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**The impact of the Minimum Income Scheme on Poverty
in the Basque Country**

Lucía Gorjón García
FEDEA and University of the Basque Country

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The impact of the Minimum Income Scheme on Poverty in the Basque Country

Lucía Gorjón García*

FEDEA and University of the Basque Country

Abstract

This paper assesses the impact of a Minimum Income Scheme (MIS), which operates in one of the 17 Spanish Regions – the Basque Country. In particular, an ex-post evaluation of the impact upon effectiveness and efficiency in fighting poverty is performed. Results show that MIS has had a strong impact in reducing all dimensions of poverty. However, 13% of the benefit transferred does not effectively contribute to poverty reduction. The paper presents an alternative, more egalitarian design of the Minimum Income Scheme, which, in line with an international standard of poverty, seeks to maximize its coverage and its impact in reducing poverty.

JEL Classification: I32, I38, D61

Key words: minimum income schemes, poverty, inequality, efficiency and effectiveness

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1. Introduction

The Great Recession has had severe consequences in terms of poverty, as it has placed many citizens at risk of social exclusion¹. As a result, Minimum Income Schemes are currently at the heart of public debate. Most European Union Member States currently provide some form of Minimum Income Scheme so as to ensure a minimum standard of living for households when they lack other sources of financial support. These schemes have been reinforced in recent times, but they first emerged back in 1992, when a European Council recommendation assessed the need to develop last resort schemes, which recognized the basic right of every individual to be guaranteed a decent minimum standard of living. These programs were part of comprehensive, consistent plans to combat social exclusion². Since then, implementation of Minimum Income Schemes (MIS) across European Countries has varied in terms of coverage and target population. The most widely used are the so-called "simple and comprehensive schemes", which basically cover every person/household in need of support, without confining their effects to a particular group of people (de la Rica and Gorjón, 2017).

This paper assesses the impact of a simple, comprehensive scheme that operates in the Basque Country, a region of northern Spain³, called Renta de Garantía de Ingresos. This region pioneered the introduction of MIS in Spain in 1989. The first question to be assessed is whether the MIS achieves its goal of ensuring a decent minimum standard of living for Basque citizens. The second question addressed in the paper is to address the intensity to which MIS is effective and efficient in its goal of reducing poverty⁴. MIS costs around 450 million Euros per annum, 4.5% of total public expenditure, and equivalent to

¹ The terms poverty and social exclusion are frequently used as if they were synonymous, but they describe different concepts. The concept of poverty is generally linked to the lack of the resources (income) needed to meet the minimum needs in a given society. The concept of social exclusion refers to a lack of or insufficient level of social integration (Rodrigues, 2001).

² For more details, see Council Recommendation 92/441/EEC of 24 June 1992: <http://publications.europa.eu/en/publication-detail/-/publication/9953c2cf-a4f8-4d31-aeed-6bf88a5407f3/language-en>

³ The Basque Country is a small region in the north of Spain with a population of approximately 2 million (5% of the Spanish population). The active labor force is over 1 million and the employment rate is 50%. It is one of the richest regions in Spain, with the second highest GDP per capita and the third lowest unemployment rate (12.8%). The Basque Human Development Index is 0.924, the highest in the country, and at the same level as the Netherlands.

⁴ According to de la Rica and Gorjón (2017), the MIS does not cause any undesirable "delay in entering the labor market" effect, so the presence of the policy does not cause poverty to become chronic.

0.69% of the region's GDP. Undoubtedly, from an economic point of view, it is pertinent to assess the degree of effectiveness and efficiency of such a costly public policy.

The data for this analysis is the 2016 Survey of Poverty and Social Inequalities (referred to here by its Spanish acronym EPDS), which is the latest available wave at this time. According to this dataset, in 2016 the Basque population numbered 2.14 million, of whom 5.8% were MIS beneficiaries. 59,976 households received this aid and the benefit covered 124,493 people. Total expenditure on MIS in 2016, as reported by the EPDS, was 428.08 million Euros. This dataset includes variables for disaggregated monthly income, including the amount of MIS transferred to households. This means that a simulation of the implementation of MIS can be carried out. By comparing income distribution before and after the application of MIS, it is possible to measure the impact of the aid on poverty reduction.

Although poverty is understood as difficulty in accessing those goods and services that ensure the ability to live with dignity and lead a satisfactory social and personal life (Villar, 2017), there is no single, scientific, objective poverty line, i.e. no single threshold that determines who is poor and who is not. In this paper I work with three different poverty lines. The first is the poverty threshold used by the Basque Government in legislation to provide MIS. Eight types of household are defined and a different poverty threshold is specified for each one. The Minimum Income Scheme supplements household income for those households which all short of the particular threshold for their type.

Secondly, the paper also considers two relative poverty lines commonly found in the literature: 40 and 60 percent of the median income in the Basque Country⁵.

But in addition to different thresholds, poverty can also be defined in terms of different dimensions such as incidence, intensity, and inequality. For each of these dimensions, different indices are drawn up, and this paper computes each one to learn more about the impact of MIS on different dimensions of poverty.

⁵ For more details of different thresholds see European Commission, Research findings – Social Situation Monitor – Risk of poverty on basis of different thresholds <http://ec.europa.eu/social/main.jsp?catId=1050&intPagelId=1894&langId=en>

The results of the first part of the analysis indicate that MIS has a substantial impact in reducing poverty for the measures displayed. However, poverty is not completely eradicated, firstly because some poor people do not meet the requirements to be MIS beneficiaries; and secondly because sometimes the payments received are insufficient, particularly for some types of household, to bring them out of poverty given the standard poverty definitions commonly used in the literature.

The second part of the analysis uses the conceptual framework and empirical model developed by Beckerman (1979), where concepts of effectiveness and efficiency are defined. Results show that in terms of effectiveness (i.e. the ability to eradicate poverty) there is room for improvement. For the Basque definition of poverty, it is 85% eradicated. Furthermore, in terms of efficiency (i.e. avoiding wastage of resources) 87% of the benefit transferred effectively contributes to poverty reduction. In addition, 9,2% of total transfers were received by non pre-poor people. These results suggest that in general terms, the policy works in the expected direction, however, there is still possibility for improving in the distribution of MIS to recipients. A similar study has been conducted for the Guaranteed Minimum Income Program in Portugal (Rodrigues, 2001). The author analyzes the effectiveness and efficiency of this aid, approved in 1996, in terms of poverty reduction, applying the Beckerman diagram. Furthermore, Matsaganis et al. (2007) develop a microsimulation of family transfers in the southern Europe countries focus on child poverty, using the same conceptual framework.

In light of these results, the last section presents some policy recommendations. The poverty line established in the legislation of the Basque Country differs from those commonly found in the literature. The different criteria used to define these lines is key to understanding the weakness of the policy. Therefore it is suggested that attempts should be made to achieve full effectiveness and efficiency, and present a new distribution of expenditure on MIS which seeks to maximize its coverage and its impact in reducing poverty.

The rest of the paper is organized as follows: Section 2 reviews institutional aspects of MIS implemented in the Basque Country. Section 3 gives describes the data. Section 4 defines poverty and its measures and presents the impact of the policy on reducing poverty. Section 5 analyzes the effectiveness and

efficiency of MIS. Section 6 proposes some improvements to the policy. Finally, Section 7 summarizes and concludes.

2. The Minimum Income Scheme in the Basque Country

The Basque Minimum Income Scheme was introduced in 1989, with the so-called Integral Plan to Combat Poverty. Since then it has undergone several modifications. In 1998 it became a law. The quantity of benefits and the requisites for being a beneficiary have also been modified several times. The latest version, on which this description is based, was implemented in 2011 (Act 4/2011)⁶.

Requirements: The first important aspect to note is that the Basque Minimum Income Scheme is household-based, i.e. the aid is transferred to family units rather than to individuals⁷. To receive the aid, applicants must comply with some eligibility requisites. First, they must show that their household income is insufficient to meet basic needs, which means inability to access the goods and services necessary for minimum welfare in society according to the Basque Government. In particular, it is set at 88% of the Minimum Wage (MW) for single-member households and varies up to 125% of the MW for households with three or more members. In the case of households with at least one pensioner the percentages are increased to 100% and 135% respectively. Single-parent households receive an additional subsidy of €45. The second eligibility condition concerns residency in the Basque Country: In principle, the MIS recipient in the household must be registered on the census and actually have resided in the Basque Country for the last three years without interruption. If they can prove five years of paid work experience in the Basque Country, the residence requisite is reduced to one year instead of three. If none of the above requirements is met, recipients must have been registered for five continuous years out of the immediately preceding ten years. Moreover, both holders and other beneficiaries cohabiting in the same family unit who are able to work must commit to being available to do so and to actively searching for employment.

⁶ The complete order can be found here:
<https://www.boe.es/buscar/doc.php?id=BOE-A-2011-15732>

⁷ Family units include all persons who live in the same household and who are united by family or permanent relationship. Several family units can cohabit in the same home. The rest of the analysis refers to family units (also called families) and never to the physical household as a whole.

The Minimum Income Scheme is also understood as a last resort scheme, and as such applicants must already have requested all other income aids to which they are entitled. In principle, the scheme is compatible with other income aids or wages earned by a family member as long as they do not exceed the threshold. In addition, applicants must not own any property other than their usual residence.

Coverage: MIS is transferred to family units on a monthly basis. Until 2012, the maximum amount granted corresponds to the percentage of the MW explained above. Due to a budgetary adjustment, at the end of 2011⁸, this amount is redefined as 93% of the previous one for each type of household. However, the income requirement to be a MIS recipient is maintained. In line with these guidelines, the legislation distinguishes between eight types of housing unit, as shown in Table 1 along with the amount of MIS for each one in 2016. These amounts establish the first poverty line used in this paper.

Table 1. Poverty line by type of household in 2016.

| Type of household | | € |
|-------------------|--------------------------------------|--------|
| 1 | 1 adult | 626.58 |
| 2 | 2 adults | 803.31 |
| 3 | 3 or more people, at least 2 adults | 888.62 |
| 4 | Single-parent (1 child) | 848.81 |
| 5 | Single-parent (2 or more children) | 934.12 |
| 6 | 1 retired people | 710.89 |
| 7 | 2 adult, at least 1 retired | 888.62 |
| 8 | 3 or more people, at least 1 retired | 959.7 |

The amount of MIS granted to each family unit will be the difference between the income of the family unit and the thresholds of Table 1⁹, not considering as income for this computation transfers from relatives or friends, private institutions assistance, “Social Emergency Aids” (SEA) and other social aids, such as, scholarships of study, aids for family and work conciliation, aids for

⁸ Law 6/2011 of December 23rd approves the General Budgets of the Basque Country for the year 2012.

⁹ For those family units with incomes between the limit before the budgetary adjustment and current one, the maximum amount granted is defined as 93% of the shortfall up to the previous limit, in addition to the other rights that MIS beneficiaries have.

minors or benefits for birth or adoption. In particular, the Social Emergency Aids¹⁰ are non-periodic benefits for those families with insufficient resources to meet specific expenses. Those, like the rest of the aids and scholarships mentioned, are not directed exclusively to MIS recipients.

In order to encourage recipients to find work, if there are wage incomes in the household the legislation implements the so-called “Stimulus to employment”. The latest version, implemented in 2001 (Order of 14 February 2001)¹¹, establishes that a certain percentage of wages from self-employment or other jobs of the applicant or other members of the family unit will be excluded. The percentage of income from employment excluded is determined by the following formula:

$$\text{Percentage to be excluded} = \frac{\left[(88\% \text{MW} * \text{eq. factor} - \text{poverty line}) + 0.1 * (\text{total wages in the household} - \text{poverty line}) \right]}{\text{total wages in the household}} \quad [1]$$

The equivalence factor is 1.5 for single-member households and 1.8 for two-member households, with a further 0.1 being added for each additional member from 2 onwards, regardless of the type of household. The poverty line is as defined in Table 1 for each type of household. 88% of the Minimum Wage was €626.58 in 2016. Therefore, the stimuli to employment are the following:

$$\text{Stimuli to employment} = \text{percentage to be excluded} * \text{total wages in the household} \quad [1b]$$

The MIS has a supplement called “Supplementary Housing Benefit” (SHB), which is a periodic financial benefit intended to cover the cost of renting a habitual residence for those households which are not owner-occupiers. It covers the renting cost up to a maximum of €250 per month. This amount will be granted in addition to the amount of MIS that corresponds to each family.

All these payments explained are important in the calculations of the efficiency of MIS in Section 5 below, as the amount of stimuli to employment, the SHB or the social aids must not be seen as a waste of resources but as an incentive to employment or complementary aids.

¹⁰ Detailed information of Social Emergency Aids can be found here: http://www.euskadi.eus/ayuda_subvencion/ayudas-de-emergencia-social-aes/web01-s2enple/es/

¹¹ The complete order can be found here: http://www.lanbide.euskadi.eus/contenidos/informacion/rji_normativa/es_def/adjuntos/Orden%2014-02-2001.pdf

Finally, MIS recipients enjoy a series of bonuses, which may be regional or local, such as transport subsidies, academic fees, sanitation fees, tax benefits, etc.

Summarizing, the final MIS transferred to their beneficiaries is:

MIS payment = poverty line + stimuli to employment + SHB + social aids - disposal income [2]

3. Data Description

To carry out this analysis the Survey of Poverty and Social Inequalities (EPDS its Spanish acronym) for the Basque Country its used. The latest available wave is for 2016. This sample includes 10,316 individuals belonging to 4,327 households representative of the total population of the Basque Country. Weightings available to obtain population figures are applied, which seem to coincide largely with official statistics.

The EPDS includes information on the households surveyed and their members. It contains personal information such as gender, age, census status, number of years registered (if registered in the Basque Country), nationality, education level and place of origin. It also contains labor market information: labor status, type of contract if employed, etc. The last part of the survey deals with the economic situation of households. There is information available on all types of income (and the members that receive them), spending, and savings in each household. It includes on the one hand wages, benefits, retirement pension, loans, revenues, transfers of relatives and private institutions, heritage assets, social aids and, especially, the amount of Minimum Income Scheme received, joined with the amount of SHB. On the other hand, there is information on expenditures, such as, rent payment, mortgage, monthly bills, lending, etc. Thus, all income information is presented on a monthly basis. Finally, the EPDS includes a weighting factor that enables the sample to be weighted to give population figures, so all calculations are weighted by that factor. The basic figures obtained are very similar to the official ones, which make its use very robust.

With all this income information, the EPDS computes a monthly variable called Total Household Income, which is the first reference variable. This income variable corresponds to the total income received by the different members and is equal to gross income including benefits minus taxes and minus

insurance contributions, i.e. Total Household Income includes the amount of MIS received¹². I refer to this variable as (total) disposable income. The other variable of interest is the amount of MIS received by each household, which already includes the SHB. Through the information of the rent payment, the corresponding amount of SHB that the family should be receiving can be calculated.

Income information in the EPDS is reported by individuals. Moreover, one household member may answer for another if he/she is not present during the survey. The official registration of family income according to which the MIS is given is not the same. It is very common for this kind of reported data and the official data not to coincide exactly. On the one hand, empirical evidence shows that in general there is a social tendency to under-report the amount of income (Moore and Welniak, 2000)¹³. Furthermore, the information is less precise when one individual in the household responds in regard to the income of others. On the other hand, total disposable income in the dataset includes transfers from family and friends to the members of the household that the official statistics do not include. Nor are payments for informal work included in the official data, though they may appear in the reported data. Finally, total disposable income in the EPDS includes a monthly average amount apportioned for running one's own company, for treasury refunds or for labor-related indemnities.

It is also important to highlight that the database does not include all the information needed to determine whether a household complies with the requirements to be an MIS beneficiary. For instance, ownership of second homes and the number of years worked in the Basque Country are not reported. Therefore, the analysis assumes that every household that receives MIS complies with those unobserved requirements, and that every household that does not receive MIS, in spite of falling short of the income threshold, fails to comply with one or more of the remaining requirements or has not applied for it. To draw up a more in-depth analysis of the impact of MIS it would be important to have full information related to the requirements.

¹² Detailed information on the calculation of Total Household Income can be found in the Annex.

¹³ However, the results are very similar when Total Household Savings plus Total Household Expenditures are used instead Total Household Income, as a way of reducing any underreported income information.

In the empirical exercise, it is simulated the scenario that reproduces household income in the absence of MIS. This enables to compare this counterfactual situation with the real one and hence measure the impact of MIS on reducing poverty. The pre-benefit income situation is defined as the difference between disposable income and the amount of MIS and SHB received. Total disposable income in the sample is therefore the post-benefit income, as it already includes MIS. This gives two scenarios: pre and post-MIS¹⁴. Note that when the direct impact on poverty is measured the indirect effects of benefits are ignored. No account is taken of the financing of social security benefits -i.e. the extent to which the redistributed effect of benefits may be offset by taxes and social security contributions, or the indirect effect of either these taxes or benefits on the size or the economic circumstances of the population that receive the benefits (Beckerman, 1979). Furthermore, it is also assumed that there is no change in the behavior of individuals in response to the introduction of the Minimum Income Scheme (Rodrigues, 2001). In other words, the rate of exit into employment of individuals would be the same if they were not MIS recipients, which means that poverty does not become chronic because of MIS given that the Minimum Income Scheme itself does not delay the probability of finding a job. This is one of the main conclusions reached in De la Rica and Gorjón (2017).

Table 2 shows the distribution of households in the Basque Country by type according to MIS provision. It also shows the incidence of individual and household MIS beneficiaries by type (%MIS). In all 124,481 MIS beneficiaries in 59,936 households are found.

Table 2. Distribution of individuals, households, and incidence of MIS beneficiaries by type.

| Type | Individuals | | | Households | | |
|--|-------------|--------|-------|------------|--------|-------|
| | Total | % | %MIS | Total | % | %MIS |
| 1 1 adult | 146,994 | 6.86 | 15.07 | 146,994 | 16.78 | 15.07 |
| 2 2 adults | 211,256 | 9.86 | 6.10 | 105,628 | 12.05 | 6.10 |
| 3 3 or more people, at least 2 adults | 1,039,015 | 48.49 | 5.72 | 279,535 | 31.90 | 5.47 |
| 4 Single-parent (1 child) | 17,947 | 0.84 | 34.63 | 8,974 | 1.02 | 34.63 |
| 5 Single-parent (2 or more children) | 14,375 | 0.67 | 41.73 | 4,573 | 0.52 | 41.83 |
| 6 1 retired people | 103,809 | 4.85 | 6.66 | 103,809 | 11.85 | 6.66 |
| 7 2 adults, at least 1 retired | 269,998 | 12.60 | 2.07 | 134,999 | 15.41 | 2.07 |
| 8 3 or more people, at least 1 retired | 339,143 | 15.83 | 1.56 | 91,741 | 10.47 | 1.48 |
| Total | 2,142,537 | 100.00 | 5.81 | 876,252 | 100.00 | 6.84 |

¹⁴ Social aids are included in both, pre and post benefit income, as not only MIS beneficiaries can receive them.

According to Table 2, the most frequent type of household in the Basque Country comprises three or more people, including at least two adults (type 3). Almost half of all individuals live in households of this type, though less than one third of households are of this type. Focusing on the other dimension of the table, i.e. the incidence of MIS recipients, 5.8% of the more than two million inhabitants of the Basque Country are MIS beneficiaries. However, the percentage of MIS recipients varies in line with the type of household where they reside. The type of household with the highest incidence of MIS recipients is single-parent with two or more children (type 5) (42% receive MIS). By contrast only 1.6% of households with three or more people, at least one of them retired (type 8) are MIS recipients.

4. Assessing the Impact of MIS on Poverty Reduction

In this section, the extent to which MIS fulfills its main objective is assessed, which is to prevent people from living in poverty. To that end certain basic concepts such as poverty and how it is measured have to be defined.

4.1. Basic Concepts

4.1.1. *Definition of Poverty*

There has been much discussion in the literature on how to define the poverty line and there is no objective, scientific, “correct” definition of poverty (Beckerman, 1979). It is generally accepted that poor people are those who live below the poverty threshold, i.e. the income level that permits a certain minimum standard of living, given the conventional necessities of society at that point in time and other social objectives (Beckerman, 1979). This is known as the poverty line¹⁵. However, there are different definitions of the term.

The legislation in the Basque Country establishes a limited payment for each type of family, i.e. eight thresholds, which is the maximum quantity of MIS assignable, as presented in Table 1. In this paper, the first definition of “poverty line” is marked by that maximum income for each family type.

However, in the relevant literature the term “poverty” is frequently defined on the basis of a percentage of the median income. The most commonly used definition at present considers the “poor” in a given society to be those whose

¹⁵ This paper uses the terms poverty “line”, “threshold” and “limit” as synonyms.

income is less than 60% of the median income of that society (Villar, 2017). Similarly, 40% of the median is defined as “extreme poverty”.

The needs of a household grow with each additional member, but due to economies of scale in consumption that growth is not proportional. With the help of equivalence scales, the literature on poverty assigns a factor to each household which weights its needs depending on its size (OECD, 2013). In this paper I use the OECD–modified equivalence scale, which is commonly used in the literature. It assigns a value of 1 to the first household member, 0.5 to each additional adult and 0.3 to each child under 14. I thus calculate what I call the equivalent (or individualized) income, dividing total disposable income in the household by its equivalence scale¹⁶. The figures taken as references are therefore the per capita income within the consumption unit (household adjusted according to size and composition). Once the equivalent income is calculated it is assigned to each member of the household. This assigns every member of the household the same equivalent income, so the whole household is either poor or not¹⁷.

Once the equivalent population income is known, the income distribution of the society and, therefore, the median can be calculated. For the Basque Country the 2016 figure is €1428, which means that 60% is €857 and 40% is €571. Note that the median income is the same before and after the MIS transfer because all beneficiaries are placed below it, so the poverty line remains constant before and after the MIS scenario.

The analysis is now conducted for the three poverty limits defined: the one in the legislation of the Basque Country (BC), the standard definition in the literature of the extreme poverty line as 40% of the median (40%Me) and the standard poverty line in the literature of 60% of the median (60%Me). It is important to highlight that when I refer to the poverty lines in the literature, individualized disposable income is used. However, when I consider the Basque Country poverty line I apply the total disposable income of each household (as the legislation does). Hence, for the 40% and 60% poverty lines an individual is poor if his/her equivalent disposable income is less than €571 or €857,

¹⁶ To a certain extent, equivalence scales are already taken into account in the Basque legislation when types of household and the corresponding amounts of MIS as defined, as presented in Table 1.

¹⁷ Housing costs are not included by attributing income, as they are taken into account in the legislation via Supplementary Housing Benefit.

respectively. With the BC line an individual is poor if the total disposable income of his/her household is below the legislated limit for that specific type of household. This means that in all three lines either all individuals in the family unit are poor or none of them is.

Comparing the Basque and Standard Poverty Lines

Before proceeding to the analysis, it is important to compare the BC poverty line with the standard lines in the literature. This will enable readers to understand the findings in subsequent sections better.

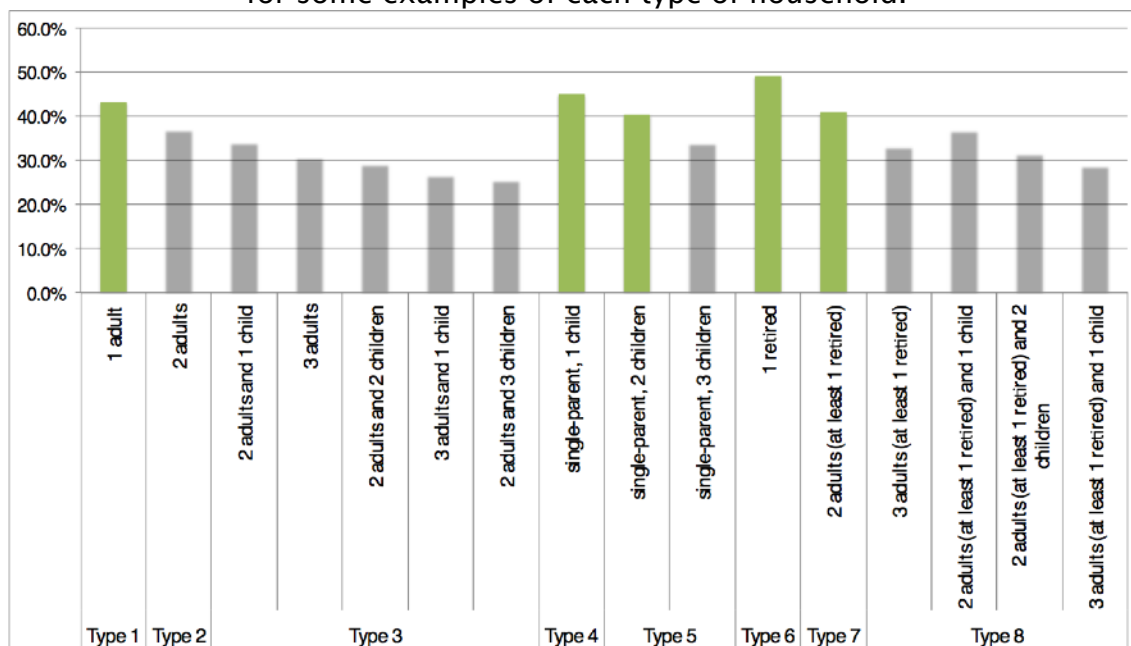
As explained above, there are eight different types of household, each with its own poverty threshold. To compare them with the standard lines the eight equivalent poverty lines must be calculated using the equivalence scale, i.e. the amount of income shown in Table 1 must be converted into the equivalent individualized income using the OECD modified scale. For example, for a household with two adults the threshold is set at €803.31. The equivalence scale for such a household is 1.5 (1 + 0.5 for the second adult). Therefore, the equivalent poverty line for this type of household is €535.34 (€803.31/1.5). This figure is 37.5% of the median (535.31/1428), i.e. slightly below the extreme poverty line.

The Basque Country and the OECD modified-scale use different criteria for weighting each member of the household. In the Basque Country being a single parent or a retired person is assumed to result in a higher cost of living, so the poverty limit is shifted upwards, but the OECD-modified scale does not consider these exceptional conditions as particular cases. On the other hand in the Basque Country the poverty line does not change for each additional member of a household up to three, but under the OECD criterion every additional member counts. For that reason, some types of household under the Basque definition can be made up of different numbers of members: For example, two adults with one child is Type 3 but two adults with two children or more is also Type 3. Moreover, the modified-scale varies in each situation.

Figure 1 shows the ratio between the individualized BC poverty line and the median income in 2016 (€1428) per type of household. Given that some households do not consist of a single composition, several common variations are presented. Furthermore, it is a comparison between the poverty thresholds that the Basque Government establishes and the poverty lines commonly

defined in the literature. Therefore, other aids that some family units can be receiving such as the Complementary Housing Benefit or social aids are excluded¹⁸.

Figure 1. Equivalent poverty line as a percentage of the median income (€1428) for some examples of each type of household.



Note: Those households over 40% of the median are shown in green.

The equivalent poverty line for most cases does not exceed 40% of the median. Five types exceed it: 1, 4, 6, 7 and 5 only if there are at most two children in the family. In addition, type 6 (one retired) stands at approximately 50% of the median. Moreover, the bigger the household is, the further it is from the 40% poverty line. This result was expected since the criteria used in Basque the legislation differs from that of the OECD scale. This figure suggests that the Basque Country poverty line seems to be set somewhat low, considering that never covers 60% of the median and hardly ever 40%¹⁹.

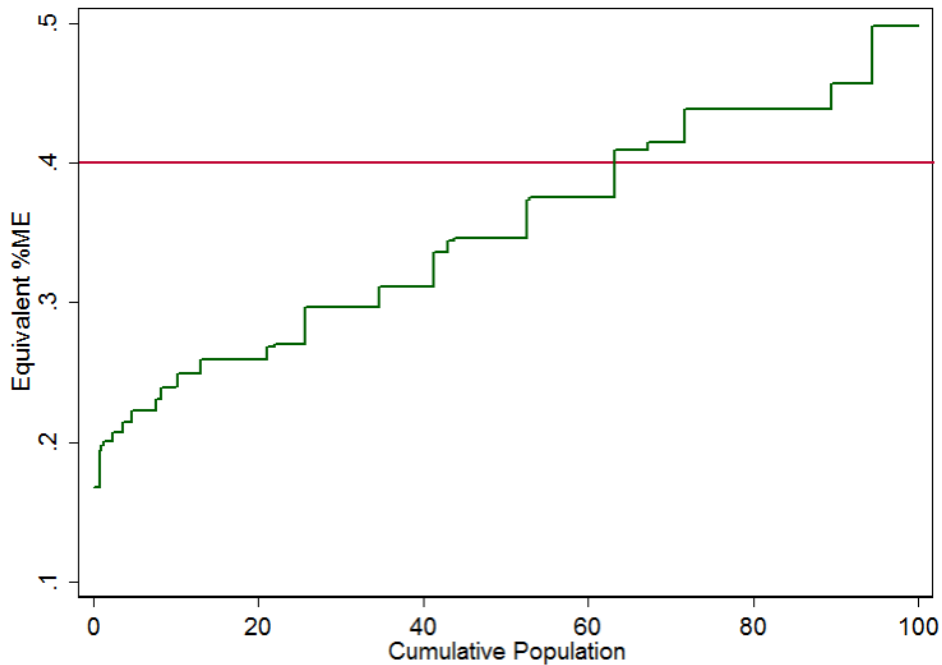
Following this methodology and in line with the number and characteristics of the families that live in the Basque Country, Figure 2 shows the equivalent poverty line as a percentage of median income for all MIS beneficiaries. The X-axis represents the percentage of the cumulative population, ranked from lowest to highest equivalent poverty line, i.e. individuals from large households

¹⁸ The Complementary Housing Benefit is excluded from this figure since the comparison with the median of the equivalent income would require including the imputed rent of those family units that do not pay rent, data that we lack.

¹⁹ In the absence of the cuts approved in 2011, the results do not vary in terms of family units that do not reach the threshold of extreme poverty.

are placed on the left while individuals from household type 6 are placed on the right. As shown in the figure above, this is the type that shows the highest equivalent poverty line, and therefore the highest ratio with respect to the median income.

Figure 2. Equivalent poverty line as a percentage of the median income for MIS recipients in the Basque Country.



This figure shows that for 63% of MIS beneficiaries (78,647 individuals) the BC poverty line lies below the extreme poverty line (40%Me) shown in red. In addition, for approximately one third of MIS recipients the line set by the BC falls below 30% of the median income. As shown in Figure 1, there is not a single case in which 50% is exceeded. The people above the red line – the remaining 37% – are those that live in households shown by green bars in Figure 1. Summarizing, in most cases the threshold set by the Basque Country is low compared to the extreme poverty line defined in the literature²⁰. Having defined, compared and clarified the poverty lines, next subsection proceeds to explain how to measure them in a given society.

4.1.2. Measuring Poverty

The concept of poverty has different dimensions and can hence be measured in a number of ways. Each dimension of poverty is normally captured by a different index. In the empirical section below I compute each index before

²⁰ Note that the green line for those families receiving social aids would be higher. They are not including because this figure merely represents the reach of the MIS itself.

and after MIS in order to measure the impact of the policy on poverty reduction for each dimension.

There is an extensive literature on poverty indexes (see Chakravarty 2009, Villar 2017 for a discussion). Each index emphasizes some aspect of the poverty problem. It is customary to assume that poverty measurement involves a direct or indirect appraisal of the three different aspects, known as Sen's three I's of poverty (Sen 1976): Incidence, Intensity and Inequality. Here I approach the measuring of poverty by resorting to the FGT family of poverty indexes (see Foster, Greer and Thorbecke, 1984). This is one of the most widely used poverty indices due to its intuitive nature, its decomposability properties, and the possibility of modulating concern for poverty by adjusting poverty aversion by a single parameter. Once the poverty line is defined, I determine the set of poor agents, $i = 1, 2, \dots, q$. For each of those agents I calculate the relative distance from the poverty threshold, $(z - y_i)/z$. This value can be enhanced or reduced by simply using a power on this fraction. The larger the power, the larger the impact on poverty of each individual observation. The overall assessment of poverty derives from adding up all the individual measurements and dividing the resulting figure by the population size, n . That is,

$$FGT_{\alpha}(y, z) = \frac{1}{n} \sum_{i=1}^q \left(1 - \frac{y_i}{z}\right)^{\alpha} \quad [3]$$

The parameter α determines the impact on individual deviations of the poverty line, increasing them for $\alpha > 1$ and decreasing them otherwise. I denote the population size by n , the number of poor people by q , the income distribution vector by y , and the poverty threshold by z . This notation is maintained below.

This poverty index satisfies all standard requirements: scale independence, anonymity, focus, etc. (see Chakravarty 2009, ch. 2 for a detailed discussion).

Interestingly enough, some particular values of the parameter α yield simple, familiar formulas. The case of $\alpha = 0$ resolves into the well-known, elementary measure known as the head-count ratio. This is the conventional measure of

the **incidence** of poverty, and it reveals the proportion of poor people in society as a fraction of the total population. That is:

$$FGT_0(y, z) = \frac{1}{n} \sum_{i=1}^q (1) = \frac{q}{n} \quad [4]$$

Looking at the head-count ratio before and after the transfer of MIS it is possible to learn how far the percentage of poor people decreases thanks to the income scheme. The biggest advantage of this relative index is its simplicity. However, this index does not contain information on the situation of the poor, only on their weight relative to the total population.

The case of $\alpha = 1$ is also very interesting because it provides a combined measure of both the **incidence and intensity** of poverty. It is given by:

$$FGT_1(y, z) = \frac{1}{n} \sum_{i=1}^q \left(1 - \frac{y_i}{z}\right) \quad [5a]$$

This expression can be rewritten as:

$$FGT_1(y, z) = \frac{q}{n} \times \left[\frac{1}{q} \sum_{i=1}^q \left(1 - \frac{y_i}{z}\right) \right] = \frac{q}{n} \times \left[\frac{\sum_{i=1}^q (z - y_i)}{qz} \right] \quad [5b]$$

which says that FGT_1 can be expressed as the product two different terms: The incidence (head-count ratio) and the intensity of poverty, measured by the average relative distance from the poverty line, which informs about how poor the poor are on average. This is important because the mere fact that people are below the poverty line conveys no information about how far away from it they are. Note that the term $\sum_{i=1}^q (z - y_i)$, is the so-called poverty gap index

(PGI), which captures the distance (in Euros) between the income of the poor and the poverty line. It measures the amount in Euros required to eradicate poverty in the society under analysis. Dividing this amount by the product of the total poor population and the poverty line, the conventional relative

intensity measure is obtained. This measure reflects how far the average poor individual is from the poverty line, relative to its level (i.e. the gap as a percentage). By focusing on that index before and after MIS, it is obtained information on the intensity of poverty through the situation of the average poor individual in each scenario.

The case of $\alpha = 2$ is usually interpreted as a measure of the intensity of poverty. This index is proportional to the squared sum of the income shortfalls of the poor.

$$FGT_2(y, z) = \frac{1}{nz^2} \sum_{i=1}^q (z - y_i)^2 \quad [6]$$

Squaring the income shortfalls gives them progressively greater weighting, thus expressing a much higher concern for poverty (and, indirectly, making inequality worse among the poor). Deprivation depends on the distance between the actual income of the poor and the poverty limit: the further they are from the poverty threshold, the higher their weight in the index. Given an income distribution and a poverty line, this index will produce an assessment of poverty that is much higher than that derived from equation [5]. And, by the same token, it will prove much more sensitive to any transfer policy, thus making the outcome much better. This aspect is worth bearing in mind.

One of the most appealing properties of the FGT indexes is that they are additively decomposable according to population subgroups, using the following formula:

$$FGT_\alpha(y, z) = \sum_{j=1}^m \frac{n_j}{n} FGT_\alpha(y^{(j)}, z^{(j)}) \quad [7]$$

such that income vector y breaks down into subgroups of income vectors $y^{(1)}$, ..., $y^{(m)}$ and $z^{(j)}$ is the poverty line of the corresponding subgroup²¹. m is 8 in our analysis (the number of types of household). The population share weights $(\frac{n_j}{n})$ are those presented in Table 2.

²¹ Note that changes for each type of household when the BC poverty line is used but remains constant with the standard poverty thresholds.

The decomposability property is important when the population is made up of heterogeneous agents. Several poverty studies have demonstrated the usefulness of breaking down populations into subgroups. Given that MIS is based on household types, decomposing these indexes by household types is useful, as it enables the relative incidence of each type of household in total poverty to be determined by measuring poverty in any of the ways defined above. Thus, it reveals how the contribution of each type of household to total poverty changes with the application of MIS.

The next subsection assesses the extent to which MIS affects poverty in the Basque Country for the poverty thresholds and indexes presented.

4.2 Empirical Results – Impact of MIS on poverty reduction

The relative poverty indicators for the Sen's three I's are shown in Table 3. To measure the impact of the application of MIS, the indicators are presented before and after the transfer of MIS (joined with the SHB), thus enabling the two scenarios to be compared. Furthermore, a third column is added that computes the percentage of variation of each index due to MIS. This enables to compare the relative changes in all dimensions of poverty. The results are presented using the three different poverty lines defined above: 40% and 60% of the median income (€571 and €857, respectively) and the Basque Country line (BC). For this last case the indexes are computed by using both individual units and household units. Using individual units facilitates direct comparison with the standard poverty lines and household size is explicitly taken into account. But results are also displayed at household level as this is the unit specified in the legislation of the Basque Country and the approach of the policy aimed at eradicating poverty.

Table 3. Head-count ratio, Relative Average Distance, Poverty-Gap ratio and FGT₂ index before and after MIS transfer and relative fall in absolute value(%)²².

| | | Before | After | %change |
|--------------|-------------|--------------------------------|--------------------|---------|
| Poverty line | Units | Incidence | (Head-count ratio) | |
| 40%Me | Individuals | 7.83 | 4.88 | 37.70 |
| 60%Me | Individuals | 17.41 | 16.34 | 6.16 |
| BC | Individuals | 6.50 | 2.73 | 57.99 |
| BC | Households | 8.44 | 3.92 | 53.55 |
| | | Intensity (RAD) | | |
| 40%Me | Individuals | 49.01 | 24.93 | 49.13 |
| 60%Me | Individuals | 38.39 | 26.16 | 31.85 |
| BC | Individuals | 49.67 | 25.09 | 49.48 |
| BC | Households | 48.82 | 26.31 | 46.10 |
| | | Incidence and Intensity (PGR) | | |
| 40%Me | Individuals | 3.84 | 1.22 | 68.33 |
| 60%Me | Individuals | 6.68 | 4.27 | 36.01 |
| BC | Individuals | 3.08 | 0.65 | 78.89 |
| BC | Households | 3.85 | 0.97 | 74.81 |
| | | Inequality (FGT ₂) | | |
| 40%Me | Individuals | 2.73 | 0.58 | 78.65 |
| 60%Me | Individuals | 4.13 | 1.75 | 57.53 |
| BC | Individuals | 2.39 | 0.41 | 82.91 |
| BC | Households | 3.16 | 0.69 | 78.12 |

Incidence: Lines 1 to 4 present the result of applying formula [4] before and after MIS. According to the Basque Country poverty threshold, the incidence of poverty is reduced to less than 3% of individuals (and 4% of households). Hence, the aid reduces poverty substantially but does not fully eradicate it. This is partly because some poor households do not meet the requirements for receiving MIS and also because the amount received is not enough to take them out of poverty. In particular, it is observed that 18.5% of them are MIS recipients.

The next question is how far MIS reduces poverty if the 40% ME threshold is considered instead of instead of the BC threshold. The first line of Table 3 gives the answer: Using this threshold the percentage of pre-MIS poor

²² Note that the poverty threshold under the BC line differs for each type of household. As a result the average distance is calculated from the corresponding poverty line for each poor individual/household. The RAD divides the above amount by the weighted average poverty lines for those poor individuals/households. Similarly, the denominator of the PGR is a weighted sum of the minimum income required to avoid poverty for each type of household. PGR can also be calculated as the product of the head-count ratio and the RAD. For the BC poverty line the figures do not coincide, as there is no single threshold. Finally, the FGT index is also a weighted sum of each type of household.

individuals is 8% of the population, and MIS reduces it to 5%. 34.6% of them are MIS recipients²³.

An analysis of the impact of MIS on eradicating poverty using the 60%ME threshold reveals that it hardly reduces it at all, which is expected given the comparative analysis between lines discussed above.

Intensity: lines 5–8 in Table 3 seek to measure how poor the poor are by calculating the RAD. These figures represent how far the average poor individual is from his/her corresponding poverty line. It can be seen that MIS notably reduces the intensity of poverty for all three poverty definitions. The results for 40%Me and the BC are quite similar, while the result for the 60%Me differs. For the 40%Me and BC lines, before the application of MIS the average poor individual is approximately in the middle of the poverty limit. However, after MIS the average poor person is located one–fourth of the way to the line, which reflects a drop of 50% in the intensity of poverty after MIS²⁴.

Incidence and intensity: Lines 9–12 in Table 3 show the poverty gap ratio (PGR) before and after the transfer of MIS using formula [5], which is a combination of the two previous dimensions. As explained above, it represents the proportion of the total amount required to eradicate poverty that is still needed in terms of the minimum amount for eliminating poverty in the whole society.

It can be seen that MIS notably reduces the figure for all three lines. For the BC and 40%Me, the remaining amount required is around 1% of the minimum income for avoiding poverty. Before the transfer, the poverty gap ratio is 3%–4%. Therefore, MIS brings society closer to putting an end to poverty.

²³ By comparing the percentage of poor individuals after MIS under the 40%Me and BC line, I find that more than 2% of the Basque population (46,000 individuals) is not considered as poor under the Basque criterion but is considered so under the extreme poverty line.

²⁴ However, it must be taken into account that only poor people are included in this calculation so those who exit poverty as a result of the transfer are not counted in intensity calculations after MIS. For that reason, it is interesting to distinguish whether the RAD drops because MIS reduces the intensity of poverty but still leaves them poor or because it raises people out of poverty and non–recipients are less severely poor. In particular, around 2/3 of the 18.5% who remain poor as MIS recipients are less than €50 from the poverty line.

Focusing on the PGR as a combination of incidence and intensity, it can be seen that for the 40%Me line the fall in the PGR is predominantly driven by a fall in the intensity of poverty, whereas for the BC line the opposite is true.

Inequality: Finally, the last four lines in Table 3 show the FGT_2 index (formula [6]) as a poverty aversion indicator. This sensitive index shows that MIS is a very pro-poor policy because it results in substantial drops in all three thresholds. In other words, the poverty of the poorest is greatly reduced.

As a first conclusion, it is noteworthy that the greater the degree of poverty aversion (α) shown by the indicators is, the higher the percentage drop resulting from MIS. It can therefore be asserted that MIS works well in helping those who are far below the poverty line.

In light of these results, and using the information presented in Figures 1 and 2, it can be concluded that the standard poverty line in the literature (60%ME) is very far from the BC line. Hence, from now on the paper focuses only on the BC and 40%ME poverty thresholds. Moreover, it seems reasonable for MIS to seek to reduce extreme poverty.

In order to facilitate a deeper understanding of the impact of MIS on poverty, I take advantage of the properties of the indexes presented to decompose them into subgroups, specifically by types of household. This reveals in which type of household poverty is most severe.

Decomposition of poverty indexes by types of household

This section presents the FGT_0 head-count ratio ($\alpha = 0$) and the FGT_1 poverty-gap ratio ($\alpha = 1$) for each type of household and their contribution (in %) to total poverty before and after MIS for each index. This reveals where attention should be primarily focused for a more successful eradication of poverty. It also reveals how the contribution of each type of household to the total poverty changes with the application of MIS.

All results corresponding to the head-count and poverty-gap ratios are presented before and after the transfer of MIS, applying equation [7] for the BC

poverty line in Table 4, and for the 40%Me line in Table 5²⁵. Calculations at household level for the BC line are not displayed because the information is deemed to be of little interest, given that it is especially important in them to include household size. Nor are they comparable with the standard poverty lines in the literature. The units are therefore individuals in both tables.

At first sight, the weighted sum of the head-count and poverty-gap ratios coincides with the figure shown in Table 3, so the additively decomposable condition is satisfied. Moreover, the MIS notably reduces all three indexes for all types of household and poverty lines but the results are heterogeneous.

Table 4. Decomposition of Poverty Indexes by type of household and weighting using the BC Poverty line, before and after MIS.

| | FGI ₀ | | | | FGI ₁ | | | |
|--------------------------------------|---------------------|-------|------------|--------|------------------|-------|------------|--------|
| | Headcount ratio (%) | | Weight (%) | | PGR(%) | | Weight (%) | |
| | Before | After | Before | After | Before | After | Before | After |
| 1 adult | 20.96 | 8.59 | 22.0 | 21.6 | 12.67 | 3.57 | 26.3 | 33.8 |
| 2 adults | 7.70 | 3.66 | 11.6 | 13.2 | 3.46 | 1.18 | 10.3 | 16.1 |
| 3 or more people, at least 2 adults | 5.47 | 1.59 | 40.7 | 28.2 | 3.12 | 0.42 | 45.8 | 28.2 |
| Single-parent (1 child) | 45.02 | 17.67 | 5.8 | 5.4 | 25.21 | 3.67 | 6.4 | 4.2 |
| Single-parent (2 or more children) | 40.49 | 7.64 | 4.2 | 1.9 | 23.42 | 4.78 | 4.8 | 4.4 |
| 1 retired people | 7.87 | 5.66 | 5.8 | 10.0 | 2.20 | 0.79 | 3.2 | 5.3 |
| 2 adults, at least 1 retired | 4.40 | 3.88 | 8.5 | 17.9 | 0.79 | 0.44 | 3.0 | 7.7 |
| 3 or more people, at least 1 retired | 0.55 | 0.32 | 1.3 | 1.9 | 0.06 | 0.01 | 0.3 | 0.2 |
| Total | 6.50 | 2.73 | 100.00 | 100.00 | 3.08 | 0.65 | 100.00 | 100.00 |

Table 4 shows the impact of MIS on poverty, focusing on the BC poverty line. Incidence (head-count ratio) and intensity (poverty-gap ratio) are reduced mainly for single-parent and one-adult households. However, 17.7% of households comprising single-parents with one child are still poor even after the transfer. As mentioned above, most of those who remain poor after the MIS transfer are likely to be people who do not meet the requirements.

Contributions to total poverty are distributed over many types of household. In terms of contribution to incidence, the households that stand out most are those of type 3, and to a slightly lesser extent types 1 and 7. With respect to intensity, the stand-out households are types 1, 3 and 2.

²⁵ Relative Average Distance is not considered as it only includes poor people, mainly non-MIS recipients, in the calculation. Nor is the decomposition FGT₂ index presented for sampling reasons. The results might be not robust because certain households, specifically single-parent households, have few observations in the sample and a high incidence among MIS beneficiaries. Therefore, any small variation could affect the results drastically, especially if the households in question are far away from the poverty line, as the index varies exponentially.

Table 5. Decomposition of poverty Indexes by type of household and weighting using the 40%Me poverty line, before and after MIS.

| | FGT ₀ | | | | FGT ₁ | | | |
|--------------------------------------|---------------------|-------|------------|--------|------------------|-------|------------|--------|
| | Headcount ratio (%) | | Weight (%) | | PGR(%) | | Weight (%) | |
| | Before | After | Before | After | Before | After | Before | After |
| 1 adult | 19.02 | 6.54 | 16.7 | 9.2 | 12.19 | 3.18 | 21.8 | 17.9 |
| 2 adults | 8.38 | 4.37 | 10.5 | 8.8 | 3.73 | 1.35 | 9.6 | 10.9 |
| 3 or more people, at least 2 adults | 8.48 | 6.52 | 52.5 | 64.8 | 4.21 | 1.41 | 53.3 | 56.1 |
| Single-parent (1 child) | 40.99 | 9.69 | 4.4 | 1.7 | 22.66 | 2.44 | 4.9 | 1.7 |
| Single-parent (2 or more children) | 44.67 | 9.37 | 3.8 | 1.3 | 23.40 | 4.86 | 4.1 | 2.7 |
| 1 retired people | 3.88 | 1.02 | 2.4 | 1.0 | 1.57 | 0.52 | 2.0 | 2.1 |
| 2 adults, at least 1 retired | 2.70 | 2.18 | 4.4 | 5.6 | 0.68 | 0.35 | 2.2 | 3.6 |
| 3 or more people, at least 1 retired | 2.61 | 2.34 | 5.3 | 7.6 | 0.51 | 0.39 | 2.1 | 5.1 |
| Total | 7.83 | 4.88 | 100.00 | 100.00 | 3.84 | 1.22 | 100.00 | 100.00 |

Focusing on the 40% median poverty line (Table 5), a big fall in the incidence (head-count ratio) and intensity (PGR) of poverty can be seen for single-parent households and households with one adult. The impact is substantial because the transfer that they receive is around the 40% Me line, as shown in Figure 1. In spite of the substantial reduction, these three types of household are still the ones furthest away from putting an end to poverty.

If we now focus on contributions to total poverty under these two different definitions, there is one type of household that clearly contributes more both before and after MIS: that formed by three or more persons, with at least two adults (type 3). The table shows that if poverty among this group were eradicated, in head-count terms 2/3 of total poverty would be eliminated.

In summary, it can be concluded that in terms of **incidence** the Basque MIS notably reduces the number of poor individuals and households. It also reduces the **intensity** of the poverty substantially: after MIS Basque society is notably closer to eradicating poverty altogether; in other words, the extra amount in Euros required to put an end to poverty is much lower. Furthermore, in terms of **inequality** the MIS proves to be a very pro-poor policy, as it alleviates the situation of the poorest individuals. By type of household, single-parent family units are the poorest but their contribution to total poverty is low because they are few in number and the amount of money that they receive exceeds the 40% Me line in most cases. By contrast, households with three or more members and at least two adults are not so poor but they are much more numerous and they do not receive enough MIS, so their contribution to total extreme poverty is the highest.

5. Effectiveness and Efficiency of MIS

This section seeks to measure the effectiveness and efficiency of the expenditure in MIS²⁶. The question tried to answer here is whether MIS is allocated properly (according to the legislation) or whether the same amount distributed in a different way would reduce poverty more. It is essential to address this question in order to make the best use of public funding.

First of all, it is important to define both concepts. Effectiveness is understood as the ability to achieve a desired effect – eradication of poverty in this case. Efficiency is the ability to achieve that effect with the minimum cost, i.e. efficiency takes into account the "excess of resources" devoted to transfers.

In general, social benefits reduce the poverty gap depending on the total amount spent and the efficiency of its use. Effectiveness depends on the objectives. For example, if the goal is to minimize extreme poverty then spending should be concentrated on the poorest, i.e. those who have the largest poverty gap. If the aim is to maximize the number of people raised above the poverty line then it should be concentrated on the least poor. Finally, if the objective is to maximize the number of target groups who receive the benefit then it should be spread over as large a proportion of the poor population as possible (Beckerman, 1979). Theoretically, the aim of the MIS in the Basque Country is to eradicate poverty for all those who meet the requirements, independently of how large their poverty gap is.

To measure the efficiency and effectiveness of MIS it is therefore necessary to focus on the criterion of poverty set out in the scheme itself, as that is the one that it seeks to eradicate. Therefore, unlike the previous section, the analysis here focuses only on the BC poverty line. Moreover, the unit of measurement used is households, which is the reference unit in the BC legislation. The analysis is also limited to MIS beneficiary households, disregarding the 47,708 poor individuals who are not MIS beneficiaries. It is assumed that they do not meet the requisites, and therefore are not a target group.

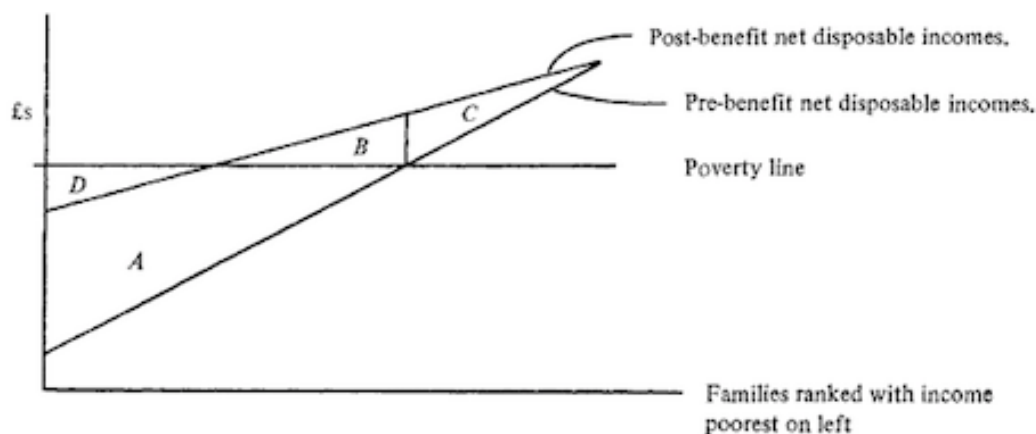
The tool known as Beckerman's Model is used to conduct the analysis of efficiency and effectiveness of MIS.

²⁶ Effectiveness could be understood as bringing to zero all the measures presented in Section 4. However, this section measures effectiveness in the expenditure, i.e., as the proportion in Euros by which the poverty gap has been reduced.

5.1. Beckerman's Model

The concept of poverty reduction efficiency was developed by Beckerman (1979). Efficiency is defined in a manner that takes into account total expenditures as well as their impact on poverty gaps.

Figure 3. Beckerman's Diagram



The horizontal axis represents individuals ranked in increasing order of disposable income (poorest on the left) and the vertical axis represents their income. The diagonal lines represent the pre-MIS income and the post-MIS income of the population. The horizontal line is the poverty threshold.

Area C can be interpreted as total amount of MIS received by pre-MIS non-poor considered as “badly distributed”. This amount of money is transferred inefficiently because it neither takes people out of poverty nor reduces the poverty gap. Area B is the excess amount of benefits received by the pre-poor, i.e. the difference between the amount of benefits received by the poor and the amount by which their poverty gap is reduced. If the sole objective of the MIS is to reduce poverty (which is not, as it tries to incentivize exits into employment too) the spillover could be considered as “excess” payment. Area D represents the extra income that post-poor households need to get out of poverty. Area A can be interpreted as the total amount of MIS received by pre-MIS poor considered as “well distributed”, i.e. that effectively reduces the poverty gap. Finally, the amount of benefits needed to eradicate poverty can be obtained from the areas D-B-C. Therefore, from an optimal point of view in terms of effectiveness and efficiency in eradicating poverty, areas D, B and C should be zero.

Summarizing, the areas correspond to the following figures:

$A+B+C$ = total expenditure on MIS.
 $A + B$ = total amount of benefits received by pre-MIS poor.
 $A + D$ = pre-MIS poverty gap
 D = post-MIS poverty gap.

Beckerman presents one effectiveness and two efficiency measurements:

Overall poverty reduction effectiveness (OPRE): The proportion of the pre-benefit poverty gap reduced by transfers.

$$OPRE = \frac{A}{A + D}$$

Therefore, OPRE is 100% when $D = 0$

Vertical expenditure efficiency (VEE): The proportion of benefits accruing to people who would have been poor in the absence of benefits, i.e. proportion of total transfers received by those individuals that were poor before the program.

$$VEE = \frac{A + B}{A + B + C}$$

Poverty reduction efficiency (PRE): The net extent to which benefits reduce poverty. That is to say, the proportion of transfers that effectively contributes to a reduction in poverty, expressed by the poverty gap. Note that only the A amount contributes to reducing the pre-transfer poverty gap.

$$PRE = \frac{A}{A + B + C}$$

Therefore, the PRE is 100% when $B+C = 0$.

These concepts of efficiency take into account the “waste of resources” associated with the transfers made to the non-pre-poor population and the excess payment to the non-post-poor population. However, according to the legislation, it must be taking into account that some transfers made to the non-poor population cannot be interpreted as “waste of resources” and, therefore, neither as inefficiency. Some examples are the Social Housing

Benefits, Social Emergency Aids and the other social aids explained in Section 3. In addition, the MIS is compatible with the transference of relatives, friends or private institutions. Detailed information on how these amounts are included in the diagrams and calculations can be found in the annex.

5.2. Empirical Results – Effectiveness and Efficiency of MIS

This section shows the results obtained from Beckerman’s model. First, some introductory figures are shown; then Beckerman’s diagrams are given, and finally the measures of efficiency and effectiveness calculated are presented.

In total, we find 8,716 beneficiary households with 23,299 individuals who are not poor in the absence of MIS, which represents 19% of all MIS beneficiaries. The stimulus to employment calculated is €1,176,938, corresponding to 16,240 households with employed individuals (approximately 27%).

Beckerman’s diagrams should be used with caution. The legislation presents eight different poverty lines, one for each type of household, so a different figure is required for each type. They are all presented in Figure 4. As explained, only households that receive MIS are shown. They are sorted from the poorest (left) to the richest (right). The green line represents pre-benefit disposable income and the orange line post-benefit disposable income. To make the diagrams clearer, the gap between the orange and the green lines represents only the MIS transference. Notice that the ordering of the households can change from one line to another, i.e. the poorest households before the MIS transfer might be not the same ones which are the poorest afterwards. Note that reported data is used and it might not coincide with the official registered income.

[Insert Figure 4 here]²⁷

At first sight, it can be seen that poverty (under BC criteria and for MIS recipients) is much closer to be eradicated after the MIS transference, as the orange line is remarkable higher than the green one. In other words, the post-poverty gap (Area D) has been notably reduced. However, the orange lines does not reach the poverty line in most cases. This is reflected in the

²⁷ In order to avoid distortions in the scale of the graphs, there is a limit in the income of family units to €2,000, leaving out 3% of the households.

effectiveness measure. The second fact shown by these figures is that there are some non-pre-poor families receiving the MIS, in concrete, those whose pre-MIS disposable income (green line) is above the poverty line. This must be reflected in the efficiency indexes. According to those graphs, it can be seen that the MIS helps specially households type 1 and 3, those with more number of families and bigger Area A.

The final step is to quantify the efficiency and effectiveness of the MIS. Table 6 presents these measurements by type of household and for MIS beneficiaries all together, joint to the distribution of the expenditure by type of family unit and their incidence. These figures together give a whole picture of the role of the MIS in the Basque Country.

Table 6. Beckerman measures of effectiveness and efficiency and expenditure in MIS by type of family unit.

| Type of family unit | | OPRE(%) | VEE(%) | PFE(%) | Eradicate poverty (€) | Total expenditure in MIS(€) | Expenditure (%) | Incidence of the FU (%) |
|---------------------|--------------------------------------|---------|--------|--------|-----------------------|-----------------------------|-----------------|-------------------------|
| 1 | 1 adult | 90.05 | 97.17 | 92.87 | -425,198 | 13,573,536 | 38.41 | 17.79 |
| 2 | 2 adults | 82.97 | 81.40 | 78.30 | 226,918 | 4,037,063 | 11.42 | 10.35 |
| 3 | 3 or more people, at least 2 adults | 81.88 | 87.87 | 85.41 | -481,118 | 11,158,498 | 31.58 | 47.75 |
| 4 | Single-parent (1 child) | 81.88 | 99.93 | 97.98 | -444,364 | 2,259,381 | 6.39 | 4.99 |
| 5 | Single-parent (2 or more children) | 82.15 | 98.42 | 90.86 | -138,686 | 1,307,872 | 3.70 | 4.82 |
| 6 | 1 retired people | 81.90 | 96.71 | 89.82 | -149,301 | 1,542,980 | 4.37 | 5.55 |
| 7 | 2 adult, at least 1 retired | 82.50 | 66.39 | 56.68 | 308,932 | 987,048 | 2.79 | 4.50 |
| 8 | 3 or more people, at least 1 retired | 58.07 | 23.71 | 23.07 | 284,309 | 471690 | 1.33 | 4.25 |
| Total | | 85.06 | 90.79 | 87.03 | -818,507 | 35,338,068 | 100.00 | 100.00 |

Table 6 shows that effectiveness (OPRE) is high for most household types. In particular, the poverty gap is reduced in a 90% for one adult household and more than 80% for the others. The exception is the family unit type 8, with an effectiveness of 58%. The level of efficiency, however, is more heterogeneous across family types. Concretely, the Vertical Expenditure Efficiency (VEE) is remarkable high for single parent and 1 adult households (types 1, 4, 5 and 6): more than 96% of the transferences directed to those families are received by poor individuals. For the whole society, 90,8% of the expenditure in MIS is directed to poor households. The Poverty Reduction Efficiency (PRE) displays a high inefficiency in those households with two adults: 22% of the transfers are received by non-pre-poor families. Table 6 also shows that, in spite of the high level of inefficiency, the MIS does not play an important role for households with two or more people and at least one retired (types 7 and 8), given that only around 4% of the total expenditure is directed to those family units. On the contrary, 70% of the MIS is transferred to households type 1 and 3. This is partially explained by the high incidence of those type of households

among the perceivers (65%). Finally, according to the EPDS, if there were a 100% efficiency in the distribution of the MIS, the amount of public resources needed to eradicate poverty, i.e. to reach a 100% effectiveness, is still €818,507 per month.

These results raise the question of the reasons for these ineffectiveness and inefficiency findings. The first obvious candidate is that our dataset comes from reported income figures by the individuals interviewed, whereas MIS is assigned using official registered income. It may be that these two sources of information on income do not coincide, as explained in the data section. There may also be some lack of supervision of MIS recipients. In other words, with this information it is not possible to disentangle how much of the ineffectiveness and inefficiency results is, in fact, misreported income. Nonetheless, the analysis helps to determine which family units are more and less benefited from the Minimum Income or in which type of families should be paid more attention in terms of poverty eradication or in order to make a better use of public resources.

6. Proposals for improving the Basque Minimum Income Scheme

Results so far reveal certain strengths and weaknesses of the Minimum Income Scheme to eradicate poverty in the Basque Country. This section now seeks to propose changes in its design so as to enhance its fairness and efficiency.

The first design change proposed refers to the way that each household member is computed in defining poverty thresholds. Figure 2 shows that as currently defined the BC poverty line means that 63% of MIS recipients are classed as being in extreme poverty (below 40% of the median income distribution), and that they are mostly persons who live in large households. These households are classed as being in extreme poverty because BC legislation does not compute each extra member but instead the transfer remains constant from a particular number upwards. Hence, I propose that household members be counted following the OECD criterion, i.e. using the OECD equivalent-modified scale. This assigns a value of 1 to the first household member, 0.5 to each additional adult and 0.3 to each child under 14. This is because the needs of a household grow with each additional member but economies of scale in consumption mean that the growth is not

proportional²⁸. In addition, this change is very likely to bring down the number of MIS-receiving households because as the legislation now stands individuals from large families have incentives to live in separate households in order to receive a different MIS. Larger total amounts of MIS for large households would be offset by savings due to economies of scale with people living in the same household. The incentive to move out is thus reduced and individuals would tend to stay in the same household and make use of economies of scale, which would help bring down spending on MIS²⁹. Moreover, this proposal encourages an increase in the birth rate as it does not penalize having more children.

Secondly, there is a need to improve other inefficiencies detected in the current mechanism: it must be assured that MIS is not transferred to non-poor people, or in other words that ONLY poor people receive the transfer. In terms of the Beckerman model, this means eliminating area C. Moreover, the system should transfer to poor people only the payment required to raise them to the poverty line and no more. This means eliminating area B. Finally, effectiveness would improve if the new mechanism proposed enabled all MIS recipients to reach the poverty line, i.e. to exit poverty.

My proposed Minimum Income Scheme design enables all three of these improvements to be made together. Issues such as requirements for receiving MIS and the design of employment stimulus are taken as given.

Specifically, my proposal for a new design is the following:

$$\text{MIS} = (0.88) * \text{MW} * (1 + 0.5 (A - 1) + 0.3 C)$$

where A is the number of adults in the household and C the number of children under the age of 14^{30, 31}.

²⁸ Some steps in this direction are being taken. A new proposal that takes into account each extra member of the household has been presented at the Basque Parliament but has not yet been approved.

²⁹ Unfortunately, the scope of this indirect effect cannot be estimated.

³⁰ It should be noted that extra income received by retired people or single parent families under the BC legislation would be lost, since the modified OECD criterion does not consider that it entails any additional living cost.

³¹ This paper does not assess "Supplementary Housing Benefit": the proposed MIS design takes it as given and maintains it.

This MIS design not only uses an international poverty standard (the modified OECD scale) but also draws on the premise already set out in legislation of using a linkage with the minimum wage³². The legislation sets an amount of 88% of the minimum wage for a one- adult household. According to the EPDS, this is equivalent to 43.9% of the median, slightly above the figure for the extreme poverty line³³. Furthermore, setting the threshold below the minimum wage does not discourage exit into employment.

7. Summary and Conclusions

In the Basque Country (a region in northern Spain) a Minimum Income Scheme has been in place since 1989. It is a last resort scheme whose main objective is to guarantee individuals the basic right to a guaranteed decent minimum standard of living. According to the Basque Survey of Poverty and Social Inequalities in 2016 there were 124,493 beneficiaries of this aid (5.8% of the population) in 59,976 households.

The first question assessed in the paper is to measure the impact of MIS on poverty reduction. Three different poverty thresholds are used: two commonly found in the literature, known as the “poverty line” (60% of the median income) and the “extreme poverty line” (40% of the median income) and the one used in Basque legislation. The threshold set in the legislation is lower than the extreme poverty line for 63% of MIS recipients and is lower than the poverty line in all cases. Poverty is quantified using the FGT family of indexes, constructed as a function of the degree of poverty aversion. Specifically, they cover three dimensions of poverty: incidence, intensity, and inequality. Comparing the situation before and after the MIS transfer, it can be concluded that in terms of **incidence** MIS notably reduces the number of poor individuals and households. It also reduces the **intensity** of poverty substantially: after MIS Basque society is notably closer to eradicating poverty, i.e. the extra amount in euros required to put an end to poverty is much lower. In terms of **inequality**, the MIS is shown to be a very pro-poor policy, as it alleviates the situation of the poorest individuals. Single-parent households are the poorest

³² Another possibility is to use the median individual disposable income of the population, but this number is not easy to learn. Furthermore, only past values of it could be known. However, the MW is not set by the Basque Government, so unexpected changes could affect the Basque budget. If this happens, some adjustment can be made using initial values of the MW and updating it depending on the funding available in the Basque Country.

³³ The figure for 2014 is similar: 88% of the MW is equivalent to 44.25% of the median income at that time. Therefore, this mechanism seems to be consistent over time.

type, but their contribution to total poverty is low because their number is low and the amount of money that they receive exceeds the 40% Me line in most cases. By contrast, households with three or more members and at least two adults are not so poor but they are much more numerous and they do not receive enough MIS, so their contribution to total extreme poverty is the highest.

The second aim of the paper is to assess the effectiveness and efficiency of MIS. To that end, Beckerman's Model is used. The question posed is whether MIS is properly assigned (according to the legislation) or whether same amount distributed in a different way would reduce poverty more. The findings reveal that in terms of effectiveness the poverty under the Basque definition is eradicated in a 85% for MIS recipients. The results for the efficiency are slightly higher, however 13% of the benefit transferred does not effectively contributes to poverty reduction. In conclusion, although the MIS performs quite well, there is room for improvement. Unfortunately, it is not possible to ascertain which part of the results are misreported data.

Finally, in light of the results, this paper presents an alternative design for MIS in the Basque Country. The first proposal is counting household members in line with an international standard of poverty. The MIS design suggested uses the OECD modified scale starting from 88% of the minimum wage (the current amount for a one-adult household). This threshold is more egalitarian as it is the same for all MIS recipients. Furthermore, it is equivalent to 44% of the median income, slightly above the extreme poverty line. The second improvement proposed is that MIS should not be paid to non-poor people, and that precisely the amount required to bring people up to the poverty line should be paid. These changes would enable the policy to reach full effectiveness and efficiency.

References

Anyaegebu, G. (2010). Using the OECD equivalence scale in taxes and benefits analysis. *The Labour gazette*, 4(1), 49–54.

Beckerman, W. (1979). The impact of income maintenance payments on poverty in Britain, 1975. *The Economic Journal*, 89(354), 261–279.

Chakravarty, S. R. (2009). *Inequality, polarization and poverty. Advances in distributional analysis*. New York.

European Commission, Research findings – Social Situation Monitor – Risk of poverty on basis of different thresholds.

Foster, J., Greer, J., & Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica: journal of the econometric society*, 761–766.

Gouveia, M., & Rodrigues, C. F. (1999). The impact of a Minimum Guaranteed Income Program in Portugal.

de la Rica, S., & Gorjón, L. (2017). Assessing the Impact of a Minimum Income Scheme in the Basque Country (No. 10867). Institute for the Study of Labor (IZA).

Moore, J. C., & Welniak, E. J. (2000). Income measurement error in surveys: A review. *Journal of official statistics*, 16(4), 331.

Matsaganis, M., O'Donoghue, C., Levy, H., Coromaldi, M., Mercader-Prats, M., Rodrigues, C. F., Toso, S. & Tsakloglou, P. (2007). "Child poverty and family transfers in Southern Europe." *Microsimulation as a Tool for the Evaluation of Public Policies: Methods and Applications*, Bilbao.

OECD (2013), *Adjusting household incomes: equivalence scales*.

Rodrigues, C. F. (2001). Anti-poverty effectiveness and efficiency of the Guaranteed Minimum Income Programme in Portugal.

Rodrigues, C. F. (2004). The redistributive impact of the guaranteed minimum income programme in Portugal.

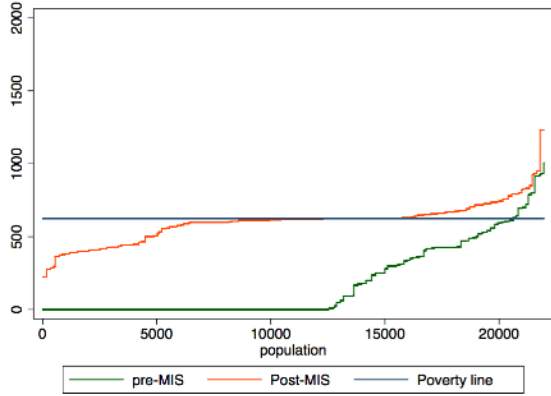
Room, G. (Ed.). (1995). *Beyond the threshold: the measurement and analysis of social exclusion*. Policy Press.

Sen, A. (1976). Poverty: an ordinal approach to measurement. *Econometrica: Journal of the Econometric Society*, 219–231.

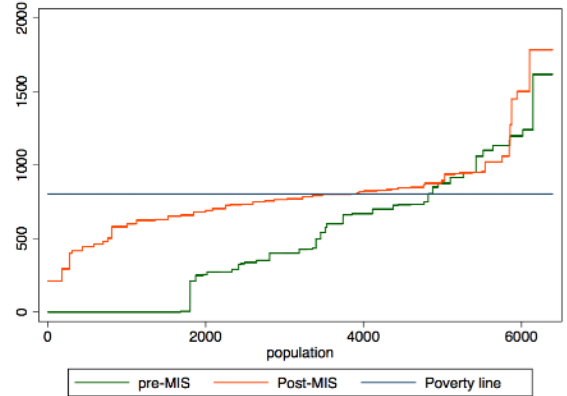
Villar, A. (2017). *Lectures on Inequality, Poverty and Welfare*. Springer International Publishing.

Figure 4. Beckerman's diagram by type of household.
 Stimuli to employment, SHB, social aids and private transfers are deducted in the lines

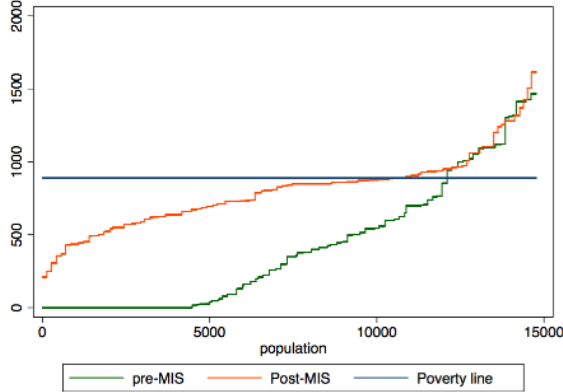
1 adult



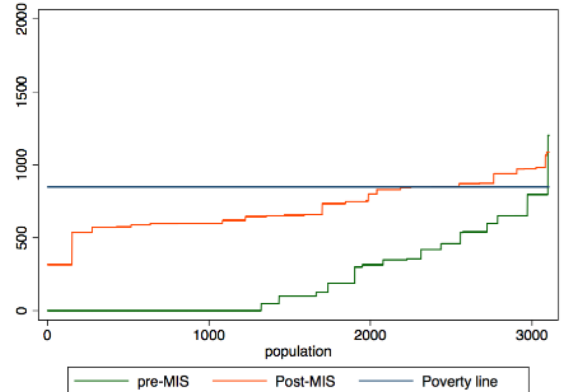
2 adults



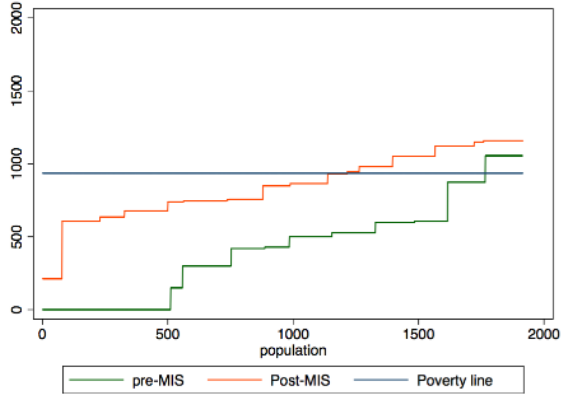
3 or more people (at least two adults)



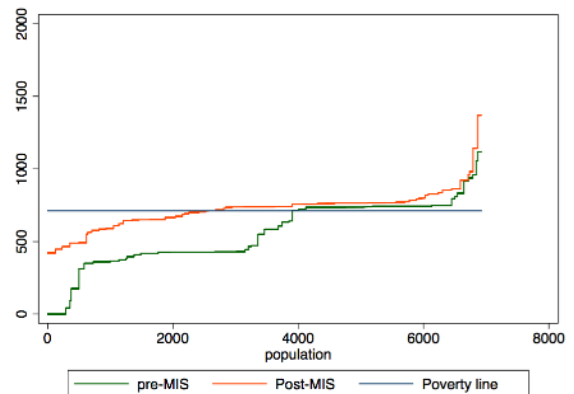
Single-parent (1 child)



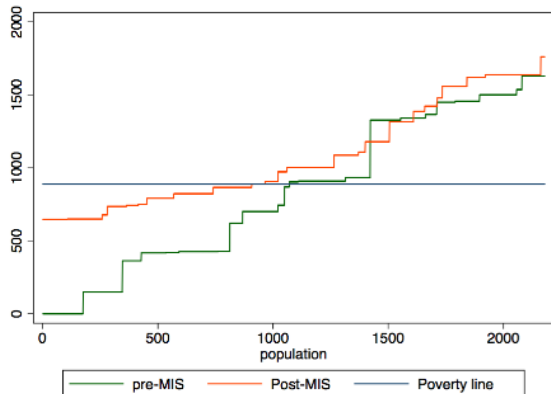
Single-parent (2 or more children)



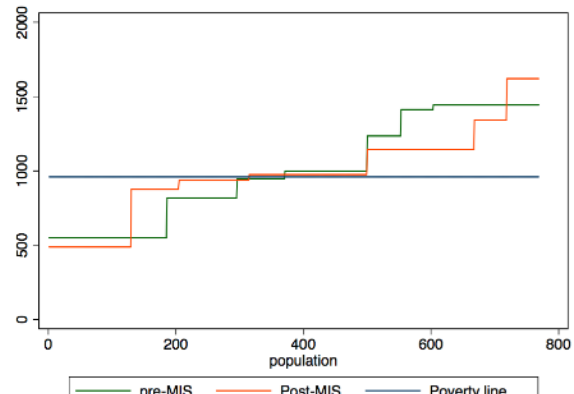
1 retired person



2 retired people



3 or more retired people



Annex

Calculating Total Household Income

Household income includes own income, income from social security benefits, income from social assistance, and income from supplementary civil society assistance. The total income received includes the following items: monthly salaries or wages from salaried or similar employment, monthly income as a maintenance allowance, extraordinary payments for wages, salaries, unemployment benefits or pensions, income from the operation of a business of their own or from courses, conferences or similar activities, income from urban rentals, rural leases, annuities or income derived from pension funds or similar, income from real estate, prizes, tax rebates or labor indemnities. In the case of wages and salaries and of the proceeds of alimony, the different monthly incomes received by the different members of the household are aggregated. In the other cases, the income obtained by the household as a whole in the last 12 months for the items indicated is calculated and a monthly average is apportioned. Income from Social Security benefits includes the total monthly income received by individual household members from benefits or unemployment benefits, pensions or Social Security benefits (including non-contributory benefits and family benefits). Income from social assistance includes the following: monthly income from MIS, social emergency aid, scholarship income, aid to minors and other public welfare assistance. In the case of MIS the different monthly incomes received by the different household members are aggregated. In the other cases the income obtained by the household as a whole in the last 12 months for the items indicated is calculated and a monthly average is apportioned. Finally, income from supplementary civil society assistance includes the income of the household in the reference month from direct support from relatives, friends, neighbors or private welfare institutions.

Application of the Beckerman's Model

Lines in the Diagrams

poverty line = amount in Table 1 for each type family unit

preMIS line = income of the family unit – MIS and SHB – (SEA + social aids) – transfers from relatives, friends or private institutions

postMIS line = income of the family unit – (SEA + social aids) – transfers from relatives, friends or private institutions – theoretical SHB (rent payment up to €250) – theoretical stimuli to employment (formula [1b])

In this way, the gap between the pre-MIS and post-MIS lines represents only the amount of MIS (without SHB) transferred to households in order to get them out of poverty as defined by the legislation.

Calculations of the Areas

Theoretical MIS and SHB = poverty line – income of the family unit³⁴ +
theoretical SHB + theoretical stimuli to employment

Area C: amount received by those whose income requirements are not met, i.e., family units whose income without the MIS, SHB and social aids is above the maximum to be a MIS recipient (107% of Table 1).

Area B: for those who do meet the income requirements, the amount of MIS and SHB received that is greater than the theoretical amount they should receive.

Area D: for those whose MIS and SHB received is below the theoretical amount they should receive, the difference up to that amount.

Area A: amount of MIS and SHB transferred to families until they reach the theoretical amount they should receive. That is, the total expenditure on MIS and SHB – Area C – Area B.

³⁴ Note that the income of the family unit already includes the SEA, social aids and transfers from relatives, friends or private institutions