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NEW TARGETING METHODS FOR BOSNIA HERZEGOVINA: PART II

Poverty impact evaluation of alternative targeting methods in
Republika Srpska

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1 Introduction

Social safety nets serve - amongst others - to alleviate extreme poverty through redistribution and constitute a means of last resort to ensure basic living standards for individuals in dire situations. In order to fulfil this objective, social safety nets should be adequate, that is, consisting of individual programs that provide full coverage and meaningful benefits to whichever subset of the population they are meant to assist. Simultaneously, they should strive to provide benefits in a cost-effective manner, channelling most program resources to the intended target group, while economizing administrative costs (cf. Grosh, del Ninno, Tesliuc, & Ouerghi, 2008).

The accurate targeting of benefits towards those most in need is essential when aiming to fulfil this objective in a financially sustainable manner. Considering that Bosnia Herzegovina is one of the highest spenders on social assistance in the Europe and Central Asia region, but simultaneously manages to reach only a small share of the poor and its benefits are generally regressive, current targeting performance of its social transfers is far from optimal. The aim of this report was to develop alternative targeting mechanisms for non-contributory civilian benefits in Bosnia and Herzegovina in order to ultimately improve the targeting performance, poverty reduction impact, and distributional impact of these social transfers.

Since income is difficult to verify in Bosnia and Herzegovina due to a high degree of informality, simple means-testing (MT) would be an inappropriate targeting mechanism in the country. Therefore, several other mechanisms were explored that make use of easily observable household characteristics to proxy household income, including proxy means-testing, additional filters for existing means-tests, categorical targeting and other/hybrid forms of targeting. Based on existing statistics on poverty incidence in Bosnia and Herzegovina, the objective was set to maximize welfare impacts for the poorest 20% of the population. In addition to reaching a larger share of this group, an improved targeting performance should ideally result in efficiency gains, meaning that the number of households that are wrongfully included to receive non-contributory civilian benefits should also decrease.

The above-presented methods for targeting non-contributory means-tested cash transfers in Bosnia and Herzegovina indicate that the newly calibrated PMT model yields the best targeting performance in terms of identifying the poorest 20% of the population. When basing the model on the rural and urban population separately, targeting performance further improves, which is due to the fact that separate consumption models for urban and rural areas more accurately capture varying living conditions in urban and rural parts of the entities. This is particularly the case in RS. Aside from its accurate targeting performance, PMT has the advantages that it captures multidimensional poverty instead of focusing on income poverty.

In spite of these advantages, PMT has a number of disadvantages. Aside from the fact that its eligibility criteria are difficult to communicate as they may seem arbitrary, and should be adapted regularly due to their fraud sensitivity, PMT is **also** rigid in the sense that it does not capture economic changes quickly. **One of its disadvantages is that it is administratively demanding in the short run. In particular, adapting the administrative structure to suit the implementation of a PMT most likely will involve higher administrative costs during the restructuring phase.**

This is Part II of the report on new targeting methods for Bosnia and Herzegovina. In Part I, we simulated new targeting methods and analyzed their potential impact on coverage of the population most in need and the distribution of the potential beneficiaries across the income

distribution. The analysis in Part I showed that moving to a proxy-means test (PMT) to identify the poorest households would improve coverage and distribution rates of existing non-contributory transfers. Alternatively, using the information on a household's electricity expenditures could also serve as an easy indicator to identify households in need.

While Part I only considered whether a household or individual would receive a benefit or not given a new methodology, Part II simulates the allocation of different transfers and analyzes the distributional impact of the new transfers, their adequacy and poverty reduction impact. In order to determine the benefit level, the current budgets for non-contributory transfers are used as starting point. After discussions with government stakeholders in both entities, notably during the round tables "New Targeting Methods for BiH – Part I" which were held on October 24th (Sarajevo) and 25th (Banja Luka), the team eventually selected three budget scenarios for the simulation.

The main targeting method used to build upon in this report is the PMT model for identification of the poor, distinguishing between urban and rural areas. We also explore the feasibility of a hybrid method, using electricity expenditures to target poor households. Both methods are employed either in combination with categorical targeting or without. In line with the first part of this report, the most recent data available from the 2011 Household Budget Survey (HBS) have been used for analysis.

The report is structured as follows. Chapter 2 describes the scenarios and methodology used for the simulation. Chapter 3 presents the results of the simulation for FBiH and RS (in separate reports) and compares the simulated scenarios with the performance of the current system. Finally, chapter 4 provides a conclusion and policy recommendations.

The report was prepared by a team from the Maastricht Graduate School of Governance: Franziska Gassmann (Team Leader), Eli Stoykova and Daphne François, with the support of IBHI consultants.

2 Methodology

2.1 Simulated scenarios

Three different scenarios are simulated. The scenarios differ with respect to the available budget and the targeting method (only needs-based versus categorical and needs-based). For all three scenarios applies that existing benefits would be replaced with the new transfer(s). Table 1 - Table 3 show the benefits that will be replaced for each scenario as well as the related budget that will be used for simulations. This means, in each scenario we have losers (households which would no longer receive a transfer) and winners (households that have previously not received a transfer). Note that in scenario II and III benefits whose purpose is to ensure “equal opportunities” rather than poverty alleviation are not substituted. Thus, as opposed to scenario I, in scenario II and III long-term care and support benefits and child allowance remain untouched.

- Scenario I
 - Budget: all civilian non-contributory benefits and child care allowance benefits (see Table 1)
 - Transfers replaced by: (i) categorical (rights-based) transfers for the disabled and for children up to the age of six; (ii) needs-based transfer targeting individuals in the poorest households.
- Scenario II
 - Budget: most civilian benefits, except for long-term care and support benefits for the disabled (see Table 2)
 - Transfers replaced by: a single needs-based program targeting individuals living in poor households.
- Scenario III
 - Budget: scenario II plus the amounts spent on the veteran’s personal disability benefits and veteran’s survivor dependent benefits (see Table 3).
 - Transfers replaced by: a single needs-based program targeting individuals in poor households, equal to scenario II.

In order to calculate the budgets for the subsequent simulations, we extrapolated the amounts obtained from the household survey data (HBS 2011) spent on the existing benefits that are to be replaced for each scenario. Table 1 to Table 3 show the monthly budget by benefit¹. For instance, for permanent financial assistance the available monthly budget amounts to 221,645 BAM.

Note, that these extrapolated budgets differ from the corresponding amounts obtained from calculations based on RS budget data for 2011 provided by the Ministries and CSW (see Table A 1 in the Annex for more details). The reason for opting to use extrapolated amounts is the fact that for the second scenario the total amount for civilian victims of war obtained

¹ Please note that the missing budget amounts for ‘allowance for single parents’ and ‘additional material support for disabled veterans’ are due to the fact that none of the respondents in HBS 2011 reported receiving such benefits.

from administrative data was considerably smaller than the extrapolated amount. For the sake of consistency we therefore use the extrapolated budget in all scenarios.²

Table 1. RS Budget in BAM (2011): Scenario I

<i>Category of benefit</i>	<i>Extrapolated budget, monthly (HBS 2011)</i>
<i>Social assistance benefits</i>	
Permanent financial assistance	221.645
<i>Child protection</i>	
Child care allowance	1.306.885
<i>Civilian (Non-war) disabilities</i>	
Long term care and support – disabled	422.686
<i>Civilian Victims of War (CVW)</i>	
Personal disability benefit (PDB)	572.876
Long-term care and support	129.912
Survivor dependent benefit (SDB)	218.440
Additional cash assistance to beneficiaries of PDB or SDB	29.662
Allowance for family members unable to work of beneficiaries of PDB or SDB	9.209
Allowance for single parents for beneficiaries of PDB or SDB	-
TOTAL Simulation budget for Scenario I	2.911.314

Source: Author's calculations based on HBS 2011.

Table 2. RS Budget in BAM (2011): Scenario II

<i>Category of benefit</i>	<i>Extrapolated budget, monthly (HBS 2011)</i>
<i>Social assistance benefits</i>	
Permanent financial assistance	221.645
<i>Civilian (Non-war) disabilities</i>	
Personal disability benefit (PDB)	290.379
<i>Civilian Victims of War (CVW)</i>	
Personal disability benefit (PDB)	572.876
Survivor dependent benefit (SDB)	218.440
Additional cash assistance to beneficiaries of PDB or SDB	29.662
Allowance for family members unable to work of beneficiaries of PDB or SDB	9.209
Allowance for single parents for beneficiaries of PDB or SDB	-
TOTAL Simulation budget for Scenario II	1.342.210

Source: Author's calculations based on HBS 2011.

Table 3. RS Budget in BAM (2011): Scenario III

<i>Category of benefit</i>	<i>Extrapolated budget, monthly (HBS 2011)</i>
<i>Social assistance benefits total</i>	
Permanent financial assistance	221.645
<i>Civilian (Non-war) Disabilities</i>	
Personal disability benefit (PDB)	290.379
<i>Civilian Victims of War (CVW)</i>	
Personal disability benefit (PDB)	572.876
Survivor dependent benefit (SDB)	218.440
Additional cash assistance to beneficiaries of PDB or SDB	29.662
Allowance for family members unable to work of beneficiaries of PDB or SDB	9.209
Allowance for single parents for beneficiaries of PDB or SDB	-
<i>Disabled War Veterans</i>	
Personal disability benefit	1.784.651
Additional material support for beneficiary of the PDB NOT receiving the long-term care and support benefit	-
Survivor dependent benefit	2.336.554
TOTAL Simulation budget for Scenario III	5.463.415

Source Author's calculations based on HBS 2011.

² It should be noted that for the first and third scenario total extrapolated amounts are smaller than amounts obtained from administrative data, which might result in underestimation of the actual impacts simulated in these scenarios.

As can be seen, war veterans are only included in scenario III, in order to illustrate their significant share in non-contributory cash transfers (the total budget for veterans' protection in 2011 accounted for 2/3 of total non-contributory transfers)

2.2 *Rationale behind the use of the budget extrapolated from the Household Budget Survey 2011 for calculating the effects of alternative targeting methods on poverty in RS*

As explained in the introduction of this report, through our simulations we aim to investigate to what extent our selected alternative targeting methods improve targeting of poor households in BiH and how successful they are in channeling a given budget towards these households. In addition, we want to see the effect on poverty of reallocating defined budgets from selected currently existing programs to a social assistance program targeted at the poor through alternative methods. In order to do this, we compare the living standard of households in the current situation with the living standard of households in the situation in our simulations, using the Household Budget Survey 2011.

The living standard of households in the current situation

Every household maintains its material existence through income generated by the household members. This income can be monetary or non-monetary in case the household has, for example, its own agricultural production. Thus, total household income includes all types of income, both monetary and non-monetary, all of which contribute to a household's consumption.

Knowing the value of the total income of a household, i.e. the income of each person living in that household, is extremely important, for instance to design tax policy and as a basis for awarding assistance. In our simulations, the most important reason why we need to know the total income of a household is to determine whether the members of this household are poor or not. Aside from the total household income, we are particularly interested in the part of the total income that is coming from non-contributory cash benefits, as this is the part of the income that can be changed through reform of the social transfers.

Different registries can be used to verify households' incomes in developed countries, such as tax registries, cadastral registries, pension insurance registries, health insurance registries, population registries, etc. These data are of administrative nature and are likely to be accurate. Data from these registries may be linked to each other in order to get a more complete picture of a household's income and are usually combined with regular survey data.

In transitional countries, different registries are usually not linked and income information is difficult to verify. This is why surveys are used to get the best possible view of household incomes and incomes of persons living within these households. However, there are differences between the data originating from administrative sources and those that are collected through social surveys. The surveys as a tool for determining the incomes of households and individuals carry some risks. One of the implications of these risks is that incomes presented in surveys are most often lower than the incomes the households in reality have at their disposal, i.e. income is usually underestimated. This is due to various reasons: household members may not remember the actual amount, they may not reveal their true income and instead report less income than they actually received, or because of seasonal effects they might have only very little or no income in specific months of the year (e.g. farms in January).

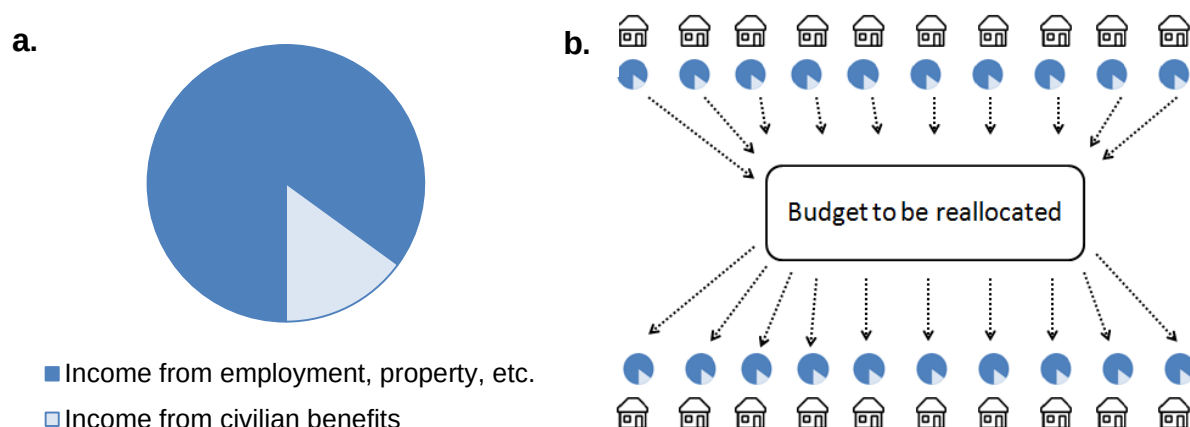
Consumption information, on the other hand, provides a more accurate estimate of the true income of households. For instance, it is estimated that the reported income in surveys in BiH and the two entities is, on average, around 30% lower than household consumption. Since the information on consumption is generally more reliable, the household consumption is used as a proxy indicator for total household incomes. Thus, if total household consumption is lower than the poverty line, the members of the household are “poor”. In addition, it has to be borne in mind that a survey is always based on a number of households that have been selected from all households in the country, i.e. a sample. The HBS sample is designed to be representative, but in reality can never flawlessly reflect the true situation. For instance, depending on the number of poor households included, it may over- or underestimate poverty.

Since Republika Srpska, and BiH as a whole, is a country in transition, **with no** administrative registries **linked to each other**, since 2000 until today different surveys and research have been conducted in order to measure the living standard **of households**, i.e. to measure household income and consumption. The latest survey dealing with the assessment of living standard and measuring household incomes, i.e. consumption is the Household Budget Survey 2011, which was implemented by the BiH Agency of Statistics, the RS Institute of Statistics and the Federal Institute of Statistics.

What we do in our simulations

In our simulations we reallocate resources of selected civilian cash-benefits through a poverty-alleviation program using alternative targeting methods. To achieve this reallocation of resources, we adapt income from civilian benefits in the total income of households (Figure 1, a). More specific, we first take away the income of those benefits that will be replaced from each household's income and subsequently calculate the total budget we have at hand for reallocation by adding up these amounts (Figure 1, b.). In a next step, we replace / abolish programs and apply our new targeting methods in order to identify newly eligible individuals. Finally, we reallocate our collected budget towards those households that are identified as poor.

Image 1. Reallocation of civilian benefits using new targeting methods



The above procedure requires us to collect three types of information on each household. In the first place, we need to know total household consumption to approximate total household

income. In addition, we need information related to a household's eligibility for a benefit. For instance, if eligibility is dependent on certain criteria that have to be inserted in a PMT-formula, we need to have household information on all of these criteria. Finally, we need to know the amount of household income acquired from civilian benefits. From these amounts we derive the budget to be reallocated for each scenario (the sum of each household's income from civilian benefits to be replaced). We obtain all of this information from the same source – the HBS 2011 – for a sample of 7,400 households.

The following example describes how a simulation is performed on a one-member household. Assume that one-member household A reports an income from wage of 150 BAM monthly in HBS 2011. The person from this one-member household also reported receiving a 30 BAM permanent financial assistance benefit. Total reported income by this household is thus 180 BAM. Through an analysis of this household's total consumption, it is determined that it has a total consumption of 240 BAM monthly. Because of the reasons mentioned above, we use consumption as a proxy for income and assume that this household has an income of 240 BAM monthly. Let us assume that the poverty line is 250 BAM monthly for an adult person. Since the total household's income, which is proxied by consumption, is estimated at 240 BAM (not 180 BAM), is less than the poverty line of 250 BAM, this person is qualified as poor.

Furthermore, when we subtract 30 BAM, the amount of the benefit, from 240 BAM of incomes, we get the so-called pre-transfer consumption/income (the level of income/consumption before receiving the cash benefit) which is $240 - 30 = 210$ BAM. The pre-transfer consumption/income serves as a basis for eligibility in the new targeting methods.

If we also assume that our household is eligible for a new transfer amounting to 40 BAM, the new simulated income of this household is $210 + 40 = 250$ BAM. Since 250 BAM is equal to the poverty line amount, this household is no longer considered poor.

This short simulation shows that one person is less poor after the application of a new targeting method.

In the above example we saw how simulations work on Household Budget Survey data, and the next example shows in what other ways the Household Budget Survey can be used.

Let us assume that one-member households B and C also reported incomes of 120 BAM and that both households receive 30 BAM of permanent financial assistance. However, the total consumption of household B is 240 BAM monthly, while household C consumption is 420 BAM monthly. Household B has a pre-transfer (pre-cash benefit) income of 210 BAM and is applying for a new social assistance program (similar to household A in the previous example). When we look at the situation of household C with 420 BAM of income, or $420 - 30 = 390$ BAM of pre-transfer income, we can see that this household is not poor, because 390 BAM is more than the poverty line of 250 BAM. Therefore, household C is not eligible for the new social assistance program.

Household A from the previous example and household B gain from the reform, whereas household C is the loser in the new social assistance program. The new program is less regressive compared to the old program, because only person C was not poor in the old program and in the new program, as shown by the simulation neither household A, B nor C are poor households.

Until now we have seen how total consumption of goods serves as a proxy for total household incomes, and how to use it to design a better social program. However, there we

encounter another problem – it is very difficult to collect data on total household consumption because in practice it means asking 120 to 600 questions contained in the questionnaire for the Household Budget Survey. We need a simpler model which contains a significantly lower number of questions.

Fortunately, we have the proxy means testing model, which contains a lot less questions and serves as a basis on which the total consumption or total income of a household is estimated³. In practice, proxy means testing includes collecting data on durable goods and when additional information is added to that, such as verifiable income or other questions, then we are talking about hybrid means testing. Designing the above described forms of testing is statistically complex as described in more detail in the previous report,⁴ but in conclusion, simulations based on HBS 2011 have two purposes: the first is to design an appropriate form of testing, i.e. model for estimating household income, and the second is to determine **how much the number of poor persons will reduce and whether the transfers are better targeted to the poor.**

In previous examples, we saw that households A, B and C received 30+30+30=90 BAM of permanent financial assistance in the old method, and in the new targeting method households A and B received 40 BAM each, whereas household C as the loser did not receive anything. Very simply put, in the old program of permanent financial assistance the budget for our two households was 90 BAM, whereas the budget of the new social program is 40+40=80 BAM.

In our simulations we designed targeting scenarios which are neutral in terms of the budget. Thus, since the “old” budget amounted to 90 BAM in our scenario the budget of the new scenario will also be 90 BAM, not 80 BAM as stated in the example.

Furthermore, we can compare the total budget for civilian benefits or the budget of each civilian benefit separately extrapolated from HBS 2011 with the budget received from administrative sources. For reasons of respondents from HBS 2011 not reporting their true incomes and outflow of FBiH funds into RS and vice versa, it is not possible to harmonise the budgets for each individual item of civilian benefits or for the total civilian benefits extrapolated from HBS 2011 with budgets for the same civilian benefits coming from administrative sources. There are differences in the amounts and in the number of beneficiaries. There is also one additional limitation – the existing registries of beneficiaries of social benefits do not contain all the elements necessary for simulating proxy means testing, so the most acceptable solution in methodological terms is to first simulate the impact of introducing new social benefits through data on budget amounts and the number of beneficiaries based on HBS 2011 data for each proposed scenario,⁵ and after that to project the results of the simulation based on survey data from HBS 2011 onto the total administrative budgets.

2.3 Targeting methods

For each of the three scenarios the households most in need of support are identified using the best-performing PMT targeting model based on the first part of this study: ‘*New Targeting Methods for Bosnia Herzegovina: Part I*’. In addition, we also used a hybrid model which identifies poor households by their level of electricity expenditures. For the first scenario we use both models in combination with categorical targeting.

³ See: Appendix II

⁴ See: IBHI, MGSoG. “New Targeting Methods for BiH – Part I”. Sarajevo, 2013.

⁵ Page 8

In the first part of this study - considering that entity-specific living conditions vary - PMT models were estimated for RS and FBiH separately, and within each entity also for urban and rural areas. In a next step, consumption of each household in the sample was estimated using the coefficients obtained through the regression analysis. Finally, the poorest 10, 15 or 20% of all individuals were identified using three different eligibility thresholds.

The hybrid model uses households' utility expenditures to identify the eligible. Based on monthly per adult equivalent expenditures on electricity (OECD 1), the poorest 10, 15 and 20% of individuals are identified. A major advantage of using electricity expenditures as a targeting mechanism for identification of the poor is that it is considerably less administratively demanding than, for instance, a PMT.

For a more extensive description of the different targeting methodologies, please refer to Part I of this study; *'New Targeting Methods for Bosnia Herzegovina'*.

Besides the needs-based program targeting the poor, in scenario I two rights-based programs are simulated; a universal child benefit and a universal disability benefit.

Currently, child care allowance is subject to a number of conditions. Firstly, child benefits are only provided from the second child onwards. Further, benefit levels vary depending on whether the child is a second, third, fourth, etc. child. Finally, from an age of 15 years onwards, child benefits become mean-tested and are provided up to 19 years old. In our simulations child benefits will be provided to all children below 6 years old and will not be means-tested.

As the HBS data do not contain any information on levels of disability, in our simulations disability benefits are provided to all persons that are receiving a long-term care and support benefit as a civilian victim of war or as a person with a non-war related disability in the existing system. Given that we only use the budget for civilian benefits for scenario I, the universal disability benefit is not allocated to veteran disabled persons.

2.4 Target groups

Following the first part of the report '*New targeting methods in Bosnia Herzegovina*', we identify eligible individuals on the basis of three program sizes, covering

- 1) the poorest 10%;
- 2) the poorest 15%; or
- 3) the poorest 20% of individuals within the population.

Depending on the program size chosen, eligibility thresholds are defined. For instance, when using electricity expenditures as a targeting mechanism, the eligibility threshold would correspond to some maximum level of electricity expenditures with all households below this level being eligible for a benefit. Targeting a smaller part of the poor (e.g. 10%) thus requires a lower threshold than aiming to reach a larger share of the poor (e.g. 20%).

2.5 Benefit types simulated

Benefit levels are usually dependent on two main factors. In the first place they are a product of the goal of the program, for instance, increasing consumption, increasing school enrolment or increasing usage of health facilities. Ideally, they should be set at the "smallest amount necessary to achieve the desired impact on intended outcomes" (cf. Grosh, del Ninno, Tesliuc, & Ouerghi, 2008). In the second place, they are a product of the program's budget constraint.

Within the framework of this project, the main goal is poverty reduction. A first step in this case is to assess the affordability of covering the gap between the eligibility threshold and the real consumption of the poor, i.e. of bringing the poor to the poverty line. In reality, this is rarely achievable due to limited budget availability.

In our simulations we test the poverty impact of the following two alternative techniques for allocating the available budget among individuals within eligible households:

- Flat benefit;
- Progressive graduated benefit.

Flat Benefit

The flat benefit is based on the most simplified method of distributing a budget among the eligible persons. Using this method, each beneficiary is allocated an equal benefit amount. For the purpose of our simulations we define the benefit level on the basis of the available budget and the number of beneficiaries. The formula used for calculation of the individual benefit level is displayed below.

$$\text{Flat benefit amount} = \text{Available budget} / \text{Number of beneficiaries}$$

The aim of this simulation is to show what impacts can be achieved on poverty – exploring a number of different benefit options – within the budget limits of the three scenarios. In addition to the available budget, benefit levels for each scenario are thus dependent on the size of the program, i.e. on the number of beneficiaries. Logically, a bigger program size will result in lower benefit levels.

When allocating the same benefit amount to each beneficiary, different magnitudes of need are not accounted for. In other words: individuals with a consumption level far below the poverty line receive an equal benefit as those with a consumption level just below the poverty

line. Therefore, aside from assigning flat benefits, we also explore a more progressive method for allocation of the budget in our simulations through defining benefit levels for different poverty brackets.

Progressive graduated benefit

This method for defining benefit levels is based on partitioning the target group into a few smaller groups (brackets) ordered by welfare level, which allows separate groups of beneficiaries to receive different flat benefit amounts. By doing so, the depth of poverty is taken into account: the poorest of the poor will receive a higher benefit than those that are closer to the poverty line. In this report, graduated benefits are simulated for targeting the bottom 15% and bottom 20% of the income distribution. Each of these two target groups is divided into three brackets:

- for a program size of 15% the brackets are i) bottom 5%, ii) 5-10%, and iii) 10-15% of the consumption distribution;
- for a program size of 20% the brackets are i) bottom 10%, ii) 10-15%, and iii) 15-20% of the consumption distribution.

In order to arrive at a benefit amount for each bracket, we multiply the flat benefit by a coefficient. The coefficient for the bracket at the bottom of the consumption distribution is the largest, the one for the middle group – medium, and the coefficient for the top group is the smallest. That way a more progressive distribution of benefits can be achieved, so that beneficiaries from the group with lower consumption level receive a higher benefit amount and vice versa.

Table 4 shows the coefficients by which we multiply the flat benefit amount to calculate the benefit levels for the different brackets.

Table 4. Coefficients for calculation of bracket benefits, program sizes 15 and 20%

<i>Brackets</i>	<i>Coefficients</i>
<i>Program size 15%</i>	
Bracket I: Poorest 0 – 5 %	1.5
Bracket II: Poorest 5 – 10%	1
Bracket III: Poorest 10 –15%	0.5
<i>Program size 20%</i>	
Bracket I: Poorest 0 – 10%	1.4
Bracket II: Poorest 10 –15%	0.8
Bracket III: Poorest 15 – 20%	0.4

Source: Author's calculations.

When aiming at a progressive distribution of benefits, the graduated benefit method is generally less accurate than defining the benefit amount as the difference between some minimum consumption/income level (e.g. the poverty line) and the consumption/income level of the beneficiary. However, using the latter method leads to allocating very small benefit amounts to individuals whose income/consumption level is close to the threshold. Moreover, this method involves work disincentives since it practically guarantees a certain minimum level of income.

Benefit levels

For each scenario several benefit options have been simulated. As discussed above, eligibility for the needs-based program (social assistance) is tested through a PMT or by evaluating electricity expenditures of a household. Table 5 shows the resulting monthly benefit levels in BAM for different benefit options. Benefits are either allocated by providing a flat benefit to the poorest 10% of the population (a), the poorest 15% of the population (b) or the poorest 20% of the population (c), or by allocating graduated benefits to the poorest 15% of the population (d) or the poorest 20% of the population (e). For the needs-based program, benefit levels shown in Table 5 have been calculated on the individual level and must be multiplied by the household size to arrive at the total benefit allocated to a household.

Rights-based programs for child allowance and disability benefits, only existing in scenario I, are subject to categorical targeting. Flat benefits are provided to all eligible persons, without being subject to a means-test.

For disability benefits the benefit level has been set at 80 BAM monthly, which is the current average of long-term care and support benefits allocated in RS.

Existing benefits for child care allowance vary between 35 and 70 BAM depending on whether the child is a first, second, third, etc. child and are means-tested from 15 years up to a maximum age of 18 years. For our simulations benefit levels for child care allowance are set at a level of 20 BAM and will not be means-tested. The reason that benefit levels have been set at a lower level than those currently provided is an increase in the number of eligible children roughly from 19,000 to 55,000. This is due to the fact that in our simulations (a) all children – including the first child – are receiving benefits, and (b) benefits are no longer means-tested. Maintaining a similar benefit level as the current one would leave us with a negligible budget for poverty alleviation.

Table 5. Benefit levels for different benefit options, in BAM, scenario I – III⁶

Targeting mechanism	Target group		Monthly benefit amount		
	Target group	Sub- targeting group (bracket)	Scenario I	Scenario II	Scenario III
PMT					
Social Assistance					
<i>Flat Benefit</i>					
a. Flat benefit per individual	Poorest 10%	-	15	13	51
b. Flat benefit per individual	Poorest 15%	-	10	8	34
c. Flat benefit per individual	Poorest 20%	-	7	6	26
<i>Graduated Benefit</i>					
d. Graduated benefit per individual	Poorest 15%	Poorest 0-5%	15	12	51
		Poorest 5-10%	10	8	34
		Poorest 10-15%	5	4	17
e. Graduated benefit per individual	Poorest 20%	Poorest 0-10%	10	8	36
		Poorest 10-15%	6	5	21
		Poorest 15-20%	3	2	10
Categorical					
Disability benefit	All current				

⁶ Benefit levels when targeting on the basis of electricity expenditures are equal to those when using PMT for targeting (see Annex).

Flat benefit per individual	Beneficiaries	-	80	-	-
Categorical					
Child benefit					
Flat benefit per individual	All children below six years old	-	20	-	-

Source: Author's calculations based on HBS 2011 data. Note: For the categorical benefits RS budget data for 2011 provided by the Ministries and CSW have been used as a guideline.

2.6 Poverty line

Since the OECD1 equivalence scale is used consistently throughout the report 'New Targeting Methods for Bosnia Herzegovina', it is necessary to apply a comparable poverty line when assessing the poverty impact of the simulations. Therefore, for estimation of the poverty indicators we adopt a relative poverty line defined at 60% of the median per adult equivalent consumption, applying the OECD1 equivalence scale. The amount of the poverty line in Republika Srpska, calculated on the basis of consumption levels reported in the 2011 HBS, is used throughout the report as a fixed poverty line and amounts to 308 BAM monthly per adult equivalent. According to this poverty line, 13.9% of the population in RS is poor, i.e. considering that the population of RS is 1,326,991⁷ around 184 thousand persons are poor in RS.

The difference between the OECD I relative poverty line of 308 BAM Per Adult Equivalent (PAE) per month in 2011 for RS used in this report and the official poverty line of 381 BAM PAE per month calculated by the BHAS is due to the usage of different equivalence scales. The BHAS official relative poverty line for 2011 was calculated using the OECD II poverty line, which assigns the value 1 to the first adult, 0.5 to every next adult and 0.3 to each child and is more appropriate for developed countries. Using the OECD2 scale in the case of Bosnia and Herzegovina, where – especially among poor households – a relatively large share of household consumption is allocated to food, could possibly underestimate the consumption needs of additional household members. Therefore, for the calculation of the poverty line used in this report we used the OECD I equivalence scale, which is more appropriate for countries in transition. It assigns the value 1 to the first adult, 0.7 to every next adult and 0.5 to each child.

Note that, when measuring the poverty impact of replacing existing transfers with new transfers, we assume no substitution effect of current income due to, for instance, work disincentives. In other words, the current consumption level of new beneficiaries is simply topped up with the new transfer and for those individuals that lose benefits in the simulations the benefit amount is subtracted from their consumption.

⁷ Results of the 2013 population census in BiH

3 Presentation and interpretation of results

3.1 Winners and losers

Since in our simulations various currently existing benefits are being substituted with new benefits targeted using alternative methods, the different simulated scenarios result in different individuals being included in the group of eligible persons. For instance, a person who receives a personal disability benefit might not be eligible anymore when this benefit is replaced with a poverty alleviation program based on PMT targeting. Such a person would be a 'loser' from the simulated reform. Simultaneously, another person – with low consumption level, for instance – who is not eligible for any of the existing programs being replaced in the simulations might start receiving benefits in some of the scenarios. This person would be a 'winner' from the simulated change.

Table 6 to Table 12 display how eligibility changes when applying the PMT or the electricity expenditures model to target a population of different size in the three scenarios. Note that the tables distinguish between different benefits (rights-based versus needs-based) as well as for different targeting methods (PMT versus electricity expenditures).

Looking at Table 6 to Table 12, it can be seen that the more generous the program, the more winners there are, especially among the poor. Naturally, targeting a larger part of the population leads to more winners. For the third scenario the share of losers is largest due to the replacement of the veteran's disability and survivor benefit in this scenario.

In scenario I we are looking separately at winners and losers from the needs-based program and from the rights-based-programs. The aim is to show clearly where in the distribution the losers or winners of categorical benefits are concentrated. Table 6 shows the winners, losers and remaining beneficiaries of child care allowance as a share of the total population. As a result of the categorical targeting, the children starting to receive benefits are almost equally spread across the consumption quintiles. The slightly larger number of winners in the first quintile could be explained by the fact that poor households on average tend to have more children. When looking at the losers, however, it is visible that half of all the children who stop receiving benefits belong to the poorest 20%. Note that a table for disability benefits is not included, because in the simulation of scenario I the disability benefits are distributed to the current beneficiaries of long-term care and support benefits. Therefore, all beneficiaries remain the same and there are no losers and winners.

Finally, we compare different targeting methods. When using a PMT model, the share of winners in the first quintile is generally larger while the share of losers is comparable than in the case of using a model based on electricity expenditures.

Table 6. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, child allowance, scenario I, RS

<i>Child Allowance</i>	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
Losers	0.4%	0.1%	0.2%	0.1%	0.1%	0.8%
Winners	0.8%	0.6%	1.0%	0.8%	0.6%	3.9%
Remain beneficiaries	0.5%	0.3%	0.0%	0.1%	0.1%	1.1%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table 7. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT model, scenario I, RS

<i>PMT model</i>	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program size</i>						
<i>10%</i>						
Losers	0.6%	0.5%	0.4%	0.3%	0.1%	1.8%
Winners	7.1%	1.3%	0.7%	0.3%	0.1%	9.6%
Remain beneficiaries	0.2%	0.0%	0.0%	0.0%	0.0%	0.3%
<i>15%</i>						
Losers	0.4%	0.5%	0.4%	0.3%	0.1%	1.6%
Winners	8.8%	3.4%	1.4%	0.5%	0.2%	14.3%
Remain beneficiaries	0.4%	0.1%	0.0%	0.0%	0.0%	0.5%
<i>20%</i>						
Losers	0.3%	0.4%	0.4%	0.3%	0.1%	1.5%
Winners	10.4%	5.2%	2.2%	1.1%	0.3%	19.2%
Remain beneficiaries	0.5%	0.2%	0.0%	0.0%	0.0%	0.6%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table 8. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, electricity expenditures model, scenario I, RS

<i>Electricity expenditure model</i>	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>						
<i>10%</i>						
Losers	0.6%	0.5%	0.3%	0.3%	0.1%	1.8%
Winners	4.9%	2.7%	1.3%	0.3%	0.2%	9.5%
Remain beneficiaries	0.2%	0.0%	0.1%	0.0%	0.0%	0.3%
<i>15%</i>						
Losers	0.6%	0.5%	0.2%	0.3%	0.1%	1.7%
Winners	6.4%	4.4%	2.0%	0.9%	0.6%	14.3%
Remain beneficiaries	0.2%	0.0%	0.1%	0.0%	0.0%	0.4%
<i>20%</i>						
Losers	0.5%	0.4%	0.2%	0.3%	0.1%	1.5%
Winners	8.2%	5.8%	2.6%	1.3%	0.9%	18.8%
Remain beneficiaries	0.3%	0.2%	0.1%	0.0%	0.0%	0.6%

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table 9. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT model, scenario II, RS

<i>PMT model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		0.6%	0.5%	0.4%	0.3%	0.1%	1.8%
Winners		7.1%	1.3%	0.7%	0.3%	0.1%	9.6%
Remain beneficiaries		0.2%	0.0%	0.0%	0.0%	0.0%	0.3%
	<i>15%</i>						
Losers		0.4%	0.5%	0.4%	0.3%	0.1%	1.6%
Winners		8.8%	3.4%	1.4%	0.5%	0.2%	14.3%
Remain beneficiaries		0.4%	0.1%	0.0%	0.0%	0.0%	0.5%
	<i>20%</i>						
Losers		0.3%	0.4%	0.4%	0.3%	0.1%	1.5%
Winners		10.4%	5.2%	2.2%	1.1%	0.3%	19.2%
Remain beneficiaries		0.5%	0.2%	0.0%	0.0%	0.0%	0.6%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Table 10. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, electricity expenditures model, scenario II, RS

<i>Electricity expenditure model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		0.6%	0.5%	0.3%	0.3%	0.1%	1.8%
Winners		4.9%	2.7%	1.3%	0.3%	0.2%	9.5%
Remain beneficiaries		0.2%	0.0%	0.1%	0.0%	0.0%	0.3%
	<i>15%</i>						
Losers		0.6%	0.5%	0.2%	0.3%	0.1%	1.7%
Winners		6.4%	4.4%	2.0%	0.9%	0.6%	14.3%
Remain beneficiaries		0.2%	0.0%	0.1%	0.0%	0.0%	0.4%
	<i>20%</i>						
Losers		0.5%	0.4%	0.2%	0.3%	0.1%	1.5%
Winners		8.2%	5.8%	2.6%	1.3%	0.9%	18.8%
Remain beneficiaries		0.3%	0.2%	0.1%	0.0%	0.0%	0.6%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Table 11. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, PMT model, scenario III, RS

<i>PMT model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		1.9%	1.6%	1.5%	1.3%	0.7%	7.1%
Winners		6.3%	1.4%	0.8%	0.3%	0.1%	8.8%
Remain beneficiaries		0.9%	0.0%	0.0%	0.0%	0.0%	1.0%
	<i>15%</i>						
Losers		1.6%	1.6%	1.5%	1.3%	0.7%	6.7%
Winners		7.8%	3.4%	1.5%	0.5%	0.1%	13.4%
Remain beneficiaries		1.3%	0.1%	0.0%	0.0%	0.0%	1.4%
	<i>20%</i>						
Losers		1.3%	1.3%	1.5%	1.3%	0.7%	6.2%
Winners		9.2%	5.1%	2.2%	1.1%	0.3%	17.8%
Remain beneficiaries		1.5%	0.3%	0.0%	0.0%	0.0%	1.9%

Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Table 12. Winners and losers from the simulated reform (in % of total population), by quintiles of pre-transfer consumption, electricity expenditures model, scenario III, RS

<i>Electricity expenditure model</i>		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>Total</i>
<i>Program Size</i>							
	<i>10%</i>						
Losers		2.3%	1.6%	1.5%	1.2%	0.7%	7.4%
Winners		4.3%	2.8%	1.5%	0.3%	0.2%	9.0%
Remain beneficiaries		0.6%	0.0%	0.1%	0.0%	0.0%	0.8%
	<i>15%</i>						
Losers		2.2%	1.6%	1.3%	1.2%	0.7%	7.1%
Winners		5.7%	4.4%	2.0%	1.0%	0.5%	13.6%
Remain beneficiaries		0.7%	0.0%	0.2%	0.0%	0.1%	1.1%
	<i>20%</i>						
Losers		1.9%	1.4%	1.3%	1.2%	0.7%	6.4%
Winners		7.4%	5.6%	2.6%	1.3%	0.8%	17.7%
Remain beneficiaries		1.0%	0.3%	0.3%	0.1%	0.1%	1.7%

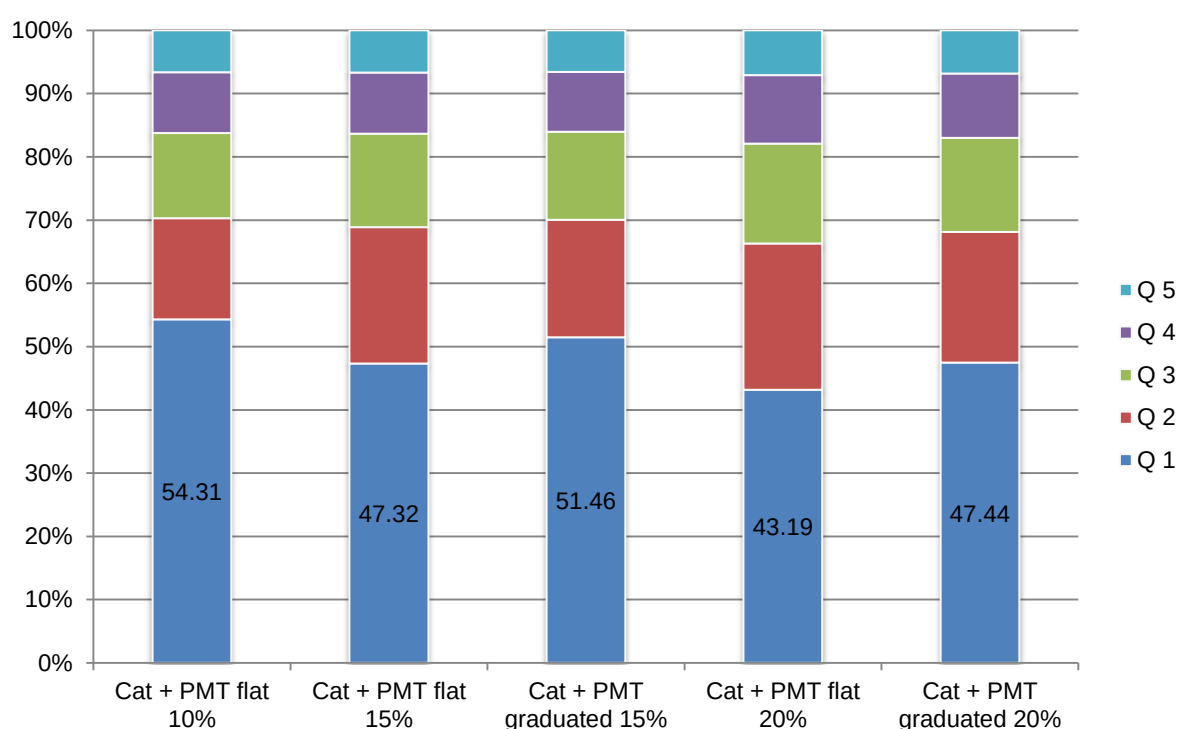
Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

3.2 Distribution and adequacy of benefits

In order to evaluate the efficiency of allocating the available budget towards the poor as well as the adequacy of benefits we use two different measures: (1) the distribution of benefits across consumption quintiles and (2) the average share of benefits in post-transfer household consumption across consumption quintiles. Formulae used to calculate these measures are included in the Annex. It should be noted that each scenario is based on a different pre-transfer consumption, which may result in slightly different ranking of the households in quintiles for scenario I-III.

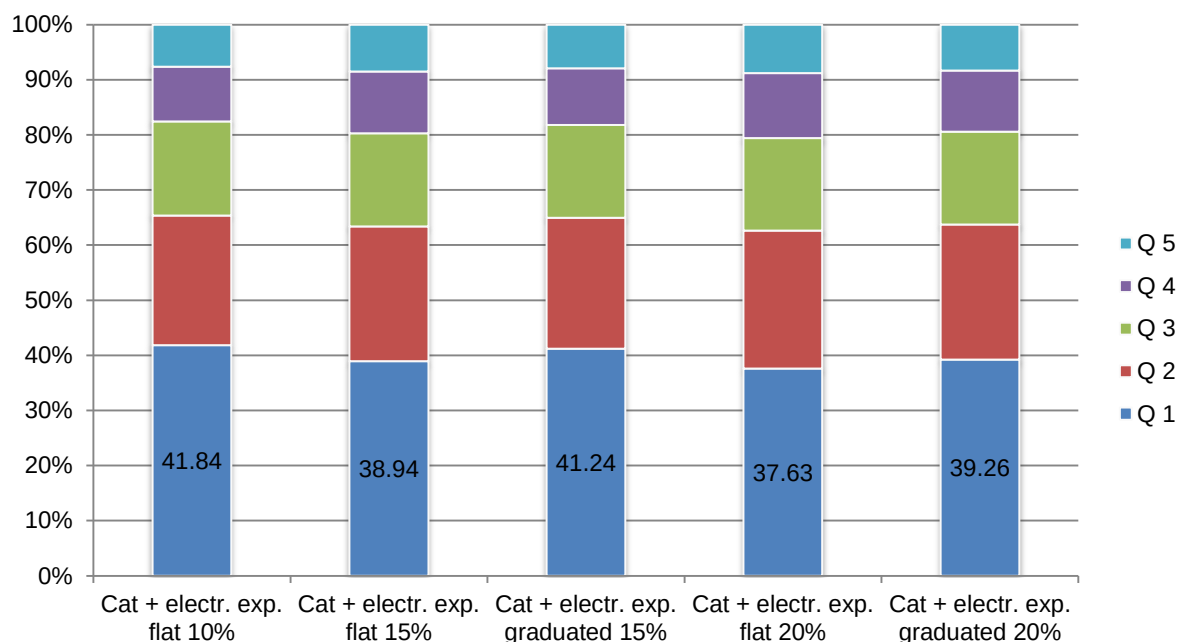
Scenario I

Figure 1. Distribution of the total benefits allocated through PMT in combination with categorical targeting (in %), different benefit options, by quintiles of pre-transfer consumption, scenario I, RS



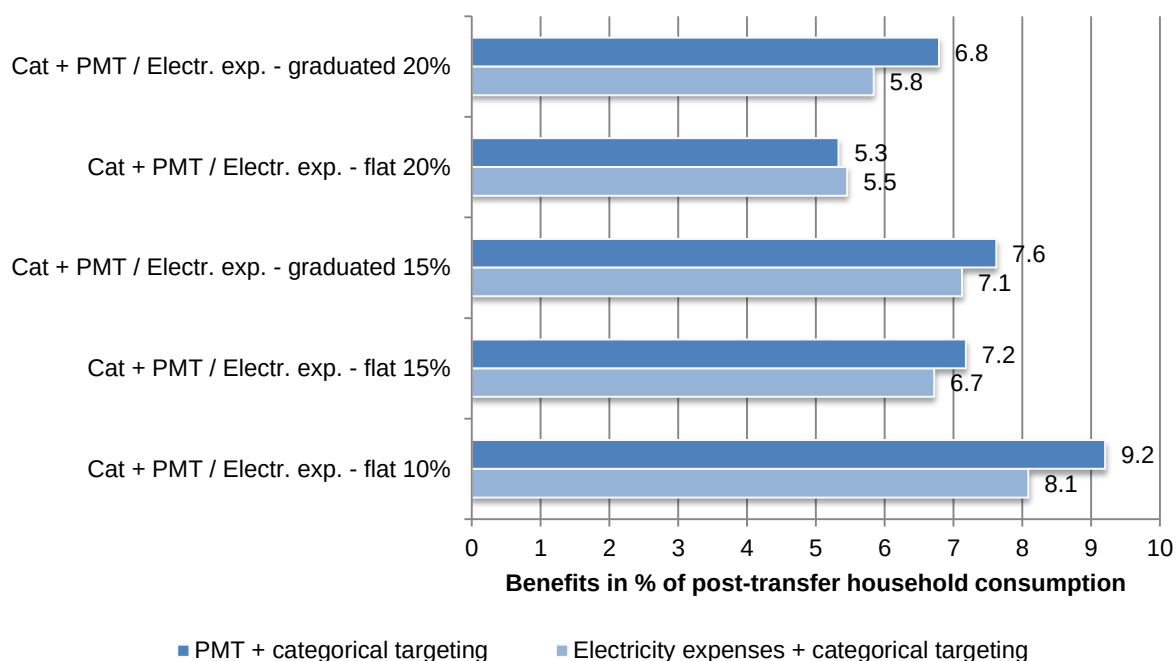
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Figure 2. Distribution of total benefits allocated through electricity expenditures model in combination with categorical targeting (in %), different benefit options, by quintiles of pre-transfer consumption, scenario I, RS



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Figure 3. Share of total benefits in the post-transfer consumption of beneficiary households, PMT and electricity expenditure model in combination with categorical targeting, first consumption quintile, scenario I, RS



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Figure 1 and Figure 2 show the distribution of benefits by consumption quintiles, while Figure 3 shows the average share of benefits in post-transfer consumption of beneficiary households for the first consumption quintile for scenario I. Different benefit options are shown for a PMT in combination with categorical targeting as well as for a model based on electricity expenses in combination with categorical targeting.

Figure 1 and 2 illustrate that channelling resources towards the poor is more efficient using a PMT as compared to a targeting mechanism based on electricity expenses. However, considering that for the electricity expenditure model eligibility is easier verifiable and is considerably less administratively demanding, it constitutes a good alternative to the PMT model.

Naturally, when the program size increases, a smaller share of the total budget reaches the first quintile due to increasing leakage of resources towards other quintiles. Analysis of the distribution of beneficiaries in Part I of this study showed that a larger program size goes hand in hand with a larger inclusion error⁸, which causes this leakage of resources to the non-poor.

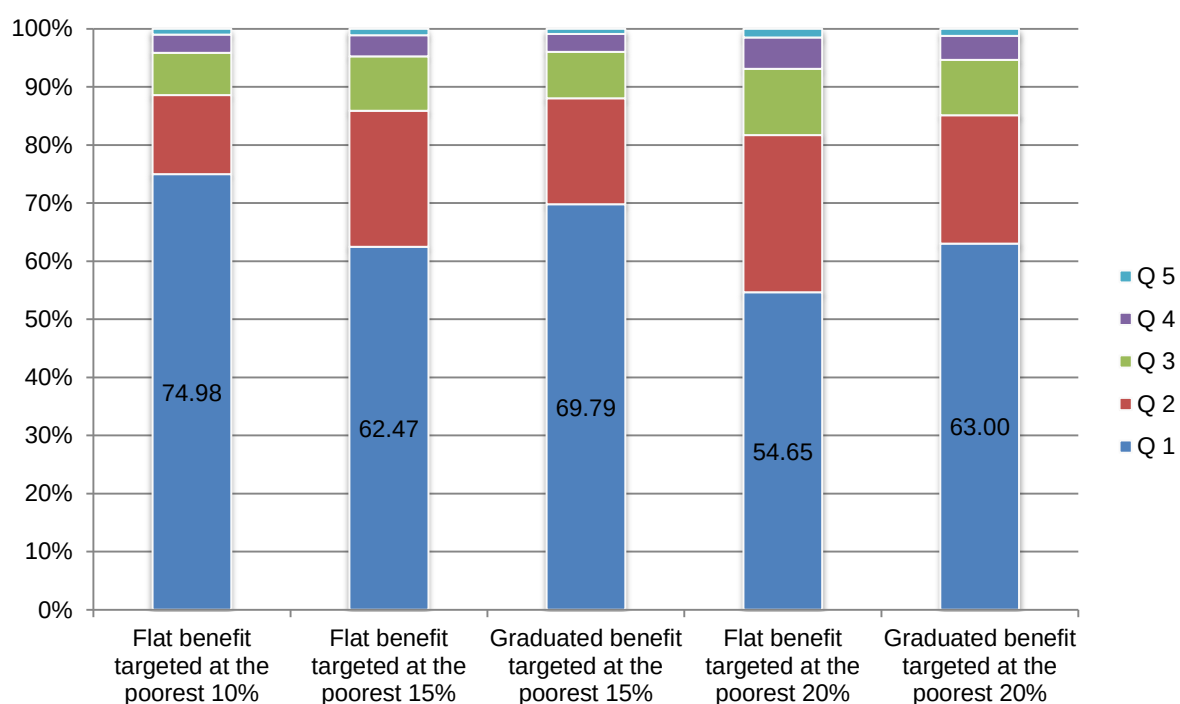
In the case of allocating flat benefits using PMT, the share of total benefits reaching the first consumption quintile ranges from 54.3% for a program size of 10% to 43.2% for a program size of 20%. This means that, for instance, when targeting the poorest 10% using flat benefits, 45.7% of the total budget is in fact allocated to the non-poor part of the population. These shares follow the same pattern for targeting based on electricity expenses but are somewhat lower than in the case of using PMT. In comparison to the other scenarios, even for the smallest program size leakage is relatively large. This is due to the fact that child care allowance and disability benefits are rights-based instead of targeted towards the poor. As these benefits are not means-tested their distribution is not as concentrated in the first consumption quintile.

Comparing graduated benefits and flat benefits for equal program sizes (e.g. a flat benefit for a program size of 15% with a graduated benefit for a program size of 15%), we can see that benefits allocated through brackets consistently show a more pro-poor distribution than flat benefits. As discussed in chapter 2.4 this is due to the fact that graduated benefits are higher for the poorest within the target group and vice versa. When targeting using a PMT for program sizes of 15% and 20%, 51.5% and 47.4% respectively of all benefits reach the first consumption quintile in the case of graduated benefits, as compared to 47.3% and 43.2% respectively in the case of flat benefits.

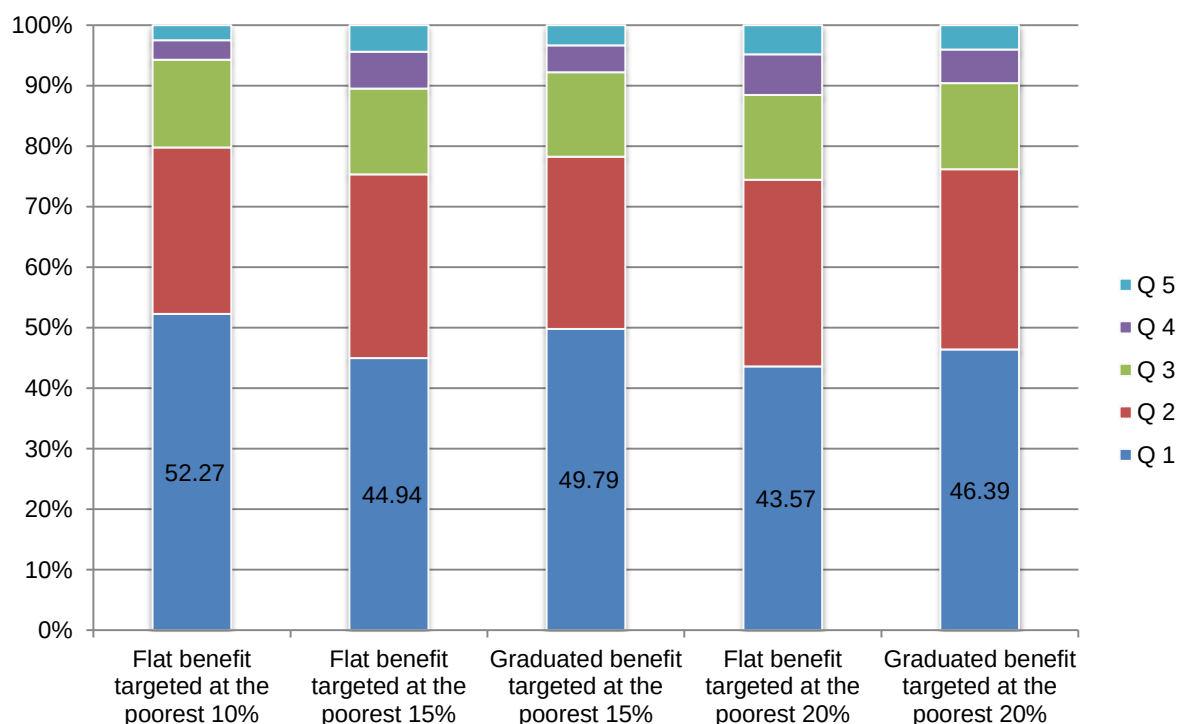
When analyzing the adequacy of benefits, figure 3 illustrates that benefit levels as a share of post-transfer household consumption in the first quintile are highest for the smallest program sizes. Considering that the total number of beneficiaries increases when the program size increases, benefit levels will decrease accordingly. When allocating benefits through a PMT, average shares of flat benefits in post-transfer household consumption range from 9.2% for a program size of 10% to 5.3% for a program size of 20%. Comparing equal program sizes for flat benefits and graduated benefits, the latter shows a relatively higher adequacy of benefits due to their more progressive distribution. The adequacy of benefits for most simulated options is somewhat lower when using electricity expenses as a targeting mechanism.

⁸ The inclusion error is the share of total beneficiaries that are receiving a benefit although they do not belong to the actual target group (100% minus the share of beneficiaries belonging to the poorest quintile).

Scenario II

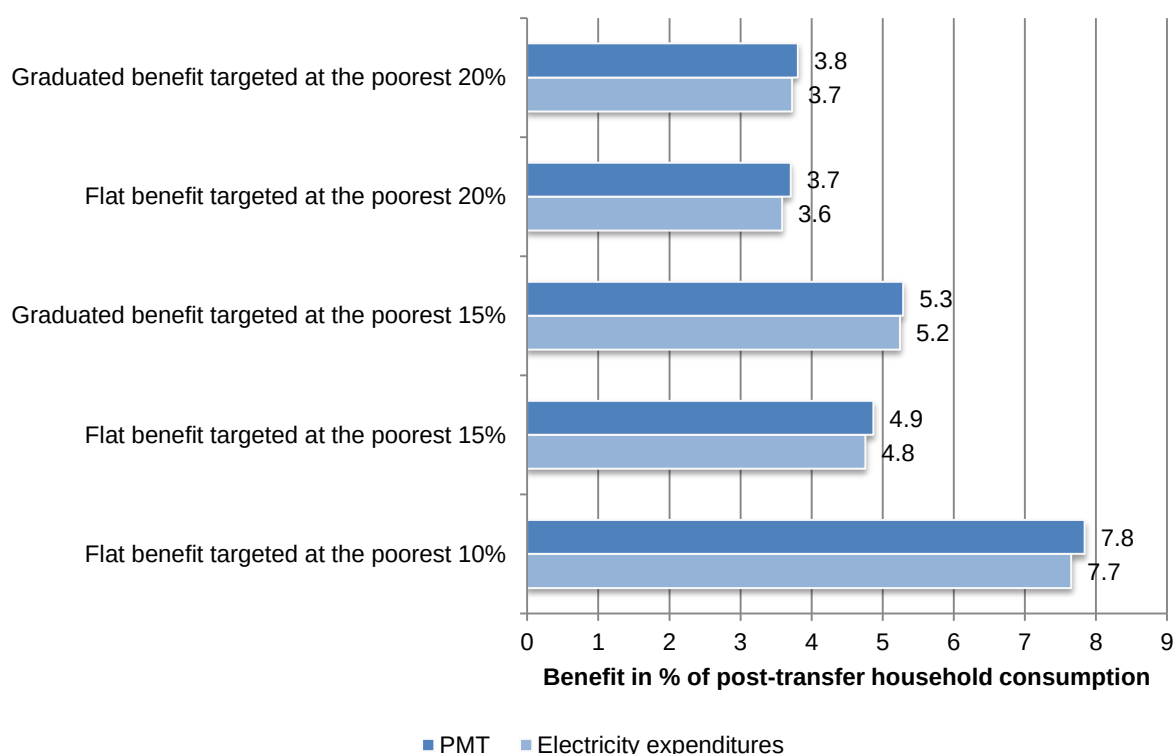
Figure 4. Distribution of benefits allocated through the PMT model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario II, RS

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Figure 5. Distribution of benefits allocated through electricity expenditures model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario II, RS

Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Figure 6. Share of benefits in the post-transfer consumption of beneficiary households, PMT model and electricity expenditure model, first consumption quintile, scenario II, RS



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Figure 4 and Figure 5 show the distribution of benefits by consumption quintiles, while Figure 6 shows the average shares of benefits in post-transfer consumption of beneficiary households for the first consumption quintile using a PMT and a model based on electricity expenses respectively for scenario II.

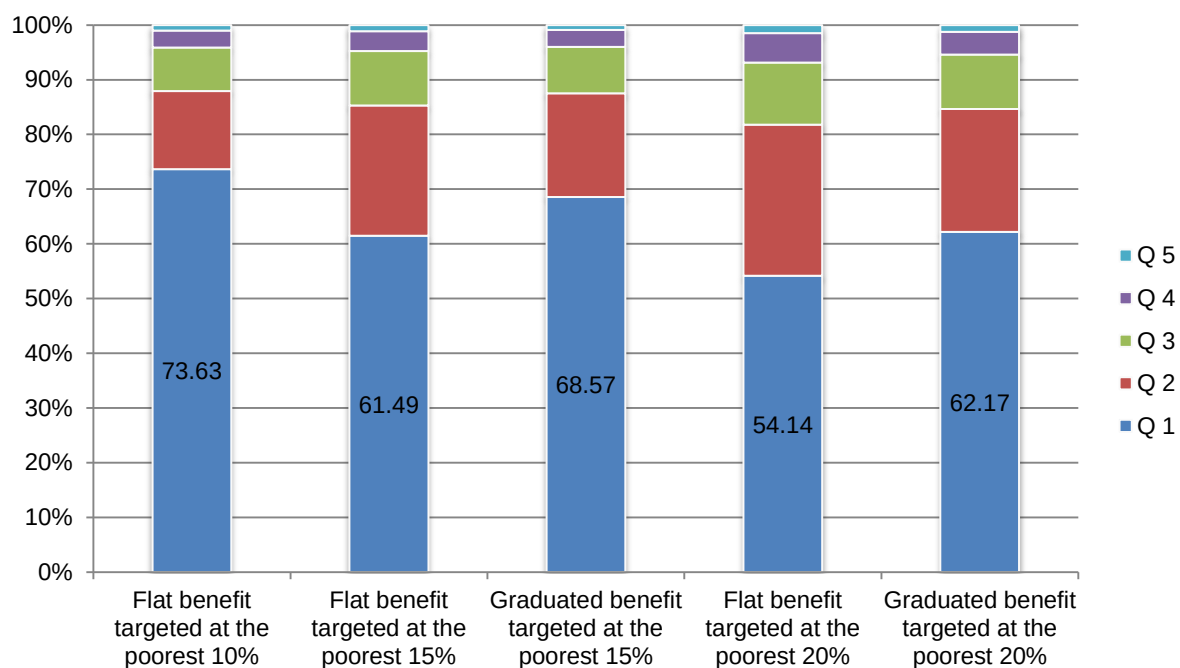
Scenario II shows roughly the same patterns in the distribution of benefits as scenario I: keeping in mind that the goal of the program should be poverty alleviation, a PMT performs better than a model based on electricity expenditures, smaller program sizes perform better than larger program sizes and graduated benefits perform better than flat benefits. However, as opposed to scenario I which simulates two rights-based programs in addition to a program targeting the poor, scenario II exclusively simulates a needs-based program aiming at poverty alleviation. This results in a stronger concentration of benefits within the first quintile. When using a PMT for targeting, the distribution of benefits within the first quintile ranges from 75.0 to 54.7% for flat benefits with program sizes from 10 to 20% and from 69.8% to 63.0% for graduated benefits with program sizes of 15 and 20%. These numbers are more than 10 percentage points lower in scenario I.

Looking at Figure 6, the adequacy of benefits also shows similar patterns that could be observed in scenario I. Generally, benefits are also more adequate when allocated using a PMT, for smaller program sizes as compared to larger program sizes, as well as for bracket benefits as compared to flat benefits. Nevertheless, considering that the budget is smallest for this scenario, the adequacy of benefits is relatively low compared to other scenarios, especially in the larger program sizes. When targeting benefits using a PMT, the average share of benefits in post-transfer household consumption of beneficiary households ranges from 7.8% for a program size of 10% with flat benefits to 3.7% for a program size of 20% with

flat benefits, and from 5.3 to 3.8% for graduated benefits with program sizes 15 and 20% respectively.

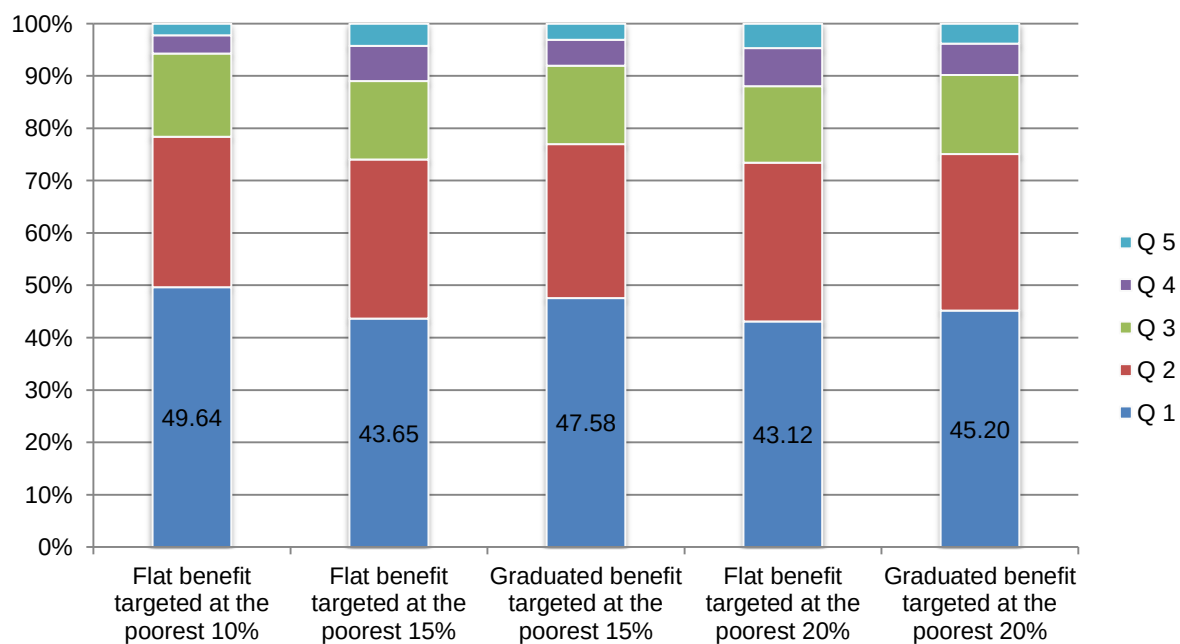
Scenario III

Figure 7. Distribution of benefits allocated through the PMT model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario III, RS



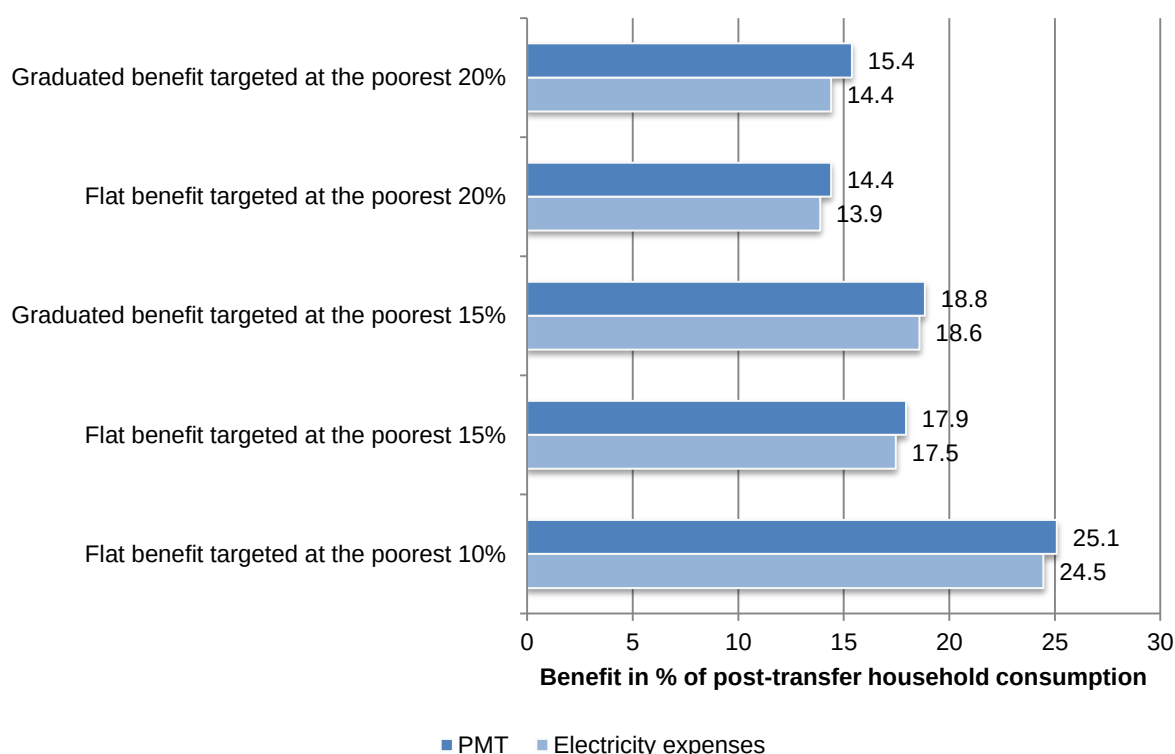
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 8. Distribution of benefits allocated through electricity expenditures model (in %), different benefit options, by quintiles of pre-transfer consumption, scenario III, RS



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Figure 9. Share of benefits in the post-transfer consumption of beneficiary households, PMT model and electricity expenditure model, first consumption quintile, scenario III, RS



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

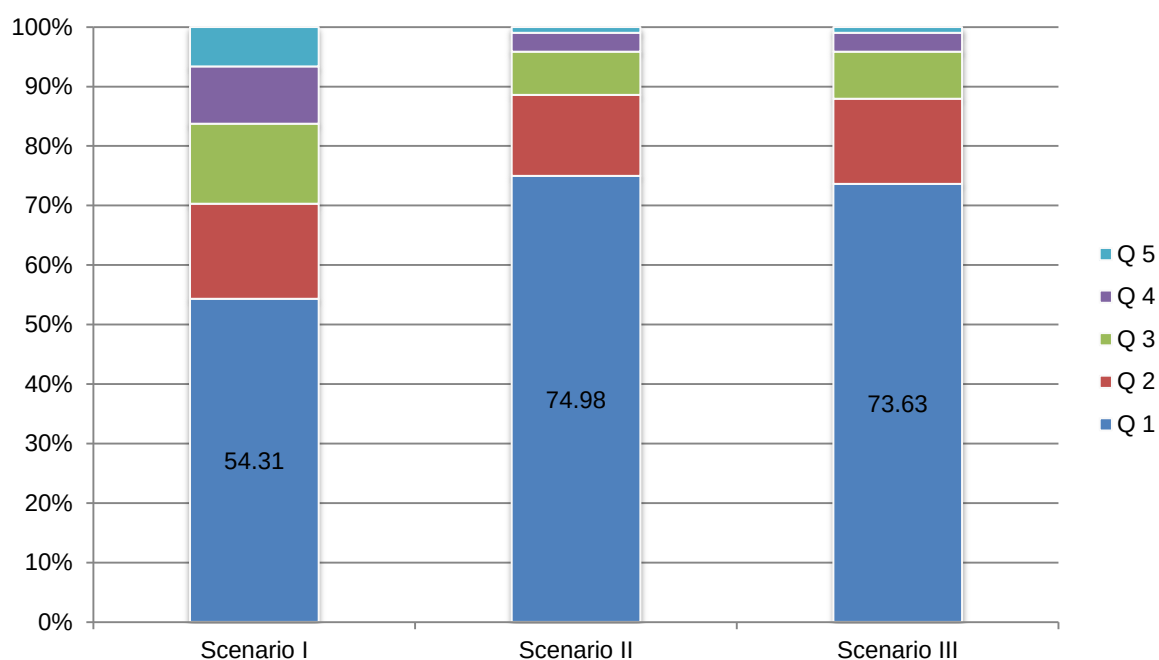
Figure 7 and Figure 8 show the distribution of benefits over consumption quintiles, while Figure 9 shows the average shares of benefits in household consumption for the first consumption quintile for scenario III using a PMT and a model based on electricity expenses respectively.

The above figures show largely the same patterns as the ones that could be observed in scenario II, which equally simulates one single program targeted to the poor. Please note that the only difference between scenario II and III is the available budget. Small differences in the distribution of benefits are due to the fact that quintiles are based on pre-transfer consumption, which is different for each scenario.

In addition to the program size, the adequacy of benefits is strongly dependent on the available budget. This becomes clear when, for instance, comparing scenario II with scenario III. The available budget for the third scenario is considerably larger than the budget for scenario II, which is well-reflected in the adequacy of benefits displayed in Figure 6 as compared to Figure 9. Shares of benefits in post-transfer consumption are much higher for scenario III.

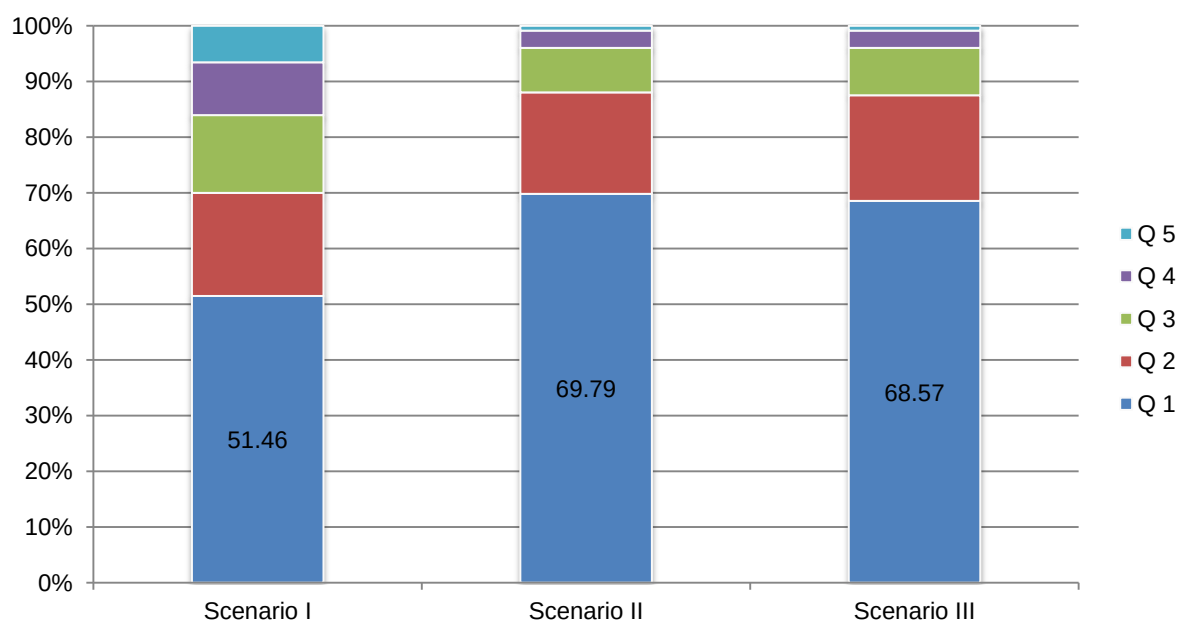
All in all, the simulated targeting and benefit allocation options show consistent results in the three scenarios. The best performance in terms of both benefit distribution and adequacy of benefit levels is achieved when allocating a flat benefit to the poorest 10% of population. The graduated benefits for the poorest 15% also show good performance in the observed indicators throughout the different scenarios. Figure 10 to Figure 12 show the distribution across consumption quintiles of the best performing benefit design as well as differences between their share in post-transfer consumption of beneficiary households, allowing for a comparison between different scenarios.

Figure 10. Distribution of flat benefits targeted to the poorest 10% of population (in %), PMT, by scenario, RS



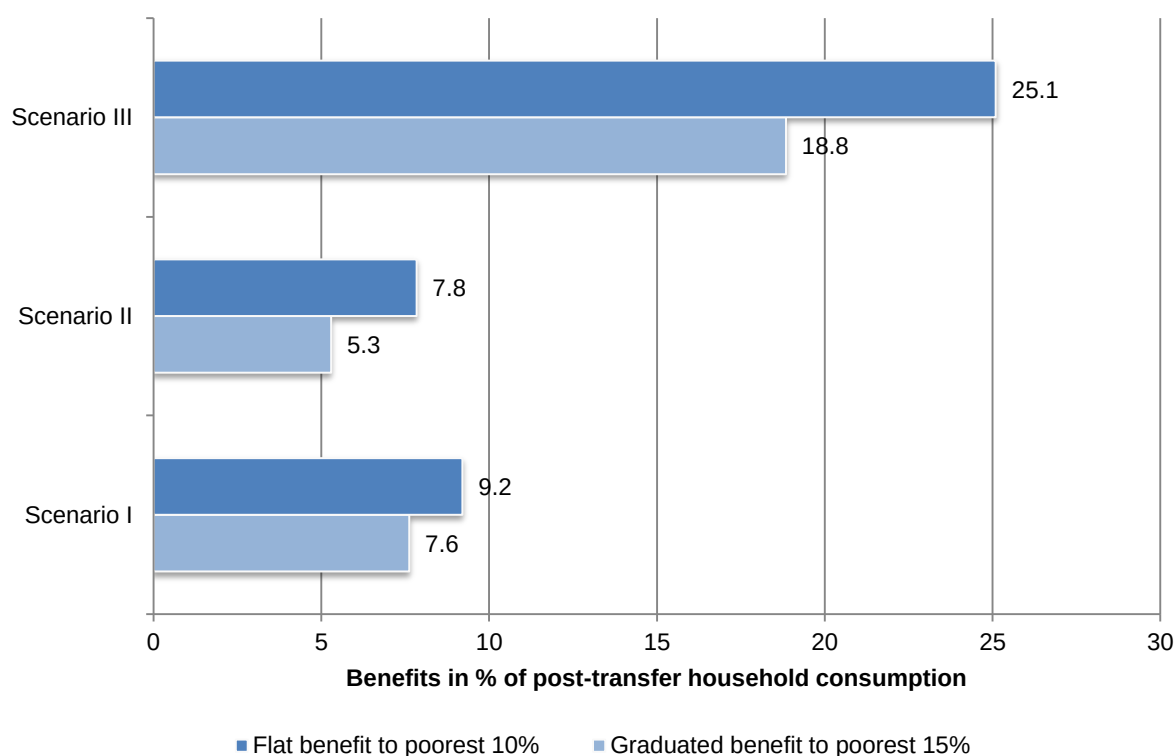
Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in the respective scenario.

Figure 11. Distribution of graduated benefits targeted to the poorest 15% of population (in %), PMT, by scenario, RS



Source: Author's calculations based on HBS 2011. Note: Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in the respective scenario.

Figure 12. Share of benefits in the post-transfer consumption of beneficiary households, best performing benefit options, PMT, by scenario, RS



Source: Author's calculations based on HBS 2011. *Note:* Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in the respective scenario.

3.3 *Impact on poverty*

The ultimate goal of simulating alternative targeting methods and different scenarios for budget allocation is to examine the extent to which the well-being of poor people can be improved. Thus, assessment of the impact on poverty is an essential aspect of the analysis of a program's adequacy. To evaluate the poverty impact of the various options, we employ two widely-used measures: the poverty rate and the poverty gap⁹.

The poverty rate, also known as poverty headcount ratio, indicates what part of the total population is poor (i.e. below the poverty line). In RS the persons with consumption of less than 308 BAM per adult equivalent¹⁰ (OECD1 scale) per month are considered poor. However, the poverty rate only gives information on the number of poor people without an indication of the depth of their need. From a poverty reduction perspective, simply reducing the poverty rate is not enough. In addition, it is crucial to minimize the depth of poverty.

The poverty gap indicates the total amount of money necessary to lift all poor to the minimum consumption level. A smaller poverty gap suggests that the consumption of poor people is on average closer to the poverty line whereas a larger gap is a sign of greater depth of poverty. In the case of RS, the total amount of the poverty gap represents the budget necessary to allocate to the poor so that each person acquires a monthly level of consumption of 308 BAM per adult equivalent.

The current poverty gap in RS – based on the above-mentioned poverty line of 308 BAM – amounts to approximately 11 million BAM monthly. This means that in the status quo the total monthly amount needed to ensure that nobody would be living below the poverty line anymore, i.e. to alleviate all existing poverty, amounts to 11 million BAM. Considering that in our simulations several transfers are 'taken away' and replaced by new transfers, the gap that has to be filled for each scenario is equal to the current gap of 11 million monthly plus the amount of the transfers that are substituted. For instance, Figure 14 indicates that the pre-transfer poverty gap to be filled in scenario I amounts to 11 million BAM (the current gap) + 1.4 million BAM (the total amount of transfers that are substituted in scenario I). As the available budgets for scenario I-III are in all cases smaller than the respective total gap for each scenario, covering the gap is not feasible in either of them. Nevertheless, the third scenario can be expected to show better results in terms of decreasing the poverty gap due to its relatively larger budget.

Scenario I

When substituting some of the currently existing programs with a combination of a universal child allowance program, a disability benefit and a social assistance program targeted using PMT or a model based on electricity expenditures, we observe a positive but marginal impact on poverty displayed in Figure 13 to Figure 15 below.

Figure 13 shows what the poverty rate would be after reallocating the available budget using different options for targeting and different benefit levels. Firstly, it illustrates that the current allocation of benefits only marginally decreases the level of poverty in Republika Srpska. In addition, it shows that substituting selected existing programs with a combination of categorical targeting and a social assistance program targeting the poor does not significantly decrease poverty incidence: poverty rates remain close to 14%. The lack of

⁹ Please refer to the Annex for the formulae used for calculation of the poverty rate and poverty gap.

¹⁰ Please see section 2.6 for the methodology used to calculate the poverty line.

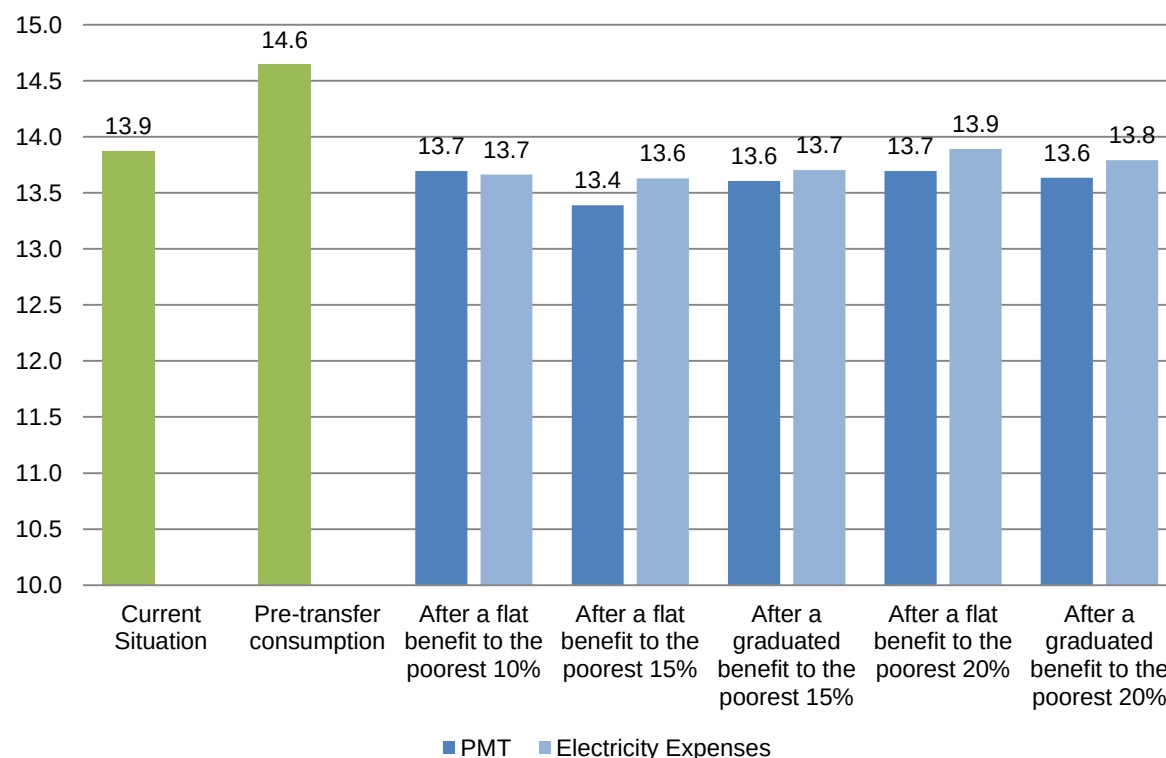
improvement in this scenario as compared to the status quo is a consequence of the way in which the budget for child protection is reallocated. In the existing situation child care allowance is means-tested, while in our simulation of scenario I child benefits are no longer conditional on a household's consumption level but instead are given to all children below 6 years old without a means-test. The budget that is left for allocation to poor households is thus relatively small.

Figure 14 and Figure 15 display the impact of different benefit programs – using a PMT model or a utility expenditure model for targeting respectively – on reducing the pre-transfer poverty gap. The graphs show what part of the pre-transfer poverty gap would be filled after applying a certain benefit and what the remaining poverty gap would be after each option.

An almost negligible decrease in the poverty gap is observed when comparing to the status quo. The best performance is achieved when allocating a flat benefit to the poorest 10% of the population or a graduated benefit to the poorest 15% of the population using PMT in addition to categorical targeting. However, the simulation of allocating a flat benefit to the poorest 20% actually shows a negative impact by increasing the poverty gap. Allocating benefits using the electricity expenditures method has a negative impact on the poverty gap for all benefit designs as compared to the status quo.

Comparing the allocation of a flat benefit to the poorest 15% and a graduated benefit to the poorest 15% through PMT it becomes evident that the reduction of the poverty gap is larger when allocating graduated benefits. This is once more a result of the more progressive nature of graduated benefits.

Figure 13. Poverty rates, selected program sizes and benefit types, PMT model and electricity expenditure model, scenario I, RS



Source: Author's calculations based on HBS 2011.

Figure 13 shows that the relative poverty rate in RS is 13.9% (first green column on the left). Based on this percentage, we can conclude that the total number of poor persons in RS is estimated at around 184 thousand persons.

When all those benefits which are included in scenario I are subtracted from total household consumption, which serves as a measure of the total household income, we get household consumption before transfers from scenario I. This consumption before transfers is lower in comparison to after transfer consumption, which serves for calculating poverty, so the number of poor persons is increased. The relative poverty rate based on pre-transfer consumption in scenario I is 14.6% (second green column from the left). In other words, if transfers included in scenario I were not paid, the total number of poor persons would increase from the currently estimated 184 thousand to 194 thousand poor persons.

The poverty rate after transfers (13.9%) serves to compare the simulated scenarios to the current situation. In addition, the poverty rate before transfers from scenario I (14.6%) serves for comparison of the simulated scenarios to a hypothetical situation in which the scenario I transfers are abolished.

The following can be observed from the graph:

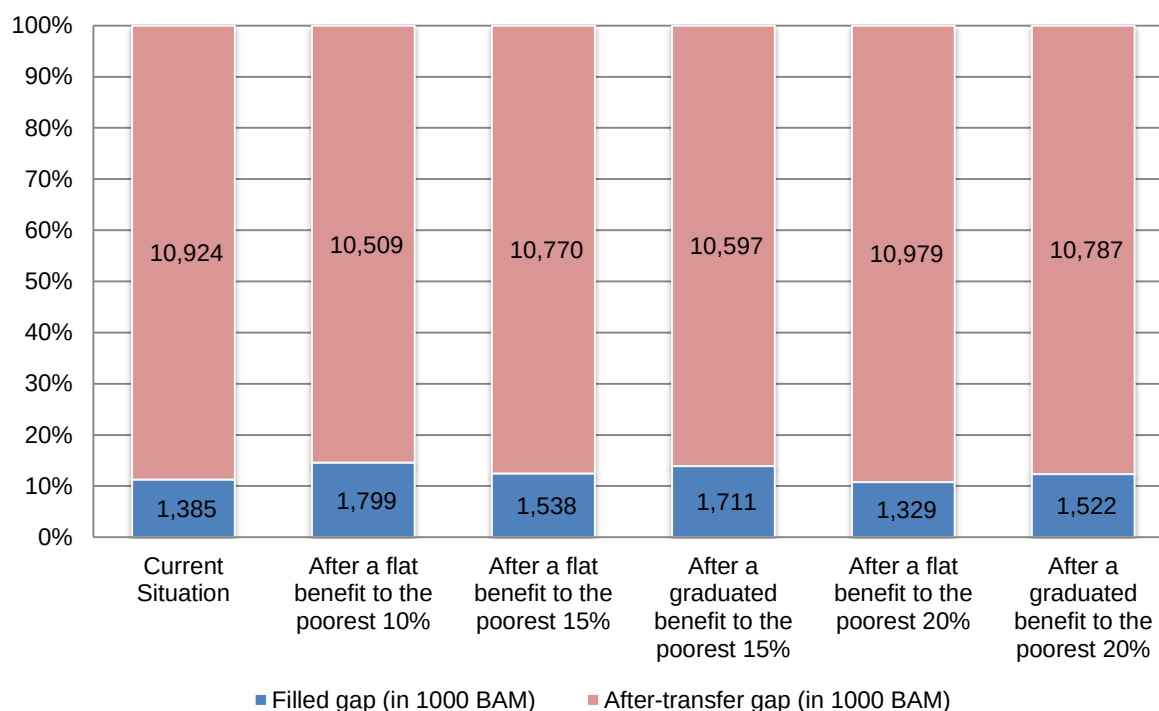
- It shows how much, using the same budget, poverty rates can be reduced from the current situation (when comparing to the current poverty rate of 13.9%)
- It shows the poverty rate (i) if the budget was not spent on social benefits at all (second green bar from the left) or (ii) if, instead, the budget was used for different simulated programs (blue bars) – the difference between these would be the total poverty reduction impact of the program.

Figure 13 shows that the proxy means testing program after a flat benefit for the poorest 15% (third blue column from the left) has the best effect on poverty reduction. This program has the effect of poverty reduction from the current 13.9% to 13.4%. In other words, this program reduces poverty by $13.9 - 13.4 = 0.5$ percentage points. In absolute terms, this means that through the application of this program and this method of targeting the poor, an additional 0.5% of the RS population would be lifted from poverty, which amounts to around 7,000 persons.

The total impact of this program would be $14.6 - 13.4 = 1.2$ percentage points. In other words, this program with this way of targeting poor categories would enable 1.2% of the total population of RS to be lifted from relative poverty which, in absolute terms, translates to around 16 thousand persons.

Figure 13 also shows that the program of a flat benefit for the poorest 20% using electricity expenditures as a basis for targeting the poor categories of the population (third column from the right) has the weakest impact on poverty reduction. Neither reduction nor increase of poverty would be the result of this program.

Figure 14. Poverty gap, selected program sizes and benefit types, PMT model, scenario I, RS



Source: Author's calculations based on HBS 2011.

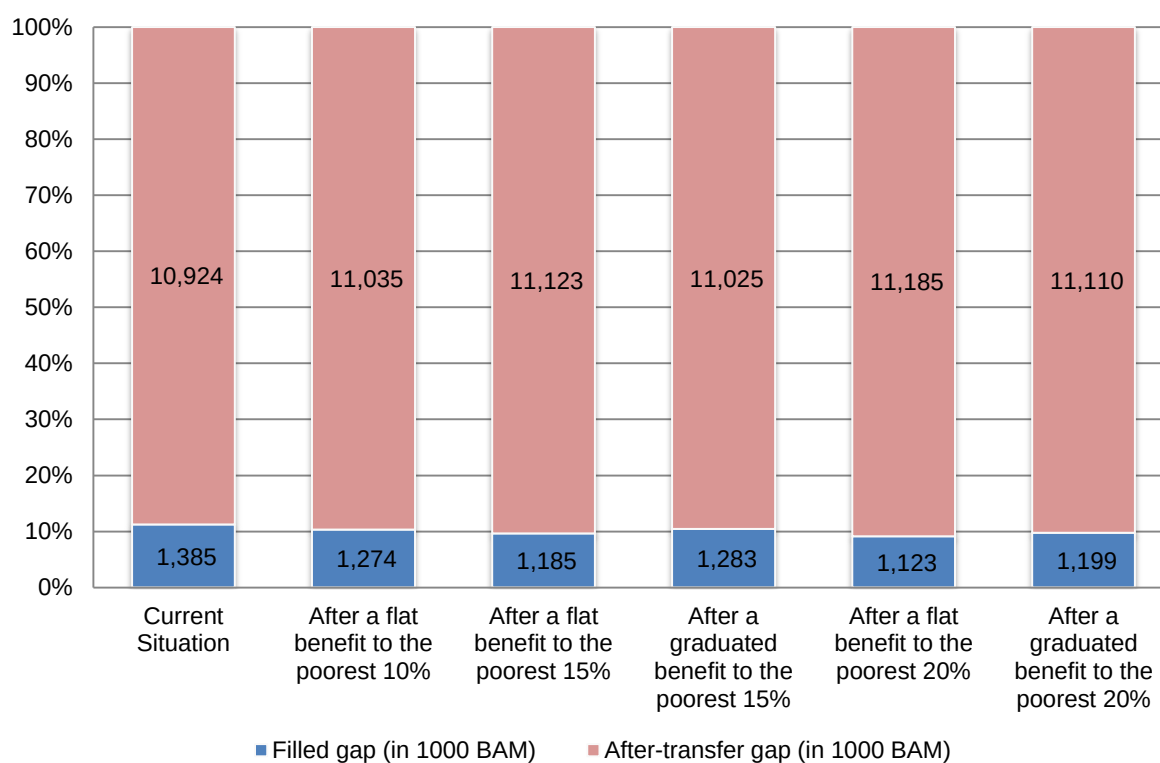
Based on the red section of the first column in Figure 14, we can see that the **remaining** poverty gap, i.e. the **additional** money needed to lift the entire population of RS above the **relative** poverty line, is estimated at 10.924 million BAM monthly. If the existing civilian cash benefits from scenario I were removed, this gap would increase by 1.385 million BAM (blue section of the first column from the left).

The first column in Figure 14 serves as a basis for comparison with the chosen program sizes and types of benefits in the PMT model for scenario I in RS.

The poverty gap is most efficiently reduced by a flat benefit for the poorest 10% (second column from the left). This program reduces the poverty gap from 10.924 million BAM for the entire population of RS below the poverty line to 10.509 million BAM.

The weakest (negative) impact is seen in the PMT program after a flat benefit for the poorest 20% (second column from the right). In this program, the poverty gap increases from 10.924 million BAM monthly to 10.979 million BAM monthly. In other words, if the flat benefit for the poorest 20% was applied, it would take additional 55,000 BAM monthly to maintain the poverty gap on the current level.

Figure 15. Poverty gap, selected program sizes and benefit types, electricity expenditure model, scenario I, RS



Source: Author's calculations based on HBS 2011.

In the scenario I simulation of targeting the poor through the electricity expenditure model, all proposed models performed poorly in comparison with the current targeting model.

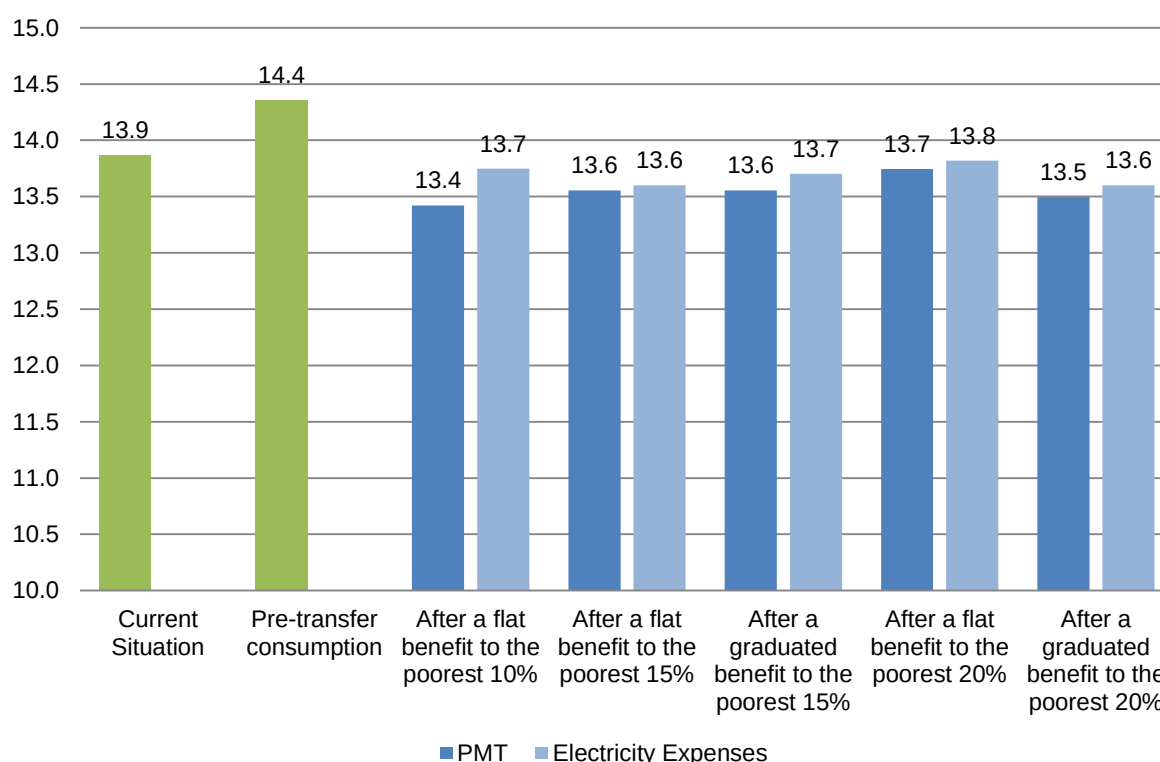
Scenario II

Figure 16 to Figure 18 below show the effect on poverty of substituting some of the currently existing civilian benefits with a poverty alleviation program which is targeted using a proxy-means test or an electricity expenditures model.

Since the programs substituted in this scenario are very limited in their budget, the impact of substituting the currently existing benefits with an alternative program based on targeting using a PMT or a model based on electricity expenditures is small. Reforms simulated for this scenario would again only very marginally reduce the poverty rates.

The poverty gap decreases more significantly than in scenario I, but the impact of reallocating the budget for scenario II on the poverty gap is still small. The most significant reduction amounts to 10% of the poverty gap when allocating a flat benefit to the poorest 10% of the population.

Figure 16. Poverty rates, selected program sizes and benefit types, PMT model and electricity expenditure model, scenario II, RS



Source: Author's calculations based on HBS 2011.

Figure 16 shows that the relative poverty rate in RS is 13.9% (first green column on the left). Based on this percentage, as already stated, we can conclude that the total number of poor persons in RS is estimated at around 184 thousand persons.

When all those benefits which are included in scenario II are subtracted from total household consumption, which serves as a measure of the total household income, we get household consumption before transfers from scenario II. This consumption before transfers is lower in comparison to after transfer consumption, which serves for calculating poverty, so the number of poor persons is increased (same as in scenario I). The relative poverty rate based

on pre-transfer consumption in scenario II is 14.4% (second green column from the left). In other words, if transfers included in scenario II were not paid, the total number of poor persons would increase from the currently estimated 184 thousand to 191 thousand poor persons.

The poverty rate after transfers (13.9%) serves to compare the simulated scenarios to the current situation. In addition, the poverty rate before transfers from scenario II (14.4%) serves for comparison of the simulated scenarios to a hypothetical situation in which the scenario II transfers are abolished.

The following can be observed from the graph:

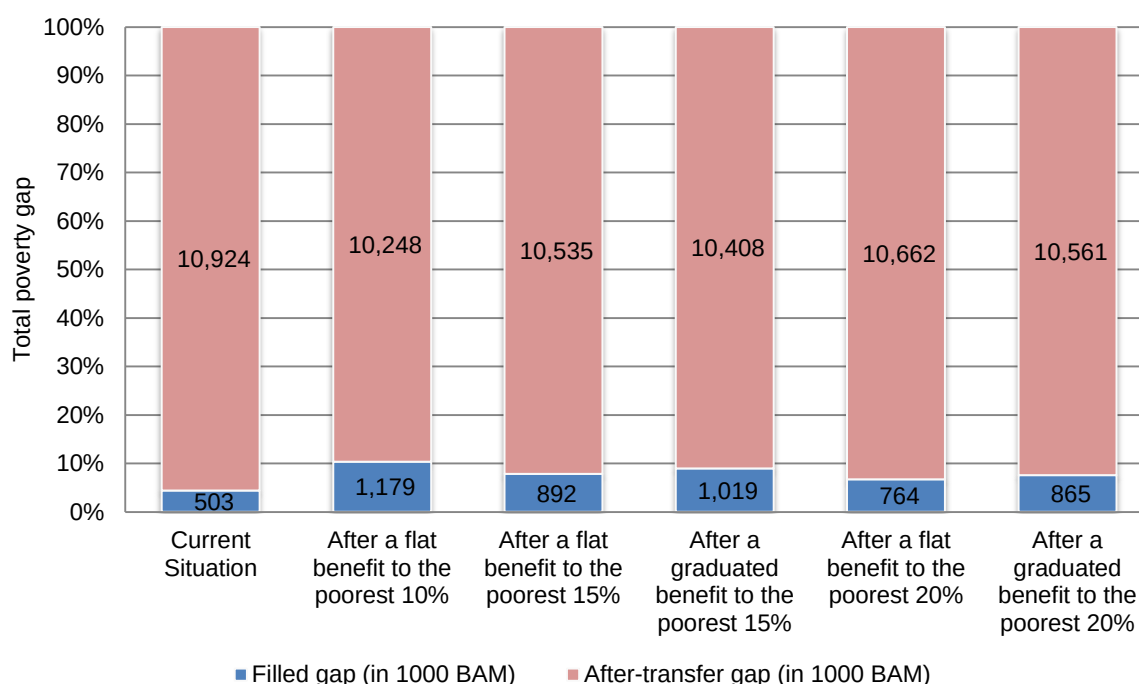
- It shows how much, using the same budget, poverty rates can be reduced from the current situation (when comparing to the current poverty rate of 13.9%)
- It shows the poverty rate (i) if the budget was not spent on social benefits at all (second green bar from the left) or (ii) if, instead, the budget was used for different simulated programs (blue bars) – the difference between these would be the total poverty reduction impact of the program.

Figure 16 shows that the proxy means testing program after a flat benefit for the poorest 10% (first blue column from the left) has the best effect on poverty reduction. This program has the effect of poverty reduction from the current 13.9% to 13.4%. In other words, this program reduces poverty by $13.9 - 13.4 = 0.5$ percentage points. In absolute terms, this means that through the application of this program and this method of targeting the poor, an additional 0.5% of the RS population would be lifted from poverty, which amounts to around 7,000 persons.

The total impact of this program would be $14.4 - 13.4 = 1.0$ percentage point. In other words, this program with this way of targeting poor categories would enable 1.0% of the total population of RS to be lifted from relative poverty which, in absolute terms, translates to around 13 thousand persons.

Figure 16 also shows that the program of a flat benefit for the poorest 20% using electricity expenditures as a basis for targeting the poor categories of the population (third column from the right) has the weakest impact on poverty reduction. The impact of this program would be a reduction of the number of poor persons by around 1.000.

Figure 17. Poverty gap, selected program sizes and benefit types, PMT model, scenario II, FBiH, RS



Source: Author's calculations based on HBS 2011.

Based on the red section of the first column in Figure 17, we can see that the **remaining** poverty gap, i.e. the **additional** money needed to lift the entire population of RS above the ~~relative~~ poverty line, is estimated at 10.924 million BAM monthly. If the existing civilian cash benefits from scenario II were removed, this gap would increase by 503,000 BAM (blue section of the first column from the left).

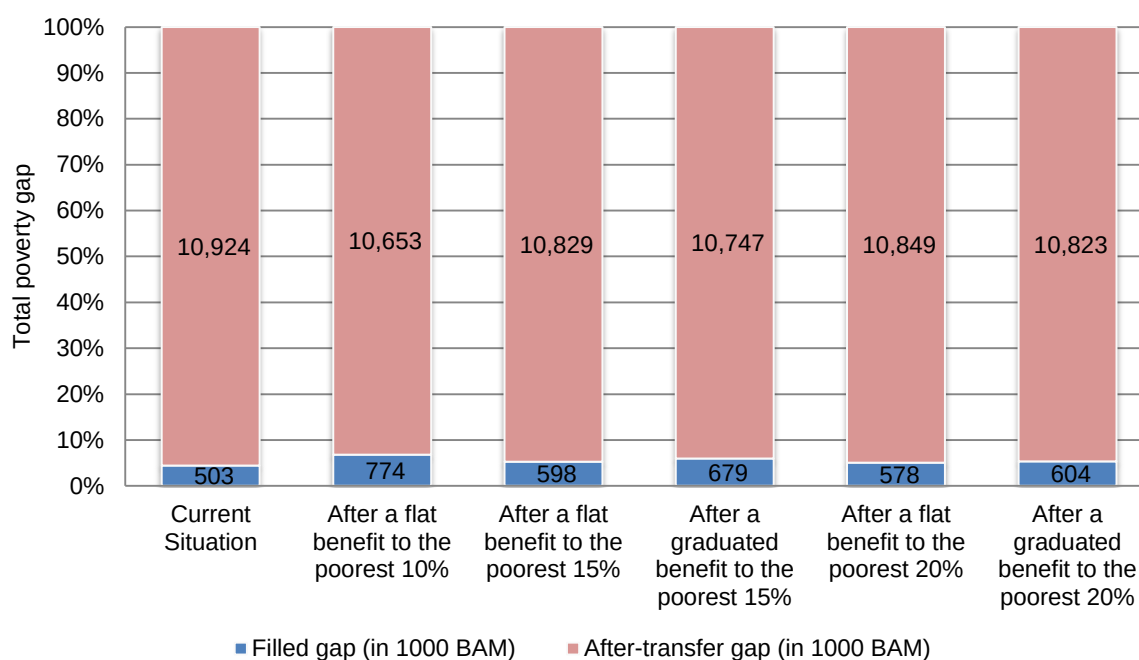
The first column in Figure 17 serves as a basis for comparison with the chosen program sizes and types of benefits in the PMT model for scenario II in RS.

The poverty gap is most efficiently reduced by a flat benefit for the poorest 10% (second column from the left). This program reduces the poverty gap from 10.924 million BAM monthly for the entire population of RS below the poverty line to 10.248 million BAM.

The weakest impact is seen in the PMT program after a flat benefit for the poorest 20% (second column from the right). In this program, the poverty gap decreases from 10.924 million BAM monthly to 10.662 million BAM monthly.

In other words, if the program of a flat benefit for the poorest 20% was applied through PMT instead of the current system of allocating civilian cash benefits from scenario II and if the poverty gap remained at the same level as it is now, the gross savings would be around 260,000 BAM monthly.

Figure 18. Poverty gap, selected program sizes and benefit types, electricity expenditure model, scenario II, RS



Source: Author's calculations based on HBS 2011.

In the scenario II simulation of targeting the poor through the electricity expenditure model, all proposed models performed just marginally better than the current targeting model.

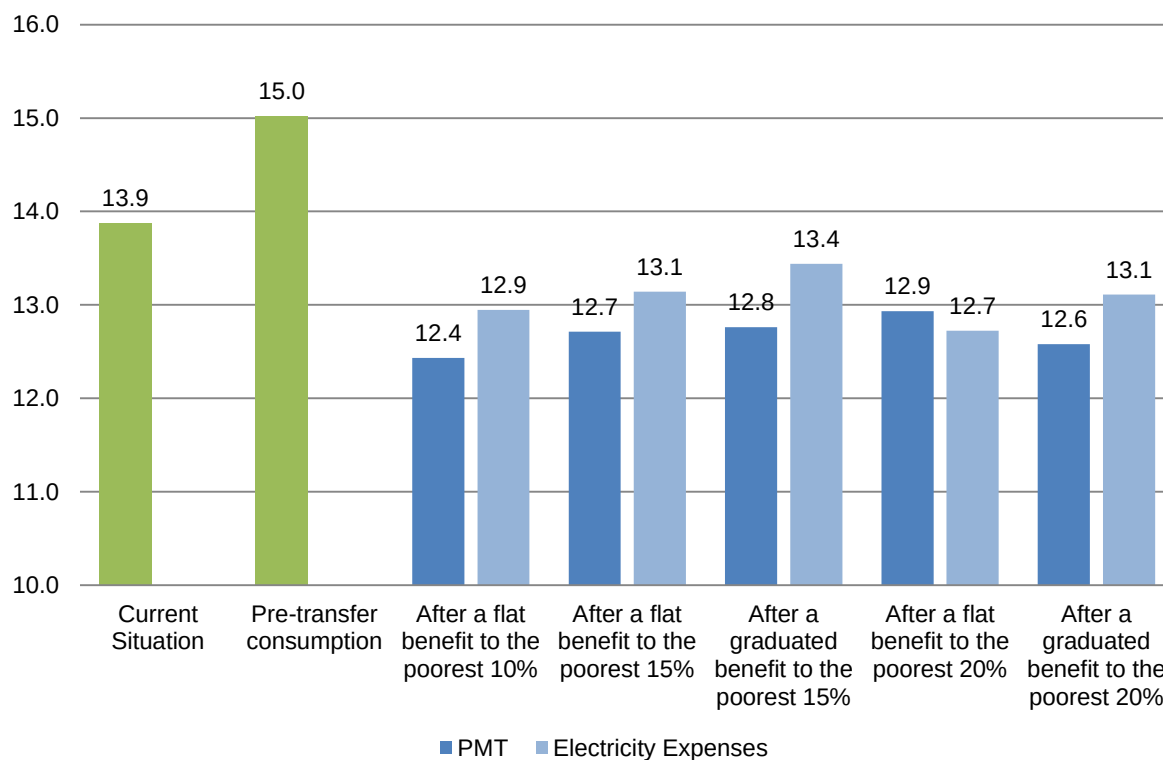
Scenario III

This simulation allows us to examine the effect on poverty alleviation of a needs-based program comparable with the program simulated in scenario II, but with a considerably larger budget. If, in addition to the civilian benefits substituted in scenario II some of the veterans' benefits are replaced as well, the budget for benefit allocation increases considerably. Consequently, benefit levels are higher, leading to a visible reduction in both poverty incidence and depth of poverty (see Figure 19 to Figure 21).

According to our simulations, a new program targeted using a PMT would reduce the poverty headcount ratio from 13.9% to 12.4-12.9% (see Figure 19). A program targeting the poorest 10%, allocating flat benefits shows the best performance in reducing the number of poor. Reduction in poverty as a result of this option is 1.5 percentage points. A targeting mechanism based on electricity expenditures performs comparatively less well.

The impact of the different targeting methods and benefit designs on the depth of poverty is displayed in Figure 20 and Figure 21. The program based on PMT results in up to 32% reduction of the pre-transfer poverty gap. The share of the gap being covered after allocation of transfers amounts to around 24 - 32%, with a flat benefit allocated to the poorest 10% again showing the best result. The alternative program based on electricity expenses shows a smaller impact due to the less precise method of targeting (see Figure 21).

Figure 19. Poverty rates, selected program sizes and benefit types, PMT model and electricity expenditure model, scenario III, RS



Source: Author's calculations based on HBS 2011.

Figure 19 shows that the relative poverty rate in RS is 13.9% (first green column on the left). Based on this percentage, we can conclude that the total number of poor persons in RS is estimated at around 184 thousand persons.

When all those benefits which are included in scenario III are subtracted from total household consumption, which serves as a measure of the total household income, we get household consumption before transfers. Consumption before transfers is lower in comparison to after transfer consumption, which serves for calculating poverty, so the number of poor persons is increased. The relative poverty rate based on pre-transfer consumption is 15.0% (second green column from the left). In other words, if transfers included in scenario III were not paid, the total number of poor persons would increase from the currently estimated 184 thousand to 199 thousand poor persons.

The poverty rate after transfers (13.9%) serves to compare the simulated scenarios to the current situation. In addition, the poverty rate before transfers from scenario III (15%) serves for comparison of the simulated scenarios to a hypothetical situation in which the scenario III transfers are abolished.

The following can be observed from the above graph:

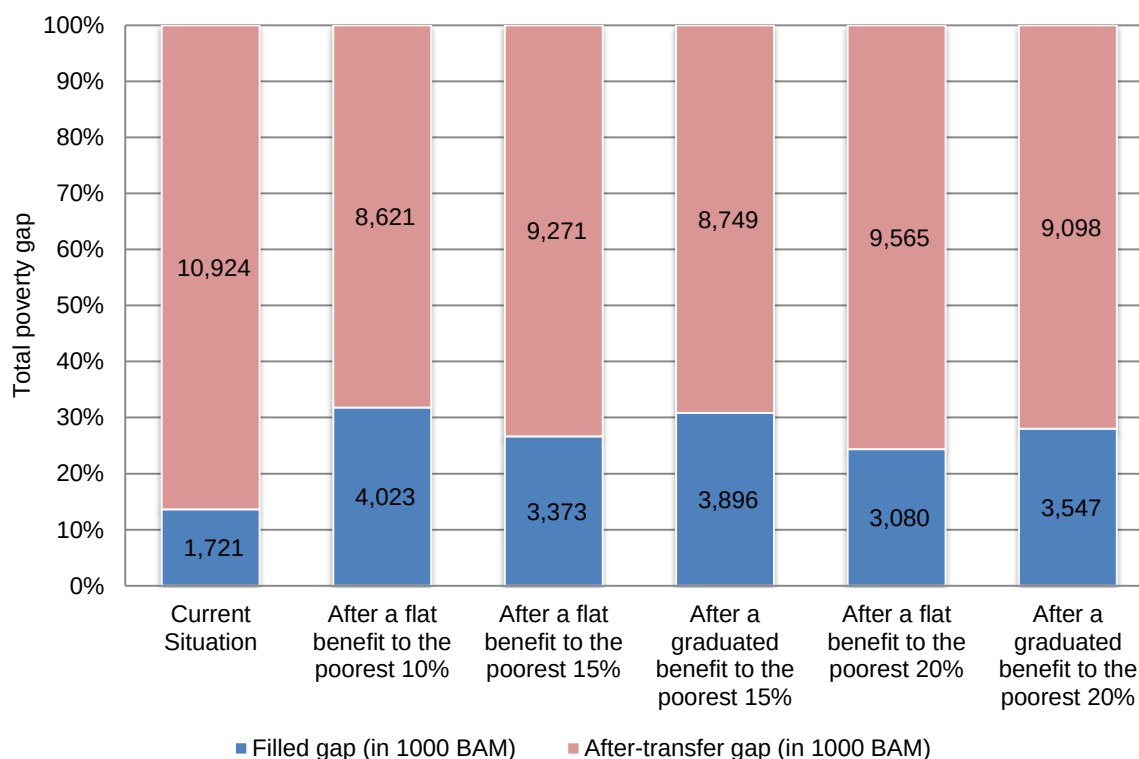
- It shows how much, using the same budget, poverty rates can be reduced from the current situation (when comparing to the current poverty rate of 13.9%)
- It shows the poverty rate (i) if the budget was not spent on social benefits at all (second green bar from the left) or (ii) if, instead, the budget was used for different simulated programs (blue bars) – the difference between these would be the total poverty reduction impact of the program.

Figure 19 shows that the proxy means testing program after a flat benefit for the poorest 10% (first blue column from the left) has the best effect on poverty reduction. This program has the effect of poverty reduction from the current 13.9% to 12.4%. In other words, this program reduces poverty by $13.9 - 12.4 = 1.5$ percentage points. In absolute terms, this means that through the application of this program and this method of targeting the poor, an additional 1.5% of the RS population would be lifted from poverty, which amounts to around 20,000 persons.

The total poverty-reduction impact of the program would be $15.0 - 12.4 = 2.6$ percentage points. In other words, this program with this way of targeting poor categories would enable 2.6% of the total population of RS to be lifted from relative poverty which, in absolute terms, translates to around 35 thousand persons.

Figure 19 also shows that the program of a graduated benefit for the poorest 15% using electricity expenditures as a basis for targeting the poor categories of the population (fifth column from the right) has the weakest impact on poverty reduction. The impact of this program would be poverty reduction of 0.5 percentage points, which translates to additional 7,000 persons lifted from poverty.

Figure 20. Poverty gap (in 1000 BAM), selected program sizes and benefit types, PMT model, scenario III, RS



Source: Author's calculations based on HBS 2011.

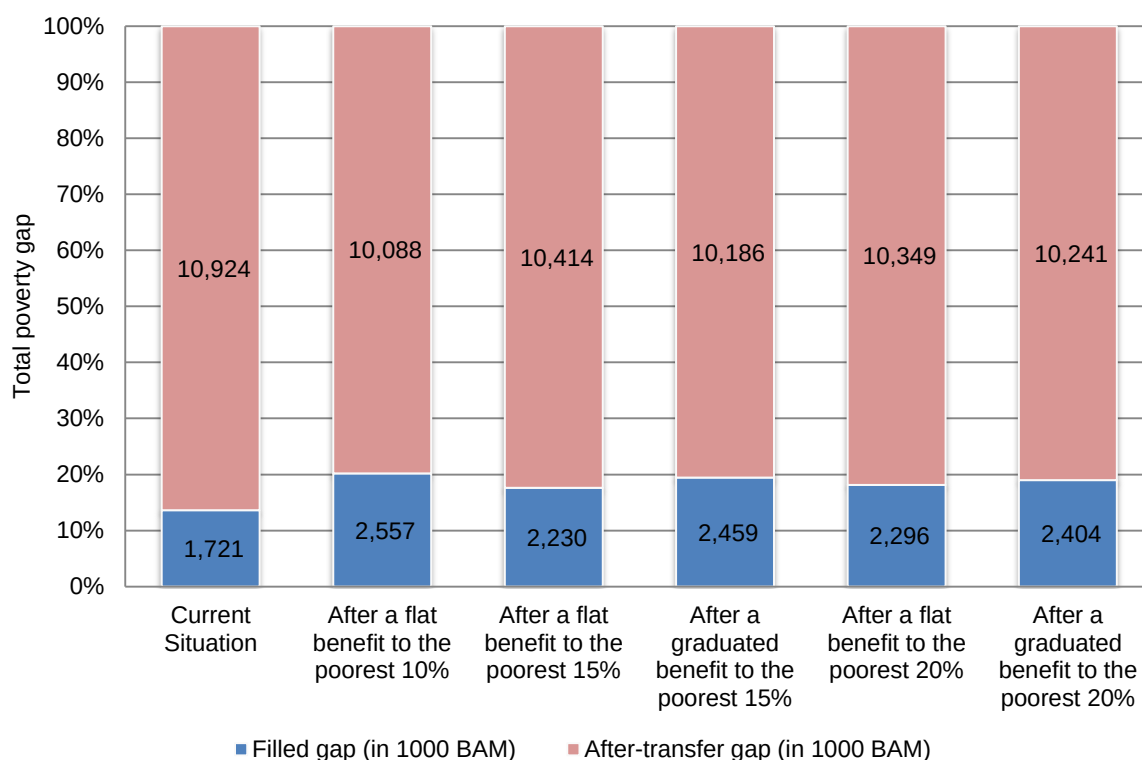
Based on the red section of the first column in Figure 20, we can see that the **remaining** poverty gap, i.e. the **additional** money needed to lift the entire population of RS above the ~~relative~~ poverty line, is estimated at 10.924 million BAM monthly. If the existing civilian cash benefits from scenario III were removed, this gap would increase by 1.721 million BAM (blue section of the first column from the left).

The first column in Figure 20 serves as a basis for comparison with the chosen program sizes and types of benefits in the PMT model for scenario III in RS.

Figure 20 shows that the poverty gap, in case of using PMT as a method of targeting the poor categories of the population, is most efficiently reduced by a flat benefit for the poorest 10% of the population.

In the case of a flat benefit for the poorest 10% of the population, while using PMT as a method of targeting the poor categories of the population, poverty gap coverage would increase from the current 1,721 million BAM monthly to 4,023 million BAM monthly, whereas the poverty gap itself would reduce from 10,924 million BAM monthly to 8,621 million BAM monthly.

Figure 21. Poverty gap (in 1000 BAM), selected program sizes and benefit types, electricity expenditure, scenario III, RS



Source: Author's calculations based on HBS 2011.

Figure 21 shows that, in case the poorest categories of the population are targeted through the electricity expenditure model, the poverty gap is best filled by a flat benefit program for the poorest 10% of the population.

In the case of a flat benefit for the poorest 10% of the population, while using the electricity expenditure model as a method of targeting the poor categories of the population, poverty gap coverage would increase from the current 1,721 million BAM monthly to 2.557 million BAM monthly, whereas the poverty gap itself would reduce from 10,924 million BAM monthly to 10.088 million BAM monthly.

3.4 Short overview of results

The following conclusions can be drawn from the above analysis of distribution and adequacy of benefits and their impact on poverty.

From an analysis of the distribution of benefits we have seen that:

- investing a larger share of the available budget in a needs-based program for poverty alleviation (social assistance) as opposed to right-based programs leads to a higher concentration of benefits within the first consumption quintile;
- a PMT is a more accurate mechanism in terms of channelling resources towards the poor than a targeting mechanism based on electricity expenditures;
- smaller program sizes show less leakage of resources towards richer consumption quintiles, regardless of the targeting mechanism or benefit design;
- graduated benefits result in a more progressive distribution of benefits, so that a larger share of the total budget is allocated to the poorest.

The adequacy of benefits:

- is higher if a larger budget is available;
- in most cases is higher for benefits allocated through a PMT as compared to benefits allocated through a targeting mechanism based on electricity expenses;
- is higher for smaller program sizes as compared to larger program sizes;
- is higher for graduated benefits as compared to flat benefits.

With respect to the impact on poverty our simulations have shown that:

- scenarios I and II do not significantly change the current situation
- scenario III shows more positive impact in poverty alleviation and decreasing the depth of poverty.
- a PMT targeting method leads to better results in reducing the poverty rate and poverty gap when compared to the method using electricity expenditures;
- a larger share of the poverty gap is filled when allocating flat benefits to the poorest 10% of the population.

Overall, with the aim of this study being poverty alleviation, the most desirable combination of distribution and adequacy of benefits and poverty reduction can be found in scenario III, due to the relatively larger budget available for this scenario in combination with the fact that all resources are invested in a needs-based program targeted towards the poor. Within this scenario benefits are best targeted using a PMT for allocating a flat benefit to the poorest 10%.

4 Conclusions, policy recommendations

The goal of this report was to simulate the impacts on poverty of a number of targeting mechanisms selected from the previous part of this study; *'New targeting methods for Bosnia and Herzegovina: Part I'*. In order to do so, three different scenarios were developed with different budget constraints depending on the benefits in the existing system that would be replaced for each scenario. Within each scenario, different benefit designs were tested.

In terms of poverty impacts, scenario III shows the most desirable results. Firstly, it contains one single needs-based program targeting the poor, which leads to redistribution of resources to the first consumption quintile. In addition, it has more resources at its availability than the other two scenarios resulting from the number and type of existing benefits to be replaced. Benefits are thus more adequate as compared to scenario I and II. However, in this scenario certain types of veteran's benefits would be reallocated, feeding into the budget for the needs-based program. Since veteran's benefits are politically loaded and cannot be easily touched or replaced, it could be difficult to gain public acceptance for this scenario in reality.

Poverty impacts simulated in scenario I are negligible due to the mix of a needs-based program with categorical benefits and the available limited budget. Scenario II shows poverty impacts that are marginal, but still somewhat larger than those resulting from scenario I due to its sole needs-based targeted program.

A combination of better targeting and well-designed benefits may improve the poverty impact of a given budget. Nevertheless, the size of the budget used for poverty reduction is a crucial factor. Although budget for all scenarios are relatively small, scenario III clearly shows that a larger budget has a much more desirable impacts in terms of poverty reduction.

The fiscal aspects of the presented scenarios will be analysed in a separate document.

References

Grosh, del Ninno, Tesliuc, & Ouerghi (2008), For Protection and Promotion: the Design of Effective Safety Nets, World Bank, Washington.

Appendix I

1. Calculation of distribution of benefits and average share of benefits in household consumption

1. Distribution of benefits

The distribution of benefits describes the share of total benefits allocated to each quintile. For the first quintile the calculation is as follows:

$$\text{Distribution of benefits} = \frac{\sum \text{Benefits allocated to individuals in Q1}}{\sum \text{All allocated benefits}} \times 100$$

2. Benefits as a share of post-transfer consumption

The average share of benefits in post-transfer household consumption across consumption quintiles shows us the adequacy of benefits. For the first quintile it is calculated as follows:

$$\text{Share of benefits (Q1)} = \frac{1}{n} \times \sum_{i=1}^n \frac{\text{Benefit amount received by household } i \text{ in Q1}}{\text{Post-transfer consumption of household } i}$$

where n is the total number of households receiving benefits in the first quintile.

2. Calculation of poverty measures

1. Poverty rate

The poverty rate, also known as poverty headcount ratio, indicates what part of the total population is poor (i.e. below the poverty line). Thus, the share of poor individuals in the total population is the poverty rate. The formula for calculation of the poverty rate is:

$$\text{Poverty Rate (in \%)} = \frac{\text{Total number of poor individuals}}{\text{Total population}} \times 100$$

2. Poverty gap

The poverty gap shows the depth of poverty. It indicates the total amount of money necessary to lift all poor to the minimum consumption level. The poverty gap is calculated by applying the following formula:

$$\text{Poverty Gap (in BAM)} = \sum (308 - \text{consumption level of } X)$$

where X is every poor individual.

Table A 1. Comparison of the budget derived from administrative data to the budget extrapolated from HBS 2011 data.

<i>Scenario</i>	<i>Budget:</i>	<i>Budget:</i>	<i>Budget:</i>	<i>Difference (in % of the extrapolated budget)</i>
	<i>Administrative data 2011</i>	<i>Administrative data 2011</i>	<i>Extrapolated from HBS 2011</i>	
	<i>Annual</i>	<i>Monthly</i>	<i>Monthly</i>	<i>Monthly</i>
Scenario I	39.934.419	3.327.868	2.911.314	114%
Scenario II	9.285.106	773.759	1.342.210	58%
Scenario III	148.142.416	12.345.201	5.463.415	226%

Source: Author's calculations based on RS budget data for 2011 provided by the Ministries and on HBS 2011.

Table A 2. Calculations of benefit levels and budgets, Scenario I, RS

	Population share	Total Population	Administrative data (2011) budget (BAM)	nominal GDP (2011)	Extrapolated budget (BAM)	Budget for poverty alleviation
BiH	100%	3 169 986	0.46%	25 474 000 000	0.40%	0.21%
RS	33%	1 060 290	3 327 868	8 670 100 000	2 911 314	1 544 974

1. Categorical benefits - Disability

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of eligible households	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget
1. Flat			<i>hh with disabled</i>	<i>disabled</i>	<i>Flat - per disabled</i>	
1.1 All	<i>All disabled that are currently eligible for LTC</i>	0.3%	3 369.15	3 369	80.00	269 532

2. Categorical benefits - Child Allowance

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of eligible households	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget
1. Flat			<i>hh with children</i>	<i>children below 6</i>	<i>Flat - per child</i>	
1.1 All	<i>All children up to 6 years old</i>	5.2%	42 796.81	54 840	20.00	1 096 808

3.A. PMT model

Poverty alleviation Budget constraint: 1 544 974

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of poor households	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget
1. Flat						
1.1. All	<i>estimated PAE1 consumption</i>			<i>Individuals</i>	<i>Flat - per individual</i>	
10% - estimated pae1 cons <	330 (rounded)	10.0%	24 616.75	106 065	15.00	1 590 975
15% - estimated pae1 cons <	363 (rounded)	15.0%	39 513.38	158 895	10.00	1 588 950
20% - estimated pae1 cons <	390 (rounded)	20.0%	56 829.14	212 278	7.00	1 485 945
2. Graduated Benefits						
2.1. Brackets - 15%	<i>PAE1 consumption < 363</i>			<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (10)</i>			<i>158 895</i>	<i>Per individual</i>	<i>1 592 791</i>
1 bracket: < 5%		5.1%	10 887.90	53 598	15.00	803 975
2 bracket: 5% - 10%		4.9%	13 728.85	52 467	10.00	524 667
3 bracket: 10% - 15%		5.0%	14 896.62	52 830	5.00	264 150
2.2. Brackets - 20%	<i>PAE1 consumption < 390</i>			<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (7)</i>			<i>212 278</i>	<i>Per individual</i>	<i>1 537 778</i>
1 bracket: < 10%		10.0%	24 616.75	106 065	10.00	1 060 650
2 bracket: 10% - 15%		5.0%	14 896.62	52 830	6.00	316 980
3 bracket: 15% - 20%		5.0%	17 315.77	53 383	3.00	160 148

3.B. Utility expenditures

Poverty alleviation Budget constraint: 1 544 974

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of poor households	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget
1. Flat						
1.1. All households				<i>Individuals</i>	<i>Flat - per individual</i>	
10% - pc exp <	<i>PAE1 electricity expenditure < 11.16</i>	10.1%	24 270.27	106 606	15.00	1 599 090
15% - pc exp <	<i>PAE1 electricity expenditure < 12.52</i>	15.1%	37 568.89	159 645	10.00	1 596 446
20% - pc exp <	<i>PAE1 electricity expenditure < 13.65</i>	20.0%	49 898.34	211 816	7.00	1 482 711
2. Graduated Benefits						
2.1 Brackets - 15 %	<i>PAE1 electricity expenditure < 12.52</i>			<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * full benefit (10)</i>	<i>15.1%</i>		<i>159 645</i>	<i>Per individual</i>	<i>1 596 448</i>
1 bracket: < 5%	1.5	5.0%	11809.18	53 039	15.00	795 586
2 bracket: 5% - 10%	1	5.1%	12 461.09	53 567	10.00	535 669
3 bracket: 10% - 15%	0.5	5.0%	13 298.62	53 039	5.00	265 193
2.1 Brackets - 20 %	<i>PAE1 electricity expenditure < 13.65</i>			<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * full benefit (7)</i>	<i>20.0%</i>		<i>211 816</i>	<i>Per individual</i>	<i>1 540 805</i>
1 bracket: <10%	1.4	10.1%	24 270.27	106 606	10.00	1 066 060
2 bracket: 10% - 15%	0.8	5.0%	13 298.62	53 039	6.00	318 231
3 bracket: 15% - 20%	0.4	4.9%	12 329.45	52 171	3.00	156 514

Source: Author's calculations based on HBS 2011. Note: PAE refers to Per Adult Equivalent consumption using the OECD 1 scale.

Table A 3. Calculations of benefit levels and budgets, Scenario II, RS

	Population share	Total Population	nominal GDP (2011)	Extrapolated budget (BAM)
BiH	100%	3 169 986	25 474 000 000	0.19%
RS	33%	1 060 290	8 670 100 000	1 342 210

1. PMT model

Budget constraint: 1 342 210

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget
1. Flat					
1.1. All	<i>estimated PAE1 consumption</i>		<i>Individuals</i>	<i>Flat - per individual</i>	
10% - estimated pae1 cons <	330 (rounded)	10%	106 065	13.00	1 378 845
15% - estimated pae1 cons <	363 (rounded)	15%	158 895	8.00	1 271 160
20% - estimated pae1 cons <	390 (rounded)	20%	212 278	6.00	1 273 667
2. Graduated benefits					
2.1. Brackets - 15%	<i>PAE1 consumption < 363</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (8)</i>		<i>158 895</i>	<i>Per individual</i>	<i>1 274 233</i>
1 bracket: < 5%		5%	53 598	12.00	643 180
2 bracket: 5% - 10%		5%	52 467	8.00	419 734
3 bracket: 10% - 15%		5%	52 830	4.00	211 320
2.2. Brackets - 20%	<i>PAE1 consumption < 390</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (6)</i>		<i>212 278</i>	<i>Per individual</i>	<i>1 219 435</i>
1 bracket: < 10%		10%	106 065	8.00	848 520
2 bracket: 10% - 15%		5%	52 830	5.00	264 150
3 bracket: 15% - 20%		5%	53 383	2.00	106 766

2. Utility expenditures

Budget constraint: 1 342 210

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget
1. Flat					
1.1. All households			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 electricity expenditure < 11.16</i>	10%	106 606	13.00	1 385 878
Program size 15%	<i>PAE1 electricity expenditure < 12.52</i>	15%	159 645	8.00	1 277 157
Program size 20%	<i>PAE1 electricity expenditure < 13.65</i>	20%	211 816	6.00	1 270 895
2. Graduated benefits					
2.1 Brackets - 15 %	<i>PAE1 electricity expenditure < 12.52</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * full benefit (8)</i>	<i>15%</i>	<i>159 645</i>	<i>Per individual</i>	<i>1 277 159</i>
1 bracket: < 5%	1.5	5%	53 039	12.00	636 469
2 bracket: 5% - 10%	1	5%	53 567	8.00	428 535
3 bracket: 10% - 15%	0.5	5%	53 039	4.00	212 154
2.1 Brackets - 20 %	<i>PAE1 electricity expenditure < 13.65</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * full benefit (6)</i>	<i>20%</i>	<i>211 816</i>	<i>Per individual</i>	<i>1 222 383</i>
1 bracket: < 10%	1.4	10%	106 606	8.00	852 848
2 bracket: 10% - 15%	0.8	5%	53 039	5.00	265 193
3 bracket: 15% - 20%	0.4	5%	52 171	2.00	104 342

Source: Author's calculations based on HBS 2011. Note: PAE refers to Per Adult Equivalent consumption using the OECD 1 scale.

Table A 4. Calculations of benefit levels and budgets, Scenario III, RS

	Population share	Total Population	Nominal GDP (2011)	Extrapolated budget (BAM)
BiH	100%	3 169 986	25 474 000 000	0.76%
RS	33%	1 060 290	8 670 100 000	5 463 414

1. PMT model

Budget constraint: 5 463 414

	Criteria	Program size: Number of beneficiaries as a share of total population	Number of beneficiaries	Benefit amount per individual (BAM)	Total Budget
1. Flat					
1.1. All	<i>estimated PAE1 consumption</i>		<i>Individuals</i>	<i>Flat - Per individual</i>	
10% - estimated pae1 cons <	330 (rounded)	10%	106 065	51.00	5 409 315
15% - estimated pae1 cons <	363 (rounded)	15%	158 895	34.00	5 402 430
20% - estimated pae1 cons <	390 (rounded)	20%	212 278	26.00	5 519 223
2. Graduated benefits					
2.1. Brackets - 15%	<i>PAE1 consumption < 363</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * flat benefit (34)</i>	<i>15%</i>	<i>158 895</i>	<i>Per individual</i>	<i>5 415 491</i>
1 bracket: < 5%		5%	53 598	51.00	2 733 513
2 bracket: 5% - 10%		5%	52 467	34.00	1 783 868
3 bracket: 10% - 15%		5%	52 830	17.00	898 109
2.2. Brackets - 20%	<i>PAE1 consumption < 390</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * flat benefit (26)</i>	<i>20%</i>	<i>212 278</i>	<i>Per individual</i>	<i>5 461 597</i>
1 bracket: < 10%		10%	106 065	36.00	3 818 340
2 bracket: 10% - 15%		5%	52 830	21.00	1 109 429
3 bracket: 15% - 20%		5%	53 383	10.00	533 828

2. Utility expenditures

Budget constraint: 5 463 414

	Criteria	Program size - Beneficiaries as a share of total population	Number of beneficiaries	Rounded Average benefit - individual (BAM)	Total Budget
1. Flat					
1.1. All households			<i>Individuals</i>	<i>Flat - per individual</i>	
Program size 10%	<i>PAE1 electricity expenditure < 11.16</i>	10%	106 606	51.00	5 436 906
Program size 15%	<i>PAE1 electricity expenditure < 12.52</i>	15%	159 645	34.00	5 427 916
Program size 20%	<i>PAE1 electricity expenditure < 13.65</i>	20%	211 816	26.00	5 507 211
2. Graduated benefits					
2.1 Brackets - 15 %	<i>PAE1 electricity expenditure < 12.52</i>		<i>Individuals</i>	<i>Brackets - 15%</i>	
<i>Total</i>	<i>X * full benefit (34)</i>	<i>15%</i>	<i>159 645</i>	<i>Per individual</i>	<i>5 427 924</i>
1 bracket: < 5%	1.5	5%	53 039	51.00	2 704 994
2 bracket: 5% - 10%	1	5%	53 567	34.00	1 821 275
3 bracket: 10% - 15%	0.5	5%	53 039	17.00	901 656
2.1 Brackets - 20 %	<i>PAE1 electricity expenditure < 13.65</i>		<i>Individuals</i>	<i>Brackets - 20%</i>	
<i>Total</i>	<i>X * full benefit (26)</i>	<i>20%</i>	<i>211 816</i>	<i>Per individual</i>	<i>5 473 338</i>
1 bracket: < 10%	1.4	10%	106 606	36.00	3 837 816
2 bracket: 10% - 15%	0.8	5%	53 039	21.00	1 113 810
3 bracket: 15% - 20%	0.4	5%	52 171	10.00	521 712

Source: Author's calculations based on HBS 2011. Note: PAE refers to Per Adult Equivalent consumption using the OECD 1 scale.

Table A 5. Share of benefits in total post-transfer consumption, by quintiles, Scenario I, RS**1. Categorical benefits + PMT**

			Quintiles based on pre-transfer pae1 consumption				
	Program size		1	2	3	4	5
Total benefits (Cat + PMT flat 10%)	N.a.	benefit in % of post-transfer hh cons (average)	9.345	2.918	2.112	1.482	0.903
		standard error (%)	0.558	0.244	0.162	0.209	0.082
Total benefits (Cat + PMT flat 15%)	N.a.	benefit in % of post-transfer hh cons (average)	7.331	3.015	2.131	1.417	0.890
		standard error (%)	0.399	0.167	0.143	0.166	0.071
Total benefits (Cat + PMT flat 20%)	N.a.	benefit in % of post-transfer hh cons (average)	5.585	2.608	1.926	1.401	0.866
		standard error (%)	0.310	0.119	0.108	0.135	0.063
Total benefits (Cat + PMT graduated 15%)	N.a.	benefit in % of post-transfer hh cons (average)	8.048	2.617	2.011	1.399	0.873
		standard error (%)	0.518	0.176	0.133	0.173	0.070
Total benefits (Cat + PMT graduated 20%)	N.a.	benefit in % of post-transfer hh cons (average)	7.012	2.666	2.001	1.414	0.876
		standard error (%)	0.408	0.145	0.127	0.165	0.070

2. Categorical benefits + utility expenditures

			Quintiles based on pre-transfer pae1 consumption				
	Program size		1	2	3	4	5
Total benefits (Cat + electr. exp. flat 10%)	N.a.	benefit in % of post-transfer hh cons (average)	7.619	3.833	2.324	1.373	0.917
		standard error (%)	0.441	0.271	0.166	0.121	0.071
Total benefits (Cat + electr. exp. flat 15%)	N.a.	benefit in % of post-transfer hh cons (average)	6.516	3.344	2.133	1.527	0.937
		standard error (%)	0.330	0.174	0.120	0.158	0.062
Total benefits (Cat + electr. exp. flat 20%)	N.a.	benefit in % of post-transfer hh cons (average)	5.491	2.776	1.950	1.454	0.890
		standard error (%)	0.346	0.124	0.104	0.146	0.054
Total benefits (Cat + electr. exp. graduated 15%)	N.a.	benefit in % of post-transfer hh cons (average)	6.901	3.260	2.133	1.407	0.876
		standard error (%)	0.401	0.209	0.148	0.129	0.061
Total benefits (Cat + electr. exp. graduated 20%)	N.a.	benefit in % of post-transfer hh cons (average)	5.777	2.762	1.994	1.394	0.860
		standard error (%)	0.335	0.162	0.115	0.133	0.053

Source: Author's calculations based on HBS 2011. Note: "Post-transfer hh cons" refers to consumption of beneficiary households after allocation of transfers to be replaced in scenario I. Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario I.

Table A 6. Share of benefits in total post-transfer consumption, by quintiles, Scenario II, RS**1. PMT model**

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1	2	3	4	5
	10%	benefit in % of post-transfer hh cons (average)	7.841	4.153	3.339	2.822	1.958
		standard error (%)	0.276	0.125	0.113	0.124	0.145
	15%	benefit in % of post-transfer hh cons (average)	4.872	2.530	2.012	1.624	1.184
		standard error (%)	0.164	0.048	0.051	0.060	0.064
	20%	benefit in % of post-transfer hh cons (average)	3.707	1.910	1.517	1.223	0.891
		standard error (%)	0.128	0.036	0.039	0.045	0.048
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)	5.290	1.929	1.575	1.305	0.993
		standard error (%)	0.250	0.128	0.149	0.208	0.187
	20%	benefit in % of post-transfer hh cons (average)	3.809	1.432	1.149	0.830	0.591
		standard error (%)	0.169	0.075	0.095	0.115	0.162

2. Utility expenditures

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1	2	3	4	5
	10%	benefit in % of post-transfer hh cons (average)	7.652	4.188	3.269	2.484	1.697
		standard error (%)	0.330	0.089	0.081	0.047	0.078
	15%	benefit in % of post-transfer hh cons (average)	4.758	2.597	1.990	1.589	1.063
		standard error (%)	0.190	0.042	0.042	0.047	0.050
	20%	benefit in % of post-transfer hh cons (average)	3.586	1.977	1.538	1.163	0.796
		standard error (%)	0.131	0.027	0.029	0.033	0.035
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)	5.245	2.350	1.865	1.258	0.825
		standard error (%)	0.280	0.128	0.146	0.155	0.120
	20%	benefit in % of post-transfer hh cons (average)	3.726	1.777	1.467	0.950	0.638
		standard error (%)	0.193	0.083	0.090	0.100	0.074

Source: Author's calculations based on HBS 2011. Note: "Post-transfer hh cons" refers to consumption of beneficiary households after allocation of transfers to be replaced in scenario II. Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario II.

Table A 7. Share of benefits in total post-transfer consumption, by quintiles, Scenario III, RS**1. PMT model**

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1	2	3	4	5
	10%	benefit in % of post-transfer hh cons (average)	25.099	14.971	11.837	10.222	7.442
		standard error (%)	0.666	0.379	0.348	0.414	0.384
	15%	benefit in % of post-transfer hh cons (average)	17.946	10.094	8.011	6.550	4.927
		standard error (%)	0.488	0.173	0.179	0.228	0.218
	20%	benefit in % of post-transfer hh cons (average)	14.404	7.831	6.227	4.909	3.437
		standard error (%)	0.563	0.106	0.127	0.120	0.258
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)	18.844	7.832	6.325	5.266	4.158
		standard error (%)	0.724	0.494	0.522	0.796	0.769
	20%	benefit in % of post-transfer hh cons (average)	15.388	6.086	5.093	3.613	2.658
		standard error (%)	0.692	0.300	0.369	0.464	0.688

2. Utility expenditures

			Quintiles based on pre-transfer pae1 consumption				
1. Flat benefit to all individuals	Program size		1	2	3	4	5
	10%	benefit in % of post-transfer hh cons (average)	24.465	15.026	11.795	8.793	6.353
		standard error (%)	0.773	0.291	0.277	0.301	0.369
	15%	benefit in % of post-transfer hh cons (average)	17.469	10.337	8.036	6.391	4.376
		standard error (%)	0.551	0.157	0.165	0.197	0.219
	20%	benefit in % of post-transfer hh cons (average)	13.880	8.119	6.394	4.860	3.360
		standard error (%)	0.426	0.107	0.119	0.134	0.155
2. Benefits by brackets to all individuals	15%	benefit in % of post-transfer hh cons (average)	18.592	9.489	7.588	5.147	3.130
		standard error (%)	0.824	0.501	0.522	0.546	0.432
	20%	benefit in % of post-transfer hh cons (average)	14.402	7.575	6.377	4.134	2.654
		standard error (%)	0.636	0.344	0.357	0.370	0.305

Source: Author's calculations based on HBS 2011. Note: "Post-transfer hh cons" refers to consumption of beneficiary households after allocation of transfers to be replaced in scenario III. Consumption quintiles are based on monthly per adult equivalent consumption (OECD 1 scale) before allocation of transfers that are to be replaced in scenario III.

Appendix II

Table: List of all variables initially included for the estimation of the newly calibrated PMT models, total population as well as urban/rural, FBiH and RS

		FBiH			RS		
		Total	Urban	Rural	Total	Urban	Rural
		pop.			pop.		
Type							
Household characteristics							
Age of household head	Dummy	•	•	•	•	•	•
Household head is male	Dummy	•	•	•	•	•	•
Household head is a permanent resident of Bosnia and Herzegovina	Dummy	•	•	•	•	•	•
Household head is living together in informal marriage	Dummy	•	•	•	•	•	•
Household head is widow(er)	Dummy	•	•	•	•	•	•
Household head completed secondary education	Dummy	•	•	•	•	•	•
Household head has a higher degree of education	Dummy	•	•	•	•	•	•
Household head is employed under a permanent contract	Dummy	•	•	•	•	•	•
Household head is employed under a temporary or other type of contract ¹	Dummy	•	•	•	•	•	•
Household head is unemployed	Dummy	•	•	•	•	•	•
Household head is a pensioner (age-related or premature)	Dummy	•	•	•	•	•	•
Household head has an official decision on disability from a commission/institute	Dummy	•		•	•	•	
Logarithm of household size		•	•	•	•	•	•
Number of children below the age of 6				•		•	•
Number of children in the age of 6-13				•		•	•
Number of children below the age of 14		•			•	•	
Number of children in the age of 14-17		•		•	•	•	
Number of children below the age of 18			•			•	•
Number of elderly 65+		•	•	•	•	•	•
Number of pensioners (age-related or premature)		•	•	•	•	•	•
Number of employed household members (full or part time)		•	•	•	•	•	•
Dependency ratio: household members per employed		•	•	•	•	•	•
Housing characteristics							
Dwelling is located in an urban area	Dummy	•			•		
Dwelling is an individual house or part of house	Dummy	•	•	•	•		•
Dwelling is part of a multifamily home located in a building with less than 10 dwellings	Dummy	•	•		•	•	•
Dwelling is located in a multifamily home located in a building with more than 10 dwellings	Dummy	•	•			•	•
Age of the dwelling		•	•	•	•	•	•
Number of persons per room		•	•	•	•	•	•
Dwelling has separate kitchen	Dummy	•	•	•	•	•	•
Dwelling's main source of water is piped inside the dwelling	Dummy			•		•	•
Dwelling mainly uses water from an individual source (well, standing pipe,...)	Dummy			•		•	•

Dwelling has a sewage system	Dummy		•			•	•
Dwelling has indoor bathroom with flushing toilet for joint use	Dummy	•				•	•
Dwelling has indoor bathroom with flushing toilet for sole use	Dummy	•		•		•	•
Dwelling has indoor flushing toilet for sole use	Dummy	•	•	•	•	•	•
Dwelling has a telephone line	Dummy	•	•	•	•		•
Dwelling has a garage	Dummy	•	•	•	•	•	•
Dwelling has a cellar, shed, boiler room, etc.	Dummy	•	•	•	•	•	•
Dwelling has an attic	Dummy	•	•	•	•	•	•
Dwelling has a balcony	Dummy	•	•	•	•	•	•
Dwelling has a garden	Dummy	•	•	•	•	•	•
Dwelling has heating	Dummy	•	•	•	•		•
Dwelling is heated by a single equipment apparatus	Dummy					•	
Dwelling is heated by a heating plant	Dummy					•	
Dwelling mainly uses coal as a fuel for heating	Dummy			•		•	•
Dwelling has hot water (faucet)	Dummy	•		•	•		
Dwelling has a gas-fired boiler	Dummy	•	•			•	•
Dwelling's legal status: household is (joint) owner (also if credit not fully paid)	Dummy	•	•	•	•	•	•
Dwelling's legal status: rented or sublet	Dummy	•	•		•	•	•
Household uses another apartment, house, country house in addition to main dwelling	Dummy	•	•	•	•	•	•
<i>Ownership of durables</i>							
Household owns electric/gas cooker	Dummy	•		•	•		
Household owns firewood or coal stove	Dummy	•	•	•	•	•	•
Household owns dishwasher	Dummy	•	•	•	•	•	•
Household owns clothes washing machine	Dummy	•	•	•	•	•	•
Household owns cleaning equipment (vacuum cleaner, carpet washing machine)	Dummy	•		•	•	•	
Household owns furnace/stove, heater, boiler, hood	Dummy	•	•	•	•		•
Household owns air conditioner	Dummy	•	•	•	•	•	•
Household owns a sewing or knitting machine	Dummy	•	•	•	•	•	•
Household owns car, bought within last 12 months	Dummy	•	•	•	•	•	•
Household owns car, not bought within last 12 months	Dummy	•	•	•	•	•	•
Household owns a bicycle	Dummy	•	•	•	•	•	•
Household owns a motorbike, scooter, moped	Dummy	•		•	•	•	
Household owns a phone (cf. module 6)	Dummy	•	•	•	•	•	•
Household owns a mobile phone	Dummy	•	•	•	•	•	•
Household owns a fax	Dummy	•	•			•	•
Household owns a satellite dish	Dummy	•	•	•	•	•	•
Household owns a DVD player or video recorder	Dummy	•	•	•	•	•	•
Household owns a HIFI system (CD and MP3 players, etc.)	Dummy	•	•	•	•	•	•
Household has internet connection	Dummy	•	•	•	•	•	•
Household has cable TV connection	Dummy	•	•	•	•	•	•
Household has a phone connection	Dummy	•	•	•	•	•	•

Household has a connection packet	Dummy	•	•	•	•	•	•
<i>Affordability of selected expenses</i>							
Log of utility expenses ²	Dummy	•	•	•	•	•	•
<i>Income source (dummy variable)</i>							
At least one household member received a pension during last month ³	Dummy	•	•	•	•	•	•
At least one household member received a veteran's benefit during last month ⁴	Dummy	•	•	•			•

Notes:

- Included in initial set of variables for stepwise estimation of the PMT models.

¹ Seasonal, negotiated, etc.

² Electricity, gas, central heating, water/sewage, waste.

³ Pension incomes include old-age pension, family survivor pension, work disability pension, pension from abroad, and veterans' pension.

⁴ Veteran's benefits include personal disability benefits (military PWDs), long-term care and support benefits, survivor's dependent benefits, veteran's allowances (FBiH and RS) and demobilized soldier's benefits (FBiH).