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**Basic consumption and income based indicators of economic inequalities in
Bosnia and Herzegovina: evidence from household budget surveys**

Prepared by the Agency for Statistics of Bosnia and Herzegovina¹

Abstract

In last two decades poverty indicators in Bosnia and Herzegovina were calculated on the basis of data collected within Living Standards Measurement Survey (LSMS) and Household Budget Surveys (HBS). In both surveys, household consumption expenditure was used as a monetary measure of people's well-being. Since 2003, European Union member states use Survey on Income and Living Conditions (EU-SILC) for data collection on household income, which is by regulation used as a monetary measure of living standard.

LSMS in Bosnia and Herzegovina was conducted in 2001 and 2004 and it collected only data on consumption expenditure, while HBS was conducted four times: in 2004, 2007, 2011 and 2015 and in every survey round both data on consumption and income was collected. Since, data on income from HBS were considered as significantly underreported, poverty indicators were calculated only on the basis of consumption expenditure data.

The aim of this paper is to compare basic poverty and inequality indicators in Bosnia and Herzegovina based on consumption and income approach. Our working hypothesis is that poverty and inequality indicators, calculated from consumption expenditure data, are significantly smaller compared to those calculated from income data. For this purpose, we will use Foster-Greer-Thorbecke poverty indices and Gini index and quintile ratio as inequality measures. These indicators will be calculated from consumption and income data collected within HBS in Bosnia and Herzegovina 2015. In this study, we will show the differences in size, depth and severity of poverty, as well as in size of inequality in the country and its regions: Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District BiH in order to test the hypothesis that poverty and inequality in Bosnia and Herzegovina were underestimated when measured by consumption method. Our expectation is that our hypothesis will not be rejected, which will clearly indicate the need for fully harmonisation of poverty and inequality measures to EU requirements and standards, i.e. for urgent implementation of the full-scale EU-SILC in Bosnia and Herzegovina.

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1. Introduction

Living standard analysis in Bosnia and Herzegovina was measured and analysed on the basis of data collected within different household surveys. The first analysis of living standard and poverty in post-war Bosnia and Herzegovina was made on the basis of the Living Standards Measurement Survey (LSMS) in 2011 and the Living in Bosnia and Herzegovina survey (LiBiH) in 2004. From 2004, living standard was analysed on the basis of Household Budget Surveys (HBS), which were conducted four times: in 2004, 2007, 2011 and 2015. In every such analysis, household consumption expenditure was used as a monetary measure for estimation of poverty and inequality indicators. There were three reasons for using consumption expenditure instead of income:

- (i) LSMS and LiBiH did not collect data on household income at all;
- (ii) Data on income from HBS were considered significantly underestimated compared to consumption data. This was especially valuable for surveys in 2004 and 2007, where income modules were poorly designed;
- (iii) Hypothesis that consumption better fits the poverty in Bosnia and Herzegovina as a transition society was accepted.

For this reason, higher level of harmonization of living standards statistics with EU standards and regulations has still not been achieved.

Although the HBS methodology was in 2011 and 2015 significantly improved in order to better collect income data, income data was neither analysed in details nor used for official poverty analysis. If seldom analyzed, income data was analysed in non-edited and raw format and results of this analysis were mostly used for internal purposes of statistical offices.

In order to improve the level of harmonisation of official statistics with EU standards, the Agency for Statistics of Bosnia and Herzegovina is obliged to strictly apply statistical methods, which are proposed or regulated by EU regulations and recommendations. In the area of living standards statistics, it implies the use of income as a monetary measure for poverty and inequality indicator calculations. By using income, Bosnia and Herzegovina could be fully compared with other EU countries in terms of living standard and the hypothesis that consumption based living standards indicators are underestimated in comparison to income based indicators, could be tested. Additionally, there are several methodological and theoretical reasons why income data is better measure of well-being in comparison to consumption expenditure (and vice versa). In any case, the use of both measures, income and consumption expenditure, will enrich the analysis of living standard and make it multidimensional. In this way, data users will be provided by better poverty profile of the country and there will be more data for policy making issues for all government bodies.

2. Literature review

Income or consumption expenditure approach in measuring living standards is an issue, which had been examined many times by statistical practitioners, as well as academic statisticians. This phenomenon was a subject of many statistical papers where it was analysed from the theoretical, conceptual and methodological point of view and from the view of pragmatical issues related to data collection and reporting. Authors focused their attention to the correlation between income and consumption and well-being, to the relationship of these measures to development status of countries and to the quality of data collected within statistical surveys. Several authors analysed the effects of the used measure of well-being on specific subpopulations in order to define their correlation and to be able to choose the best welfare measure.

Meyer and Sullivan (2003) analysed the differences in using income and consumption measure between developed and developing countries. They used data from different surveys (Consumer Expenditure Survey, Panel Study of Income Dynamics and March Current Population Survey) and analysed percentile

distribution of both welfare measure especially for several subpopualtion groups (low-educated single mother, single mother with a high schol degree, elderly families and families with a head who is disabled). Authors found out that consumption expenditure for people in the bottom part of the distribution significantly exceed reported income and provided evidence that household surveys have substantial underreporting of key income components.² Meyer and Sullivan concluded that consumption expenditure is better measure of well-being for disadvantaged families³ and recommended its use in designing benefit amounts for social benefit programs. But, authors also recommended the use of income as a eligibility criteria for transfer programs because of its ease of reporting.

The use of consumption expenditure and income as a inequality measure over time was analysed by Johnson et al. (2005). Authors used Census and Consumer Expenditure microdata and compared Gini coefficient based on two different measures. They analysed trends and sensitivities in the measurements by focusing their analysis on the distribution of these measures over different age cohorts (children, adults, elderly) and family types (single nonelderly, single elderly, nonelderly couples, elderly couples, all couples with children, single mother families, other families with children and other families). Authors concluded that, in many cases, it does make a difference which measure is used and they suggested using both of them to evaluate household well-being.

Slesnik (1993) found out that consumption based poverty indicators are significantly lower than those based on income and suggested the use of consumption- rather than income –based welfare measures in order to better identify individuals who need assistance the most⁴.

The literature review has highlighted the following elements:

- (i) There are substantional differences in poverty indicators based on income or consumption;
- (ii) Percentile distributions of income and consumption are also different, especially for specific population subgroups;
- (iii) The choice of monetary measure of poverty has an impact on effects of poverty reduction strategies because of different informative value of monetary measures;
- (iv) The choice of monetary measure of poverty depends of the level of development of the country;
- (v) The use of both measures is recommended by many authors in order to get multidimensional poverty profile of the country;

and much more.

This paper is a just one step of a more comprehensive attempt aiming at analyzing different approaches to measuring poverty in Bosnia and Herzegovina and should be complemented with quantitative analyses of several standardized poverty and inequality indicators and their relationship.

3. Monetary measures of well-being

² Meyer and Sullivan (2003), p. 34.

³ Meyer and Sullivan (2003), p. 35.

⁴ Slesnik (1993), p. 34.

Poverty is general scarcity or the state of one who lacks a certain amount of material possessions or money. This concept is based on income or consumption expenditure as monetary measures of well-being or monetary poverty indicators. The most surveys of income or consumption expenditure consider households as observational units. Both indicators are usually measured in relation to the household size and type. If household size is used as a number of household members, one has to assume that all household members have the same income contribution or the same needs, although that is not the case. In order to overcome this problem, scales of equivalence are used. The most commonly used scale of equivalence is OECD and modified OECD scale. OECD scale is defined by:

$$(1) N' = 1 + 0,7 \cdot (N_{adults} - 1) + 0,5 \cdot N_{children},$$

where:

N' – equivalised household size,

N_{adults} – the number of adults and

$N_{children}$ – the number of children in household.

In practice, the most widely used scale of equivalence is the modified OECD scale, defined by:

$$(2) N'' = 1 + 0,5 \cdot (N_{adults} - 1) + 0,3 \cdot N_{children}.$$

Although income and consumption expenditure are natural well-being measures, they are not easily measurable.

Income represents the sum of incomes of all household members, but it includes a numerous amounts such as rents, dividends, informal transfers (from family and friends), social transfers, subventions, loans, income in kind, etc. Measurement of income can be limited by the existence of grey economy and inefficient tax legislation. Besides that, people don't record income for a long period and there is possibility of hiding income due to avoid taxes or illegal sources of income.

Household consumption expenditure is defined as a value of goods and services purchased or consumed from self-production in a certain period of time. Statistical surveys on household consumption have to be well designed in order to record all components that are included in total household consumption. This is a difficult task because some components can be omitted. In certain surveys, it is sufficient to include consumption expenditure that is related to food and basic existential needs. On the other hand, even the poorest households have expenditure related to housing, clothes, footwear and personal care.

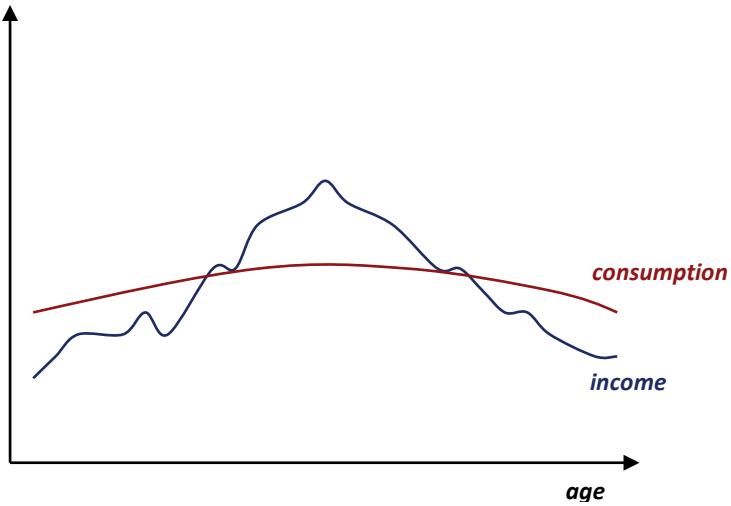
Aiming to decide which monetary indicator should be used, it is needed to perceive their advantages and disadvantages. Usually, income is used in developed and consumption expenditure in developing countries.

The advantage of income is significantly smaller number of components, comparing to consumption expenditure. Also, decision on consumption expenditure as a measure of well-being could be individually based. Low consumption doesn't necessarily mean low living standard. On the other hand, income can be underestimated and affected by short-term changes (seasonal fluctuations, temporary job loss, etc.).

Consumption reflects current living standard and people are more willing to provide information on expenditure than income. However, households with few resources can have higher consumption than their total income⁵ (loans, social networks). Consumption is much more stable in one life cycle. A typical relationship between consumption and income is presented on Figure 1.

⁵ Meyer and Sullivan (2003), p. 12.

Figure 1. Life cycle: Consumption and income⁶



4. Basic Foster – Greer – Thorbecke poverty indices

Foster, Greer and Thorbecke (1984) defined new class of poverty indices. The best known are headcount ratio, poverty gap index and poverty severity index.

4.1. Headcount ratio

The most commonly used poverty measure is headcount ratio, P_0 , (or incidence of poverty or poverty rate). For predefined poverty threshold z , headcount ratio is proportion of population units whose income⁷ is not higher than z .

In the other words, headcount ratio represents proportion of poor units in population. It can be calculated by using the formula:

$$(3) P_0 = \frac{1}{n} \sum_{i=1}^n I_i,$$

where

n is population size;

I is indicator function of poverty, $I_i = \begin{cases} 1, & y_i \leq z \text{ (i -th unit is poor)} \\ 0, & y_i > z \text{ (i -th unit is not poor)} \end{cases}$;

y_i is income of i -th population unit.

Formula (3) can be simplified as following:

$$(4) P_0 = \frac{n_s}{n},$$

where n_s is the number of population units classified as poor.

⁶ Source: Introduction to Poverty analysis, World Bank Document, p. 18.

⁷ We will keep income as poverty indicator, although all indices can be calculated for any quantitative poverty indicator.

The values of headcount ratio belong to interval $[0,1]$. It will be equal to 0 if there are not poor units in population ($n_s=0$) and equal to 1 if all population units are considered as poor ($n_s=n$). Although headcount ratio is simple to calculate and interpret, it has some serious disadvantages. In comparison of two populations or the same population in different time periods, it can indicate the same level of poverty although one population is in state of more serious poverty than the other. Also, the headcount ratio doesn't consider depth of poverty. Any population unit, which is below the poverty threshold, is treated in the same way. Any change below poverty line, e.g. falling into deeper poverty, doesn't affect headcount ratio.

Headcount ratio can be impractical and misused especially in evaluation of social policies and strategies. If reducing poverty strategies treat only poor unit on the top of distribution of poor units (that are close to poverty thresholds), more units will come out of poverty. In that case, headcount ratio will indicate better results in reducing poverty than in the case that strategies treat the most vulnerable units, on the bottom of income distribution.

4.2. Poverty gap index

Poverty gap index, P_1 , is defined on the basis of adjusted vector (adjusted distribution) of income y . If $Y = (y_1, y_2, \dots, y_n)$ represents vector of income, defined on population, than adjusted vector $Y^* = (y_1^*, y_2^*, \dots, y_n^*)$ is defined by:

$$(5) y_i^* = \begin{cases} y_i, & \text{for } y_i \leq z \\ z, & \text{for } y_i > z \end{cases}.$$

In the other words, adjusted vector of income is obtained by vector of income by replacing incomes of nonpoor population units with the amount of poverty threshold. We will assume that vector Y , and therefore vector Y^* , is arranged in non-decreasing order.

Normalized income deficit, for i -th population unit is defined by:

$$(6) PG_i = \frac{z - y_i^*}{z}, \quad i = 1, 2, \dots, n$$

For nonpoor population units, normalized income deficit is equal to zero: $PG_i = 0$ ($i = n_s + 1, n_s + 2, \dots, n$).

Poverty gap index is constructed as the average normalized income deficit, based on adjusted income distribution:

$$(7) P_1 = \frac{1}{n} \sum_{i=1}^n PG_i = \frac{1}{n} \sum_{i=1}^n \frac{z - y_i^*}{z}.$$

Based on (6):

$$(8) \sum_{i=1}^n \frac{z - y_i^*}{z} = \sum_{i=1}^{n_s} \frac{z - y_i}{z}.$$

Considering last equation, poverty gap index can be expressed as following:

$$(9) P_1 = \frac{1}{n} \sum_{i=1}^n \frac{z - y_i^*}{z} = \frac{1}{n} \sum_{i=1}^{n_s} \frac{z - y_i}{z}.$$

If μ^* is average income of adjusted income distribution, poverty gap index is equal to:

$$(10) \quad P_1 = \frac{z - \mu^*}{z}.$$

On the other hand, by using indicator function of poverty, poverty gap index can also be expressed by:

$$(11) \quad P_1 = \frac{1}{n} \sum_{i=1}^n \frac{z - y_i}{z} \cdot I_i.$$

Values of poverty gap index also belong to interval $[0,1]$. It will be equal to 0 if there are not poor unit in population and equal to 1 if all population units are poor with income of 0 (without incomes).

Poverty gap index considers the depth of poverty i.e. the mean distance separating the population from the poverty line, so it removes disadvantage of headcount ratio. Each monetary unit directed as social transfer below poverty line, regardless of position of population unit, will decrease total deficit for the same amount $1/z$. In that case, policy creators are not stimulated to intervene at the top of income distribution of poor units.

4.3. Poverty severity index

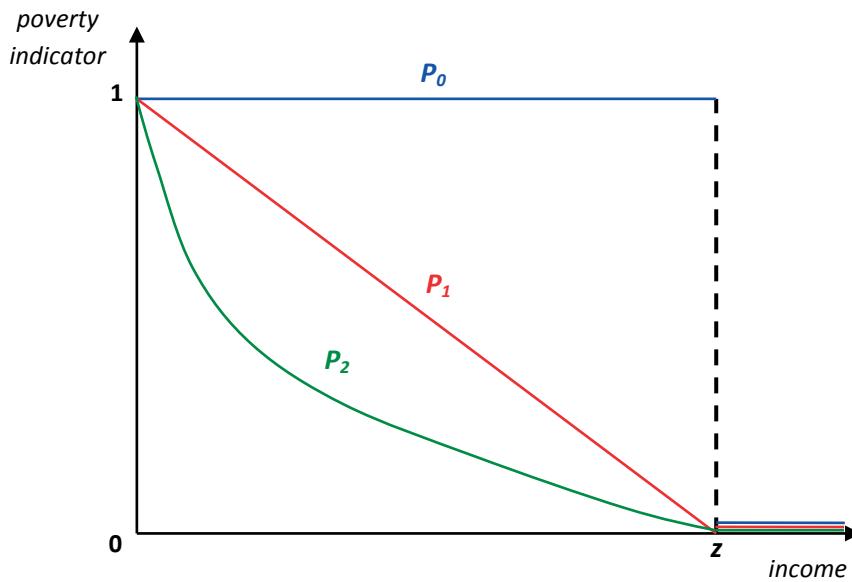
Poverty severity index, P_2 , is defined as the average squared normalized deficit of adjusted income distribution:

$$(12) \quad P_2 = \frac{1}{n} \sum_{i=1}^n PG_i^2 = \frac{1}{n} \sum_{i=1}^n \left(\frac{z - y_i^*}{z} \right)^2$$

The values of poverty severity index also belong to interval $[0,1]$ with the value of 0 if there are not poor population units and value of 1 if all population units are poor with income of 0. Poverty severity index can be understood as weighted poverty gap index, where each normalized income deficit is weighted by itself. Proportionally higher weights are assigned to the units with the higher deficit of income. In that way, units at the bottom of income distribution have higher significance. Therefore, unlike headcount ratio and poverty gap index, poverty severity index takes care of income distribution among poor population units. The usage of this index will stimulate policy makers to direct budget at the bottom of distribution first.

Figure 2 represents the relationship among values of headcount ratio, poverty gap index and poverty severity index.

Figure 2. P_0, P_1 i P_2 ⁸



5. Basic inequality indicators

In order to better describe poverty profile of the country, besides basic poverty indices defined above, the analysis of poverty must also contain some measures of inequality of distribution of the monetary aggregate, which is used as a welfare measure. In this paper, we will define and compute two main inequality indicators: Gini coefficient and Quintile Ratio S80/S20. Both of them will be calculated for consumption expenditure as well as for income of households.

5.1. Gini coefficient

Gini coefficient is the most commonly used inequality measure. It is defined based on the Lorenz curve as the share of concentration area compared to maximum concentration area.⁹ Let $L=L(r)$ be Lorenz curve of income distribution Y , where r is cumulative share of population units. Then, Gini coefficient is equal to:

$$(13) \quad G = 2P = 1 - 2 \cdot \int_0^1 L(r) dr .$$

In practice, there are more equivalent formulas to calculate Gini coefficient. Suppose that population incomes are arranged in non-decreasing order. The most common method for calculation of Gini coefficient is *trapezium rule*:

$$(14) \quad G = 1 - \frac{1}{n} \sum_{i=1}^n (Q_i + Q_{i-1}) ,$$

where Q_i represents cumulative income for the first i population units. Gini coefficient can be calculated directly by income:¹⁰

⁸ Ravallion, M. (1988), p. 41.

⁹ Triangle on Lorenz curve graph, below the total equality line.

$$(15) \quad G = \frac{2 \sum_{i=1}^n i y_i - (n+1) \sum_{i=1}^n y_i}{n \sum_{i=1}^n y_i}.$$

There are some other equivalent formulas for calculation of Gini coefficient directly by income:¹¹

$$(16) \quad \begin{aligned} G &= \frac{1}{2n^2\mu} \sum_{i=1}^n \sum_{j=1}^i |y_i - y_j| = \\ &= 1 - \frac{1}{n^2\mu} \sum_{i=1}^n \sum_{j=1}^i \min(y_i, y_j) = \\ &= 1 + \frac{1}{n} - \left(\frac{2}{n^2\mu} \right) (y_1 + 2y_2 + \dots + ny_n) \end{aligned}$$

In case of sample with defined weights for sample units, expression for calculation of Gini coefficient is:¹²

$$(17) \quad G = \left(\frac{2 \cdot \sum_{i=1}^{n'} \left(w_i \cdot y_i \cdot \sum_{j=1}^i w_j \right) - \sum_{i=1}^{n'} w_i^2 \cdot y_i}{\sum_{i=1}^{n'} w_i \cdot \sum_{i=1}^{n'} w_i \cdot y_i} - 1 \right) \cdot 100,$$

where n' is sample size.

The values of Gini coefficient belong to interval $[0,1]$ where 0 represents total equality and 1 represents total inequality. The main disadvantage of Gini coefficient is lack of decomposability on population subgroups. Also, Gini coefficient does not allow to distinct different inequality types.

There are cases in which Lorenz curves intersect, indicating different patterns of income distributions, but Gini coefficients have close values.

5.2. Quintile Ratio S80/S20

S80/S20 is a ratio of total equalised household consumption expenditure or income of the top quintile (20% of the households with the highest equalised consumption expenditure) to that spent by the lowest quintile (20% of the households with the lowest equalised consumption expenditure or income). It is equal to:

$$(18) \quad S_{80-20} = \frac{S_{80}}{S_{20}}$$

where

S_{80} denote the share of (equivalised disposable) income received by the top 80 % of the population, and

¹⁰ Šošić, I., Primijenjena statistika, p. 125.

¹¹ Unidimensional Inequality Measurement (On line materials), OPHI

¹² Hulliger et al, Robust Methodology for Laeken Indicators, European Comission, str. 19.

S_{20} is the income share received by the bottom 20% of the population

The quintile share ratio belongs to a set of Laeken indicators, chosen by the EU to monitor income distribution.

6. Poverty and inequality measures based on income and consumption

The calculation of poverty indicators in this study are based on data from the most recent available Household Budget Survey in Bosnia and Herzegovina from year 2015. Datasets contain data collected on the sample of 7,702 households. Monetary poverty indicators used for construction and calculation of poverty and inequality indices are equivalised¹³ monthly household's consumption expenditure and equivalised monthly household's income. For both indicators relative poverty thresholds are calculated as 60% of median of used monetary measure. Poverty threshold based on equivalised monthly household's consumption expenditure amounts 389.26 BAM, while poverty threshold based on equivalised monthly household's income amounts 246.00 BAM.

In order to calculate income based indicators, we used non-edited i.e. raw income data, while data on consumption expenditure had been edited, imputed and validated. Non-edited income data set contains several hundreds of households with very low or zero income and for this reason, we can doubt that indices based on income could be considered as overestimated.

The average and median of household's consumption expenditure and income were calculated and shown in Table 1.

Table 1. Mean and median of household's income and consumption expenditure

Statistics	Sample (7,702 households)	
	Income	Consumption expenditure
Mean	541.84	768.21
Median	410.00	648.77

The mean and median for consumption are significantly higher and they indicate the need for comparisons of poverty indices based on households' consumption expenditures and households' incomes.

6.1. Foster – Greer – Thorbecke poverty indices

Based on formulas (4), (9) and (12), Foster – Greer – Thorbecke poverty indices: headcount ratio, poverty gap index and poverty severity index, were constructed for entire Bosnia and Herzegovina and separately for Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District BiH. All indices were calculated based on households' consumption expenditures and households' incomes as poverty indicators.

The results are presented in Table 2.

¹³ Household monthly consumption expenditure and household monthly income are divided by adjusted household size, obtained by using modified OECD scale.

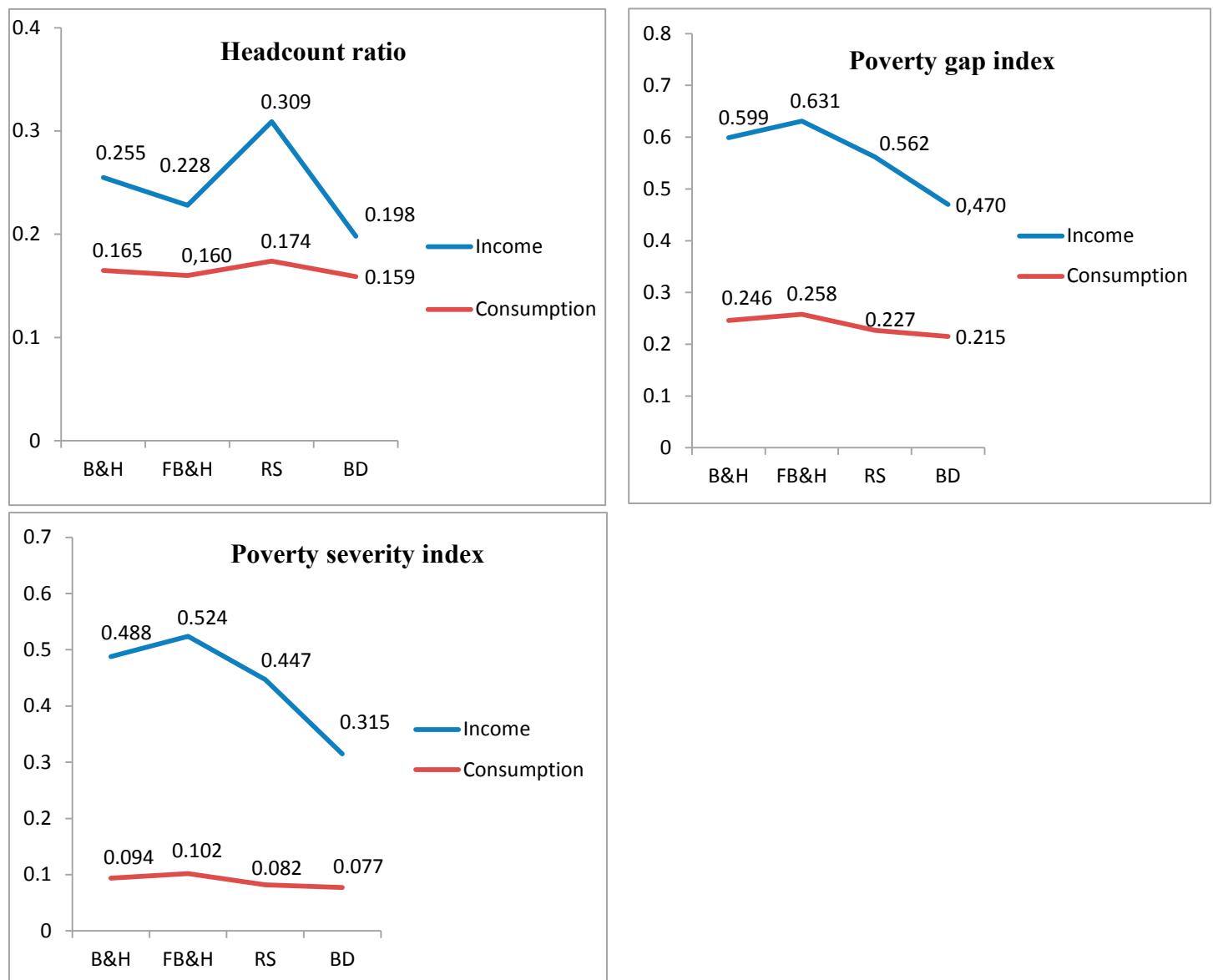
Table 2. FGT indices based on income and consumption expenditure (B&H, FB&H, RS and BD, HBS 2015)

	Headcount ratio (P_0)		Poverty gap index (P_1)		Poverty severity index (P_2)	
	Income	Consumption	Income	Consumption	Income	Consumption
B&H	0,255	0,165	0,599	0,246	0,488	0,094
FB&H	0,228	0,160	0,631	0,258	0,524	0,102
RS	0,309	0,174	0,562	0,227	0,447	0,082
BD	0,198	0,159	0,470	0,215	0,315	0,077

As expected, all poverty measures based on income are higher than corresponding poverty measures based on consumption. Especially in case of poverty rate (headcount index), for Republika Srpska, the percentage of poor households is more than 10 percentage points higher if measured by income. For all regions, depth of poverty is more than double higher in case of income as poverty indicator. Also, for almost all regions, severity of poverty is more than five times higher if measured by income.

The differences in poverty indicators based on two different welfare measures are more noticeable on graphical presentation given on Figure 3.

Figure 3. Graphical presentation of FGT indices based on consumption and income



6.2. Inequality measures

In order to show differences in distributions of two monetary measures of well-being by households in Bosnia and Herzegovina, we calculated two basic inequality measures: Gini coefficient and quintile ratio S80/S20. These indicators are also calculated for three geographical areas in the country and shown in the Table 3.

Table 3. Gini coefficients and S80/S20 ratios for B&H, FB&H, RS and BD (2015)

	Gini coefficient (%)		S80/S20	
	Income	Consumption	Income	Consumption
B&H	48,7	31,2	20,2	4,9
FB&H	48,9	31,0	19,3	5,2
RS	47,9	31,4	22,3	4,3
BD	52,8	31,7	8,8	4,2

Inequality indicators, calculated on the basis of distributions of households' consumption expenditures and households' incomes, indicate higher level of inequality in all areas in case of income distribution. Gini coefficients are more than 15 percentage points higher for income distribution, compared to consumption distribution. Quintile ratios show exactly the same relationships between levels of consumption inequality and income inequality. In all geographical areas, these ratios are about four times higher when measured by income in comparison to the consumption approach, except in Brcko District BiH where this ratio is twice higher. The situation in Brcko District BiH is very specific regarding inequality indicators based on income measure: Gini coefficient is the highest, but quintile ratio is the lowest, compared to two bosnian entities. Since, Gini coefficient measures the distribution of income among all sectors of the population while quintile ratio makes a comparison between the richest and the poorest, it seems that middle class of District population also suffers of high income inequality.

All obtained differences in poverty and inequality indicators can be considered as an indication that poverty and inequality in Bosnia and Herzegovina shouldn't be measured exclusively on the basis of consumption expenditure.

7. Conclusion

Official statistical assessments of poverty in Bosnia and Herzegovina are still exclusively based on household's consumption expenditure as a measure of material well-being. The reason for this approach is in the fact that income is considered as underreported within Household Budget Survey. This approach is still kept in the practice, although income module in Household Budget Surveys in Bosnia and Herzegovina was significantly improved in 2011 and 2015. For this reason, income data were not analysed in details. Statistical offices did not edit nor impute income data and reaserchers had to analyse only raw income data or put a lot of efforts to edit and impute them by themselves. In this paper, we decided to use raw income data, although we were aware that this had some influence on the results of the analysis. As mentioned above, income measurement is significantly improved in the last two waves of HBS and it is important to investigate whether poverty and inequality measures indicate similar conclusions. The importance of income poverty and inequality indicators is particularly emphasized in the process of harmonisation of statistics of Bosnia and Herzegovina to EU regulations and best practices and for purposes of international comparability of results. Additionally, data users, especially government bodies which are in charge for economic and social policies, must be provided with adequate measures of well-being.

The aim of this paper is to present methodology of calculation of several main poverty and inequality indicators and to compare results of their applications on consumption and income data. Based on data from HBS 2015, we calculated Foster-Greer-Thorbecke poverty indices: headcount ratio, poverty gap index and

poverty severity index, and also Gini coefficient and quintile ratio as the inequality measures. In case of income, we used non-edited and non-imputed data because it was not undoubtedly clear whether some households had very low and/or zero incomes in certain income kinds or incomes were not reported. Although we were aware of this lack, we believe that results based on non-cleaned income data satisfactorily indicate the main direction of relationship between poverty and inequality indicators based on income or consumption expenditure.

Based on calculated FGT poverty indices, we can conclude that, at all regional levels in Bosnia and Herzegovina, incidence of poverty is from four to thirteen percentage points higher when measured by income in comparison to their consumption counterparts. Values of the depth and severity of income poverty are from two to four times higher, respectively, compared to consumption poverty. This result led us to conclusion that state of poverty in country is underestimated if measured by consumption expenditure.

Similarly, calculated inequality measures indicate greater income inequality level in all regions, in certain cases for more than 15 percentage points for Gini coefficient and about four times higher values in quintile ratios. Regarding inequality indicators, we indicated a specific situation in Brcko District BiH, where Gini coefficient and quintile ratio shown contradictory position of this region, compared to bosnian entities. According his data, it seems that middle class households in Brcko District BiH suffer of high inequality in income distribution and that inequality is not only a problem of poorest quintile.

Considering these conclusions, to achieve more efficient poverty and inequality assessments in Bosnia and Herzegovina, in future work it is needed to improve the analysis of income data, which are collected in Household Budget Survey in the sense that appropriate procedures of data editing and imputations must be applied within data validation process. In this way it is possible to get complete income variables ready for the analysis and to produce both, income and consumption poverty indicators.

Additionallyt, Household Budget Survey could be used as an unique data source for both, consumption expenditure and income and to enable the comparison of welfare measures for main domains of the analysis. Fully harmonization of the living standards statistics with EU regulations and best practices requires the introduction of EU-SILC survey as a source of income data and a basis for poverty analysis. EU-SILC is at the moment in piloting stage in Bosnia and Herzegovina and the first full-scale SICL will be conducted in 2018. Once the EU-SILC was introduced, it should be continuously conducted, while Household Budget Survey could be conducted less frequently (for ex. every five years). The optimal combination of EU-SILC and Household Budget Survey should be the goal of statistical institutions in Bosnia and Herzegovina in coming years.

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