The formulated definition of microcredit is defined at the start (loans up to 10,000 euros). When discussing the general research hypothesis, the abuse in the microfinance sector is also being analyzed (in certain cases, there is the problem of "double counting"). In this context, it will

be examined whether the risk of a country is installed twice in the height in of interest rates on microcredit (incorporating the risk free return rate and unjustified reintegration in the premium on market risk). Furthermore, it is being analyzed whether the expected profit (margin) is the dominant factor in determining the level of active interest rates on microcredits, and not the operating costs (how it is theoretically represented).

In addition to the basic (general) hypothesis, the research will aim at the detection / rejection (partially or completely) of one special (partial) hypothesis.

Special (partial) hypothesis H₁: Microfinance contributes to the growth of gross domestic product in Serbia and Montenegro (there is a positive correlation observed between the independent and the dependent variables). Within the research, the degree of severity of the assumed positive impact is statistically examined using the Pearson's correlation coefficient (i.e., whether there is a weak, moderate or strong correlation). Therefore, this H_1 analyzes the impact strength of the micro-scale financing to commercial and economic growth.

2. A review of relevant literature

In the function of making the conclusions, a segment of manuscript that studies the impact of microfinance on the volume of gross domestic product will be consulted by authors Abraham and Balogun in 2012 [1]. The relationship between microcredits and specific (macro) economic indicators is analysed by Sharma, Himanshu and Hartika [21].

When analyzing the components that affect the amount of interest rates on micro-loans, and the direction, manner and intensity of their activity, and in the function of better understanding of the problem, consulted will be the papers of the following authors: [7] (analysis of the determinants of lending rates for micro-credits); [4] (analysis of microcredit repayment rates in the so-called lending "group"); [9] (analysis of whether the "commercialization" of microfinance sector affects the increase in lending rates on microcredits, and consequently on the profitability of microfinance institutions); [14] (analysis of whether there is a fair interest rate on micro-loans); [18] (analysis of the cost structure of microfinance institutions); [19] (comparative analysis of interest rates of classic banks, microfinance institutions and local "loan sharks"); [17] (analysis of flexibility and discipline repayment of microcredit); [16] (analysis of elasticities of supply and demand for microcredit); and others. In the conclusion in the part of the paper

which analyzes whether increasing operational efficiency (and, consequently, reduced operating costs) contributes to a reduction in interest rates on microloans, significantly helpful was reading of the papers of the following authors: [3]; [5]; [6]; and others.

3. Methodology
3.1. Defining a research problem

Analysis of the level and reasons for inequality of practice when it comes to defining the lending interest rates in the microcredit sector (in general, but with special emphasis on Serbia and Montenegro) is the central problem of the research in this paper. The results of the research showed that when calculating the lending rate on microloans, the banks and microfinance institutions do not introduce the necessary differentiation, i.e., carry out unjustified averaging (uniform rhetoric financial institutions).

The title of the paper refers to the substance of the analysis. When making a comparative analysis, it is particularly important to examine the extent and reasons of discrepancies practice for calculating lending interest rates on microcredit. In Serbia, the microfinance sector is not regulated by law (as opposed to the microfinance sector in Montenegro in the framework of the Banking Act of Montenegro, under Article 105, while performing control functions the Central Bank also controls micro-credit financial institutions; also, the monetary authority of Montenegro adopted the Decision on Minimum Standards for Risk Management in Micro-Credit Financial Institutions), which primarily hinders the functioning of the sector, but also the very empirical analysis. In Serbia, there is no organized unique database regarding the microfinance sector because the National Bank of Serbia does not perform monitoring of this sector and, consequently, does not include it in its stats (again, unlike the practice of the Central bank of Montenegro, where the Central Bank of Montenegro regularly publishes monetary statistics and interest rates of microfinance institutions). In a reasoned limited terms of research, and when it comes to the process of collecting data regarding the microfinance sector in Serbia, in the paper, the justification of necessary approximations and simplifying the production of estimates will be commented (in the economic literature, often with a quotation by statistician George Box that "all models are wrong, but some are useful"). Also, the paper would inevitably emphasize that there is awareness that the designed model of the analysis can not completely precisely and accurately describe and summarize the extremely complex reality of microfinance. What the designed model can provide is the analytical and synthetic information for a

deeper understanding of the components that affect the amount of lending interest rates on microcredit in these countries.

3.2. Methods of scientific research

During the process of writing the paper, the following research methods will be used: analysis and synthesis method (a method of analysis would be particularly emphasised in partition of the risk and the components that influence the definition of the height of lending interest rates on microcredit, a synthetic method for aggregating impacts in earlier mentioned components to derive conclusions about the nature of the overall impact), the method of abstraction (in particular would be expressed in the analysis where data is insufficient), the method of compilation and "mosaic" (in particular would be expressed in the introductory part of the study where is presented an overview of relevant literature on the subject of microfinance), the statistical method (expressed around the area where correlation analysis between the volume of microfinance and the gross domestic product would be conducted), empirical methods (it would be expressed in a qualitative upgrading of analysis, in order to compensate for the inadequacy of the data).

4. Data and empirical analysis

4.1. Analysis of the impact of microcredit in Serbia and Montenegro

According to data from the website mixmarket.org (total volume of granted microcredits), the websites of the Republic Institute for Statistics of Serbia and the Statistical Office of Montenegro (the amount of gross domestic product), the Pearson's correlation coefficients have been calculated as follows.

Table 1. Correlation between the total amount of granted microcredits in Serbia and its gross domestic product for the period 2005-2013.

Year	The volume of granted microcredits in $	Gross domestic product in mln RSD	Pearson's correlation coefficient
2005	246,605,177	744,845.5	0.876585
2006	456,620,785	779,494.9	
2007	665,855,150	828,730.0	
2008	648,905,182	836,063.5	
2009	696,815,855	797,055.3	
2010	680,902,281	808,760.7	
2011	685,421,797	826,008.5	
2012	684,370,341	803,902.4	
2013	764,282,777	831,705.9	

Correlations		Microcredit	GDP
Microcredit Pearson Correlation		1	.877**
Sig. (2-tailed)			.002
N		9	9
GDP Pearson Correlation		.877**	1
Sig. (2-tailed)		.002	
N		9	9

**. Correlation is significant at the 0.01 level (2-tailed).

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.877ª	.768	.735	15.23499

a. Predictors: (Constant), Microcredit

Source: Author's calculations (using the SPSS Statistics 17.0)

From Table 1, it can be seen that the value of Pearson's correlation coefficient is in the range of 0.8-1, so it can be said that there is a strong positive correlation between the independent variables (the total volume of granted microcredits in Serbia) and the dependent variable (the amount of gross domestic product in Serbia). In the interpretation of the research results and making a final conclusion, it is very important to mention the fact that the data on the total volume of granted micro-credits in Serbia is to some extent imperfect (in Serbia there is no single database that consolidates data on the micro-credit sector, nor shall the National Bank of Serbia monitor and oversight this sector). R-squared is high in our analysis, but Std. Error of the Estimate is high too (instead of decreasing like we'd expect to see).

In addition to being able to contribute to the growth of gross domestic product, the concept of microfinance can contribute to the growth of the index of gross national happiness (the opposite of traditional macroeconomic indicators), and in particular to subcomponents called "standard of living" [20]. In Serbia, there is no legislation that regulates the microcredit sector, and it is one of the main obstacles to a stronger development of this sector. The sector of micro, small and medium enterprises is "the missing middle" between segments of the industry and the so-called "disembodied" economy sectors (information and telecommunication technology). Entrepreneurship can strengthen economic and social cohesion in deprived areas, and encourage the active involvement of the unemployed and other vulnerable groups of people in the current economic and social processes (micro-credits in the function of financial inclusion). It reflects all the stronger consensus that the current market conditions of the sector of micro, small and

medium enterprises is primarily responsible for creating new jobs, as well as an entrepreneurial networking as a crucial part of the response to globalization.

Table 2. Correlation between the total amount of granted microcredits in Montenegro and its gross domestic product for the period 2005-2013.

Year	The volume of granted microcredits in $	Gross domestic product in mln EUR	Pearson's correlation coefficient
2005	38,935,714	1,815.0	0.371566
2006	86,697,483	2,148.9	
2007	149,209,261	2,807.9	
2008	227,135,031	3,086.0	
2009	67,528,437	2,981.0	
2010	314,987,120	3,104.0	
2011	370,595,569	3,234.0	
2012	28,623,870	3,149.0	
2013	30,467,200	3,327.0	

Correlations		Microcredit	GDP
Microcredit	Pearson Correlation	1	.372
	Sig. (2-tailed)		.325
	N	9	9
GDP	Pearson Correlation	.372	1
	Sig. (2-tailed)	.325	
	N	9	9

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.372a	.138	.015	.51664
a. Predictors: (Constant), Microcredit				

Source: Author's calculations (using the SPSS Statistics 17.0)

Table 2. shows that the value of the Pearson correlation coefficient is within the range of 0.3-0.6, and it can be concluded that there is a weak positive association between the independent variables (the total volume of granted microcredits in Montenegro) and the dependent variable (the amount of gross domestic product in Montenegro). R-squared is low in our analysis, but Std. Error of the Estimate is low too (instead of increasing like we'd expect to see).

Table 3. Correlation between the total amount of granted microcredits in Montenegro and its gross domestic product for the period 2005-2013.

Year	The volume of granted microcredits in thousands EUR	Gross domestic product in mln EUR	Pearson's correlation coefficient
2009	897,589	2,981.0	-0.84239
2010	730,696	3,104.0	
2011	533,556	3,234.0	
2012	437,843	3,149.0	
2013	460,887	3,327.0	

Correlations		Microcredit	GDP
Microcredit	Pearson Correlation	1	-.842
	Sig. (2-tailed)		.073
	N	5	5
GDP	Pearson Correlation	-.842	1
	Sig. (2-tailed)	.073	
	N	5	5

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.842a	.710	.613	.08152
a. Predictors: (Constant), Microcredit				

Source: Author's calculations (using the SPSS Statistics 17.0)

Looking at the data on total loans in the aggregate balance sheet of micro-credit financial institutions (Central Bank of Montenegro - Monetary Statistics), it can be seen that the data is completely different compared to the base MixMarket (data not published before 2009). From Table 3. it can be seen that the value of Pearson's correlation coefficient is within the range between -0.8 and -1, and we can conclude a strong negative relationship between the independent variables (the total volume of granted microcredits in Montenegro) and the dependent variable (gross amount domestic product in Montenegro). Re-analysis of data from other sources was performed to relativize reasoning. When interpreting the research results, it is of great importance taking into account the fact that data on the total volume of granted microcredits in Montenegro is to some extent imperfect (there is the question of regular reporting and submitting data to the base MixMarket). On the other hand, the diametrically different results obtained for two of the mentioned countries to some extent can even be possible to explain with the

conflict between the formation of media images about the concept of microfinance in countries where it had not yet implemented (promotion by celebrities and creating a positive public opinion) and in the countries where it has long been applied (increasing criticism on account of "predation" because of the extremely high lending rates and deformations of the initial vision of financing the poor, and that the concept of microfinance is in fact the product of the theory of neo-liberalism and the "mainstream" banking, and increasingly common cracking of "the microfinance bubble").

4.2. Key factors in determining interest rates on micro loans in Serbia and Montenegro

The work will consist of four main components that affect the interest rates on microcredit: the amount and structure of operating costs (in the literature also referred to as administrative, transactional), financing costs, the amount of the expected loss ("delinquency rates", i.e., the level of problematic microcredits), and the amount of profit (interest margin). In Serbia, the current nominal interest rates on microcredit are in the range 20-26% (annualized), noting that those rates are slightly more when it comes to dinar microcredits than the microcredit in euros. In Montenegro, nominal interest rates on microcredit are around 20%, effective up to 26% (in 2009, the effective interest rate ranged up to 29%).

In the literature and in the media as the main argument for increasing interest rates on microcredit are the high operational costs in the sector of microcredit (microcredit sector is considered to be more risky compared to conventional banking, the costs of processing loan requests of small amount is higher than the cost of processing loan requests with higher amounts, the collateral in the microcredit sector are more stringent, and so on). However, the situation can be viewed from another angle. With the analysis of the micro-credit sector in these two countries, we came to the data that the length of the average processing time of microcredit demands is not significantly different from the average length of time required for processing the classic consumer loans (both of these types of loans can be approved within three days). Also, more demanding collateral is not stricter, as usually considered. In this context, the paper examines whether in these countries there is a "predatory" microlending (unreasonably high lending rates). In the previous period, the reference interest rate of the National Bank of Serbia was tapered (it is currently 4.00%, and in January 2013 it stood at 11.5%, in January 2014 the rate was 9.5%, and in January 2015 the rate was 8%), while interest rates on microcredit did not in commensurate

measure show this trend (interest rate channel in Serbia is muted). Despite that inflation is around the lower tolerance of inflation for the period of the last year and a half, "unofficial" inflation expectations in Serbia remain high (expectations are formed more "gravitationally" because of the problematic economic and banking history in Serbia) and inflation expectations is the thing that is installed in lending rates, not the current values of inflation. In Montenegro, there is no reference rate (for monetary regime of the official euroisation), which deepens the problem of lack of transparency (different assessments of the economy and the transmission mechanism by the business sector, financial sector and the central bank). In the following chart are presented the components that are built into the interest rate on microcredits in certain countries for the period 2004-2005.

Chart 1. The components that influence interest rates on micro loans
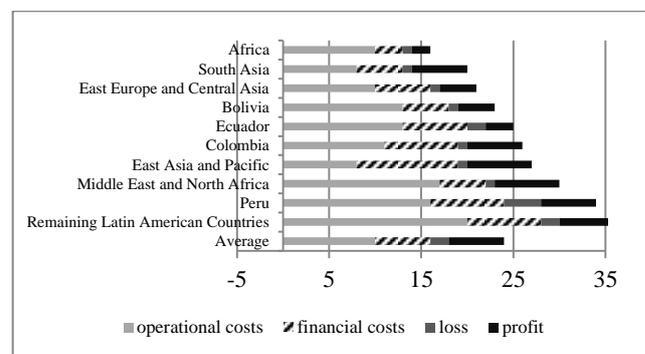
Source: [12]

This chart will use the simplified analysis for the purpose of illustrating. It can be seen that the biggest part in the calculation of interest rates on microloans take the operating costs, then, the cost of financing, then, the expected profit, and finally, the smallest part is occupied by the height of loss. Chart 1. shows that the share of operating costs is about 10% (on average). Again, the question arises whether the operational processing costs of microcredit demands are really that high as they are represented? During the research, we found that the financial institutions in Serbia and Montenegro have significantly modernized (purchase of "smart machines", which will replace the human staff of certain qualifications), and in the literature it is known that information technology can significantly contribute to the reduction of operating costs [6], [25]. Of course, we take into consideration that information technology lowers only certain types of operating costs, and not all at the same time and in equal measure, however, there is a reduction in the total amount of operating costs (also, the fact that the effect of influences of information technology on the active interest rates is

different in the short and long term, is taken into account, as well as in developed countries and countries in transition). When it comes to the approval process of microcredit in Serbia, it is important to note that some banks engaged in this type of lending do not work in the field (which means that for them there is no significant increase in fuel costs, which rhetorically "justifies" increase in operating costs). Due to the fact that in the previous graphic relating to the 2004-2005, one can even say that at that time it was more realistic for operating costs to be high, but today, after 10 years, when technology has advanced significantly, it is considered that it is financially irrational to insist on an inadequate way of managing operating costs. The Note from the financial statement from the Microfinance Centre based in Warsaw (Poland), which concerns precisely the structure of its operating costs will be displayed in the following.

Table 4. Structure of operating costs in the Micro Financial Centre in Warsaw

Operating costs in the Polish Zloty	2013	2012
Salaries, bonuses and benefits	731,788	667,726
Travel and Conferences	89,871	77,618
Office and administrative expenses	155,101	192,517
Amortization	2,277	4,924
Accounting and auditing service	220,841	224,298
Other	96,199	124,358
Other operating costs	545	37
TOTAL	1,296,622	1,291,478

Source: [29]

From Table 4., it is evident that in the structure of total operating costs dominate salaries, as well as bonuses and benefits (in 2013, over 56%). This is an item that is "the most resistant" to reduce (a number of reasons, which have wider social and political connotation), and we deeply analyzed (of all of the items it increased to the greatest extent, while other items were not reduced in equal custom, observed for the period 2012-2013.). When it comes to participation in the structure of total operating expenses, the next component is the "accounting and auditing service" (in 2013, over 17%, and that means paying fees for external auditors, while the internal audit is carried out within the same institutions). The question is whether these fees are too high, compared to the total salaries paid to all employees (and given the assumption that the number of engaged external auditors is incomparably less than the total number of employees). Furthermore, the next component of importance is the "office and administrative

expenses" (in 2013, over 11%). There could be classified costs of electricity, fuel, maintenance, space and IT infrastructure, rental, office supplies, telephone, etc. We believe that this component is most suitable for reducing, with the application of information technology. For example, the Internet and mobile (micro) banking lead to a reduced need for the physical existence of the same, which leads to a reduction in the cost of renting office space ("Bricks" versus "Clicks"). Also, with the help of information technology, possible cost savings are communication networks and energy. Also, the transition to "paperless" (micro) banking can be a significant saving when purchasing office supplies. Based on the review of the literature in this area, we came to the data that operating costs can be reduced by as much as 50-90% thanks to the application of information technology [10], [11], [27]. Furthermore, when it comes to the cost of travels and conferences (in 2013, over 6%), we believe that the height of lending rates should affect only costs of transport / fuel arising from the fieldwork for the purpose of granting microcredits. Finally, it is unclear what exactly falls into the category "other" (a relatively high share of total operating costs, which to some extent damages this analysis and blocks a full understanding of all the factors that lead to an increase in operating costs; it is possible that this falls under marketing costs, but this item can be significantly reduced with the use of information technologies) and "other operating costs" (negligible share of total operating costs, and therefore also the least important item for analysis and interpretation). The implication is that financial institutions should not "transfer" internal irrationalities to their customers through high lending rates. When it comes to tightening the criteria for selection of collateral, during the research we found that lenders in Serbia and Montenegro do not specifically require stricter collateral from microloaners, which could contribute to an increase in operating costs (they are required to have documentation which can be characterized as usual in creditor practice).

Within funding costs, as the most important component that would be analyzed is the explicit cost source of financing (cost of external financing sources). For the minimum cost of external financing, interest rate of sold Eurobonds can be taken as a benchmark. Also, take into account that in certain cases money can cost microfinance institutions more (if they are not engaged in accepting deposits, or are dependent on unstable donations) than traditional banks (in this context, this rate may be adjusted upwards).

When it comes to the perception of increased risk in microfinance, it primarily refers to the risk of loss (level of problematic microcredits). Chart 1. shows that the average loss suffered is the smallest component in structuring the interest rates on microcredit, which suggests that the rate of loss in the microfinance industry is not significantly higher in comparison to other forms of funding (again insisting on the rhetoric that microclients are risky, i.e., there is an increased risk of irregular debt repayment, and certain researches show that is not true). For example, at the 37th session of the CBM it was found that the share of assets of microcredit institutions accounts for only 1.2% of the total bank assets, with the overall level of non-performing loans of only 0.656% [30]. The amount of the expected loss in the microcredit sector (which varies between 0.5-1%) is written by the following authors: [26].

When it comes to the expected profit as a component in the structuring of the interest rate on microcredits, in Chart 1. can be noticed that it is moving in the range of 2-7%. However, when it comes to the period 2004-2005., it cannot be said that the same rates apply today (category of profit is a dynamic, changeable category, which varies and is evaluated according to the internal and external circumstances). Here we should first estimate the discount rate at the level of Serbia (measure of return that an investor could achieve by investing in some other purpose, as well as the measure of risk that the investor anticipates). Discount rate, i.e., the minimum required rate of return, will be calculated by using the formula of the CAPM model:

$$R_e = R_f + \beta (R_m - R_f) \tag{1}$$

R_e = Expected Rate of Return,

R_f = Risk-free Rate of Return,

R_m = Market Rate of Return,

β = Beta Coefficient.

It can be concluded that for the investment premium without risk, the interest rate on last sold long-term Serbian Eurobonds can be taken, and it is 5.875% [31]. Beta coefficient for the banking industry is estimated based on several key factors, namely the size of the bank (degree of concentration), the position of power of the bank at the regional / global level (degree of integration), and degree of financial advancement and volume of money in circulation. Regarding the degree of concentration, according to the National Bank of Serbia, for the first quarter of 2015 [32], in relation to the banking sector in Serbia (National Bank does not keep records on micro-credit institutions, nor are they subjected to

statistics), the absence of activity concentration of banks is evident, bearing in mind that the value of the Herfindahl-Hirschman's index for all key categories is below the level of 920. In addition, it can be said that banks in Serbia are small. Regarding the position of power, it can be concluded that banks in Serbia (although mostly foreign, but only somewhat significant on a regional level) do not represent a major financial center, nor can it be said that the banking sector is globalized and turned into an international banking to a significant extent. It is important to bear in mind that foreign-owned banks are not branches of foreign banks, they are specific legal entities which fulfill their obligations with their own capital. Consequently, banking in Serbia can be characterized as moderately financial propulsive. As it is said in the literature, the usual range of beta coefficient for the bank is the following: 0.4, for small banks, to 1.2 for large banks [24], and for microfinance institutions from 0.2 to 0.4 [22]; [23]; [13]. Damodaran on the website [33] of their faculty says the following range: 0.53 (regional banks) to 0.81 (financial centers), and at the same time, care must be taken for its methodology to apply to American banks. Likewise, it is valid that the higher the degree of concentration, the higher is the coefficient beta. Some authors have estimated for Universal Bank that "levered" (corrected, adjusted) beta is 0.708, while an "unlevered" beta, i.e., when you remove the effect of financial leverage and assume that the financing is done exclusively from its own capital, is 0.54 (due to the failure of the Universal Bank, the question arises of whether this assessment is valid, i.e., the risk is underestimated) [2]. Thus, the beta coefficient for the banking industry in Serbia could be in the range 0.60-0.80 (but we'll take that it is 0.75). For the field of microfinance, the beta coefficient of 0.80 can be taken (assuming that in Serbia the field of microfinance to some extent is still risky in relation to the banking industry, because it is not regulated). The premium of market risk, according to Damodaran, for the US market in 2014 was 5.78%. KPMG Netherlands in July 2015 suggested that for the market risk premium it should use a rate of 6.25% [34]. Taking into account the aforesaid, it can be taken that for Serbia the market risk premium is moving on a level of about 5% (this included country risk, i.e., the MRP itself already includes CRP, therefore, we feel that it does not need to engage in risk-free rate of return, as numerous estimating studies do, which we recognized as a problem of "double counting"). Damodaran estimates that the market risk premium in Serbia is 6.75%, which is more than the recommendation of KPMG Netherlands, however, what is often resented to Damodaran is that when calculating the market risk

premium he uses a methodology that is appropriate for developed countries, while calculating country risk he uses a methodology that is appropriate for developing countries (non-uniformity methodology problem). For this reason, in this study we will not adopt the value that is suggested, we will determine it on the basis of our own assessment. Thus, the minimum required return rate on the level of Serbia is amounted to around 9.875%.

If we tried to theoretically structure active interest rates on microcredits in Serbia (using data from Chart 1. for an approximate and simplified assessment), and respecting all previous written (and possible savings from the use of IT), the determination of the nominal interest rates on an annual basis can look like this:

- 50% savings on operating costs:

5% + 6% + 0.5% + 9.875% = 21.375%

- 90% savings on operating costs:

1% + 6% + 0.5% + 9.875% = 17.375%

The effective interest rate can be calculated by adding a processing fee of microcredit, which is in Serbia around 3% (however, the processing fee of microcredit should be already included in operating expenses). Therefore, more precisely, the minimum required return rate should incorporate the expected interest margin. Below is a comparative analysis of the interest margin in the banking and microfinance industry in different regions.

Table 5. The average interest margin in banks in the United States

Quarter	%
2012 Q3	3.42
2012 Q4	3.39
2013 Q1	3.27
2013 Q2	3.27
2013 Q3	3.26
2013 Q4	3.28
2014 Q1	3.17
2014 Q2	3.15
2014 Q3	3.15
2014 Q4	3.39
2015 Q1	3.03
2015 Q2	3.06

Source: [35]

Table 6. Interest margin in microfinance institutions in Germany

Quarter	%
2012 Q3	1.59
2012 Q4	1.71
2013 Q1	1.67
2013 Q2	1.59
2013 Q3	1.72
2013 Q4	1.76
2014 Q1	1.84
2014 Q2	1.64
2014 Q3	1.54
2014 Q4	1.54
2015 Q1	1.44
2015 Q2	1.42

Source: [36]

Chart 2. The bank's net interest margin (%)
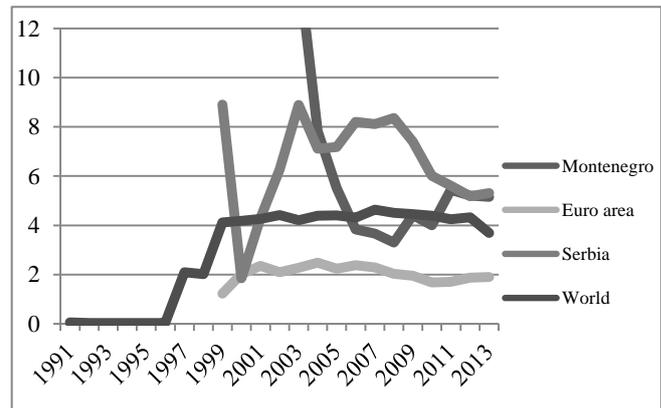
Source: [37]

Table 7. Average interest margin in banks in Serbia and Montenegro

Year	Interest margin %	
	Serbia	Montenegro
2005	7.179	5.519
2006	8.206	3.838
2007	8.118	3.666
2008	8.357	3.294
2009	7.407	4.415
2010	6.014	4.005
2011	5.614	5.435
2012	5.183	5.212
2013	5.318	5.162

Source: [37]

Calculation of the discount rate of Montenegro, the minimum required return rate will be made based on the classic formula taken from the CAPM model. For premium investment without risk, the interest rate on long-term Eurobonds last sold by Montenegro can be taken. With further research, in coordination with the Ministry of Finance, we came to data that Montenegro last issued eurobonds in March 2015 (nominal amount of 500,000,000 EUR, the interest rate is equal to 3.875%, a maturity of 5 years). Previous emissions were carried out with the following schedule: Montenegro in May 2014 issued Eurobonds with a nominal value of € 280 million, at an interest rate of 5.375%, with maturity of 5 years, then, in December 2013 issued Eurobonds in the nominal value of 80,000,000 EUR, at an interest rate of 5.95% with a maturity of 3 years (that are impact resistant bonds), and then, in April 2011 issued Eurobonds with a nominal value of € 180 million, at an interest rate from 7.25% to a maturity of 5 years, and in September 2010 issued Eurobonds with a nominal value of € 200 million, at an interest rate of 7.875% and a maturity of 5 years. However, the assessment of the investment premium without the risk always takes the last, i.e., the most recent information. Beta coefficient for the banking industry is estimated based on several key factors, which we have already mentioned [28]. Regarding the degree of concentration of the banking sector in Montenegro, it is moderate, according to the report of the Chief Economist for the third quarter of 2012 (the last one that is publicly available on the website of the Central Bank of Montenegro) [30], the value of the Herfindahl-Hirschman index for all key categories (assets, loans, deposits) is in the range of 1300-1700. The concentration of the banking system in Montenegro decreased in 2012 compared to 2011 (it is more the result of the reduction potential of the deposit and the loan portfolio due to the financial crisis, than the growth of competition in the banking sector). Therefore, we have adopted the assumption that the level of concentration was not significantly increased by 2015, and that there were no real conditions for it. For banks in Montenegro it could also be argued that they are small. Regarding the position of power, it can also be concluded that banks in Montenegro (although mostly foreign, 11 of the 14 licensed banks) do not represent a major financial center, nor can it be argued that banking in Montenegro is globalized and transformed in international banking to a significant extent. In Montenegro, there are only three banks with domestic capital (Prva, Atlas, IBM). Therefore, banking in Montenegro can be characterized as less financially propulsive. We have already mentioned the usual range of beta coefficient. Some authors for NEX PIF index estimated that beta coefficient is 1.00

[15]. NEF PIH index represents the movement of shares of six investment funds, and through analysis, we found that among the founders of these funds are banks (for example, one of the founders of the investment fund Moneta is the Montenegrin Commercial Bank AD Podgorica). Some authors have estimated that "levered" (corrected, adjusted) beta coefficient for Telekom of Montenegro is 0.58, while an "unlevered" beta coefficient is on a level of 0.37 [15], while other authors for the same company estimate a higher beta coefficient of 0.82 [38]. For this reason, the beta coefficient for the banking industry in Montenegro could be moving in the aforementioned range of 0.58 to 1.00, and estimating that the telecommunications sector is slightly riskier than the banking sector [33], we will take the value of 0.85 (beta coefficient for the banking sector of Montenegro, which could be identical for the microfinance sector, given that it is regulated and arranged, and adopting the assumption that it is not more risky than the classic banking sector). In certain cases, the banking sector can be estimated even as more risky than the IT sector, which is more pronounced in developed countries (for example, during the escalation of the financial crisis in the United States, where the risk of the banking sector and application of financial derivatives exceeds even the risk of saturation of new technologies). When it comes to market risk premiums, it can be taken that in Montenegro it starts at around 5.40% [33]. In summary, the minimum required rate of return on the level of Montenegro would amount to about 8.465%.

If we tried to theoretically structure active interest rate on microcredit in Montenegro (using data from the Chart 1. for an approximate and simplified estimation), and respecting all previous written (and possible savings from the use of IT), the determination of the nominal interest rates on an annual basis can look like this:

- 50% savings on operating costs:
  $5\% + 4\% + 0.6\% + 8.465\% = 18.065\%$
- 90% savings on operating costs:
  $1\% + 4\% + 0.6\% + 8.465\% = 14.065\%$

The effective interest rate can be calculated by adding a processing fee of microcredit, which in Montenegro moves to 2% (we have come to this data on the basis of communication with microfinance institutions and comparative analysis of their tariff lists). As we have already noted, the fee for processing microcredits should be already included in the operating costs. Thus, the minimum required rate of return should incorporate the expected interest margin (the way of defining the interest margins in Serbia and Montenegro should be examined critically, since interest margins in these countries are by far the highest). Theoretically analyzed and

designed, it is possible that the effective interest rate on microcredit in Serbia and in Montenegro is lower than 25%, in order to exclude the possibility of the existence of "predation".

5. Results and discussion

Based on the implemented simplified analysis, the conclusion is that the expected interest margin (in Serbia and Montenegro is the highest, it amounts to over 5%, while in the euro area it is about 2%, and in the United States it is about 3%) is one of the key factors when defining the lending interest rate on microcredits, and not only high country risk premium and expensive sources of financing (rhetoric). Also, it is important to recognize that in the financial sector in Serbia and Montenegro unjustified performance of averaging is taking place, respectively, that the expected interest margin sets on the same / similar level, without the necessary differentiation for different types of financial institutions (classic banks and micro-credit institutions) for different types of jobs (classic loans and microcredit), and so on.

6. Conclusion

The formation of the sample was done in a way that it supports the adoption of general and specific conclusions about the state of the microfinance sector in Serbia and Montenegro (to the extent possible, taking into account the degree of (un) availability of accurate data). At the start, the choice of definition of microcredit was made (loan amounts up to 10,000 euros), because it varies in different sources of literature. In this context, the starting point was a sample that included information related to the microfinance sector in Serbia and Montenegro. The research that began more than a year ago in Serbia the analysis included 29 banks and 3 micro-credit institutions, as regards Montenegro, the analysis covered 6 licensed microfinance institutions. The analysis found that most of the banks in Serbia do not provide microfinance services (90 percent of them), and when it comes to micro-credit institutions there were only two functional left (one in the meantime ceased to work). A significant obstacle in the study turned out to be, that 10 percent of those banks and two microcredit institutions have not given their consent to share information on historical movements in interest rates on microcredits for the observed period 2005-2013., declaring that this is a banking secret (as a contrast, we are giving the example of

greater transparency in the microcredit sector in Montenegro, where the statistics of interest rates in the microcredit sector are public). For these reasons (failure to obtain approval in all cases, the unevenness of data), it was inevitable to include data collected from the database MixMarket, as well as certain approximations, but with a high level of awareness about possible inaccuracies from the executed simplified assessments.

When it comes to components affecting the definition of interest rates on micro-loans, in the paper we have selected four core activities: operating costs, sources of financing, the amount of the expected loss and the amount of the expected profit. The rhetoric of financial institutions emphasizes the high operating costs, noting that they were significantly higher in the microfinance sector than in the traditional banking. In this paper, we tried to some extent to theoretically relativize this argument for an increase in lending rates, introducing the significance of the deployment of information technology on the reduction of operating costs. Also, the rhetoric of financial institutions focused on high risks in the microfinance sector, stressing that they are more pronounced than with traditional banking, and consequently the height of the expected loss is higher, as well as the amount of profit (compensation for the increased risks assumed). Also, there was an attempt of theoretical relativizations of these arguments of increasing the interest rates on microcredits, introducing the analysis of delinquency rates, where it turned out that it is lower than in traditional banking, as well as the analysis of the problem of "double counting" as a country risk, and consequently unjustified increase of the values of these components that continue to influence the definition of interest rates on microcredits. Thus, by means of the CAPM model and the Build-Up approach model, the general hypothesis is confirmed (degree of validity of evidence can be interpreted in the context of the limited availability of data). Also, the special hypothesis is partially proven, through correlation analysis (also, the degree of validity of the proof can be seen in the context of limited data availability).

The scientific-professional contribution of this paper is that it contains research which may affect the assessment of the field of microfinance in a different way, and which can contribute to spreading the base of references on the subject of microfinance, due to the fact that the paper on this subject is poorly present in the domestic literature.

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