

# **The Redistributive Impact of the Guaranteed Minimum Income Programme in Portugal**

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## **Abstract**

In this paper we evaluate the impact of the Portuguese Guaranteed Minimum Income Programme (GMI) on the income distribution in Portugal, and discuss its effectiveness and efficiency in fighting poverty and social exclusion in the country. We measure its impact on the distribution of household incomes and poverty, as well as the amount of government expenditure required to finance it. Our results show that 5.3% of households and 6.5% of the population are eligible to receive GMI. The programme has a small but positive impact on reducing inequality. Furthermore, the analysis of the effectiveness of the GMI shows that it has a positive impact on reducing the poverty rate. However, the most important consequence of the GMI is the sharp improvements in the measures of poverty intensity and severity. The efficiency indicators associated with the programme show that 92% of the transfers are awarded to poor people and that 89% of the transfers effectively contribute towards reducing the poverty gap. A very preliminary assessment of the *take-up* associated with the program shows that only 72 per cent of the families entitled to receive benefits from the programme are actually receiving it.

**Keywords:** Income Distribution, Inequality, Poverty Alleviation, Social Policy, Portugal

**JEL Classification:** D63, I32, I38

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## 1. Introduction

Portugal was one of the last countries in the European Union to introduce a Guaranteed Minimum Income (GMI) Programme. The Portuguese Parliament passed the Law introducing the GMI in June 1996, though it only came into full force on July 1997, after a trial period of few months in a limited area of the country. The programme is explicitly aimed at providing income support and social integration to households and individuals who have low incomes and either find themselves in a situation of social exclusion or are at risk of exclusion<sup>1</sup>.

It will only be possible to undertake an overall evaluation of the full impact of the GMI Programme on the Portuguese society after it has been working for a few years. However, it is already possible to anticipate some of its results, both through the analysis of some indicators of the programme's performance and through simulation of its effects. The first approach was followed by CIES (1998) in its evaluation of the programme's experimental phase, whilst the second was followed in Gouveia and Rodrigues (2002) and Rodrigues (2001).

Here, the simulation of the redistributive impact of the GMI follows the methodology developed in Gouveia and Rodrigues (2002). Using the micro-economic data obtained from the 2000 Household Budgets Survey (hereafter HBS), we can simulate the full implementation of the GMI law, and in particular the transfer of resources to the poorer households.

The HBS has been used as the main source for characterising income distribution in Portugal in several studies, namely Costa (1994), Ferreira (1992, 2000), Gouveia and Tavares (1995), Pereirinha (1988) and Rodrigues (1993, 1999, 2001).

The 2000 HBS sample consists of 10020 representative households. The definition of disposable income used is very comprehensive: it includes labour income, investment income, transfer and capital revenues, income in kind as production for home

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<sup>1</sup> The concepts of poverty and social exclusion are frequently and wrongly used interchangeably, although they correspond to two clearly different concepts. The concept of poverty is generally linked to the lack of (predominantly monetary) assets considered necessary to satisfy the minimum needs in a given society. The concept of social exclusion refers to a non-existent or insufficient level of integration in a given society

consumption and imputed rents. Income is net of taxes and of social security contributions<sup>2</sup>.

The 2000 HBS is the first published household survey in Portugal to include GMI benefits. However, the HBS clearly underestimates the importance of the programme. The number of people on GMI benefits recorded in the HBS is roughly only 56% of the number of beneficiaries recorded by the programme. The total amount of GMI benefits recorded in the HBS is only about 50% of the total value of funding awarded by the GMI Programme. The large under-recording of minimum income benefits in the HBS means that we cannot use the declared values as a basis for a comprehensive evaluation of the impact of the programme. Alternatively we simulate at the micro level the application of the programme.

The comparison of income distribution between before and after application of the GMI will allow us to produce the first set of indicators of its effectiveness in reducing inequality and alleviating poverty in its different forms<sup>3</sup>. We measure the impact of GMI at different levels using both inequality measures (Gini, Atkinson and Generalised Entropy) and poverty measures (like poverty rate and gap, and other Foster's measures (F)).

The distinction between effectiveness and efficiency of government programmes aiming at poverty reduction has long been established in the economic literature<sup>4</sup>. Measurements of the effectiveness of the benefits paid are designed to evaluate their impact in alleviating the various dimensions of poverty. The study of efficiency is designed to measure what proportion of the total amount of benefits awarded effectively contributed to reduce poverty.

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<sup>2</sup> For a detailed description of the Portuguese Household Budget Survey 2000, see Instituto Nacional de Estatística (2002)

<sup>3</sup> In analysing income distribution we use the (modified) OECD scale to deflate the household incomes and to obtain the equivalent income for each household. This scale gives a weight of 1 for the first adult, 0.5 for further adults and 0.3 for children aged under 14.

<sup>4</sup> Weisbrod (1969) was one of the first authors to introduce the concept of efficiency into the analysis of the effects of social transfers in alleviating poverty. Beckerman (1979) developed the conceptual framework and an empirical model for its measurement. For a discussion of the difference between the two concepts see Pereirinha (1996).

## **2. The Guaranteed Minimum Income Programme**

### **2.1 The main characteristics of the GMI**

The Portuguese Guaranteed Minimum Income Programme was introduced by Law N°. 19-A/96, of 29 June, as an active social policy measure designed to guarantee social cohesion<sup>5</sup>. Its implementation was clearly in keeping with the “model” of European social policy, in which most countries recognise that all individuals are entitled to a minimum level of income. It also corresponds to the application of the Recommendation of the Council of the European Communities about the common criteria concerning sufficient resources and social assistance in social protection systems, approved during the Portuguese Presidency in 1992<sup>6</sup>.

The aim of the GMI Programme is to guarantee to all individuals the necessary resources for satisfying their minimum needs, whilst at the same time providing support for their progressive social and professional integration. It is therefore an initiative with national scope, providing an organised response to situations of major vulnerability, and is an entitlement to families living in conditions of extreme poverty.

The GMI consists of a non-contributory benefit paid by the Social Security system, which fills the gap between the actual income of the individual and a minimum income threshold taken as the baseline. But the level of resources alone does not represent a sufficient condition for access to the programme. Participants must also follow a programme of social integration, designed to provide access to vocational training and the labour market or any other form of community work. As stressed in Pedroso (1997), the GMI Programme is based on a combination of the right to receive the benefit and the system of obligation-entitlement to social integration.

The intended beneficiaries of the GMI Programme are individuals and their families who are legally resident in Portugal, aged 18 or over, and who satisfy the following conditions in relation to their level of resources.

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<sup>5</sup> For a detailed description of the process followed for the introduction of the Guaranteed Minimum Income Programme in Portugal see Pedroso (1997).

<sup>6</sup> Recommendation of the Council of the European Communities about the common criteria concerning sufficient resources and social assistance in social protection systems (92/441/EEC) of 24 June 1992.

- i) individuals whose income is lower than the value of the Social Pension<sup>7</sup>;
- ii) households whose income is lower than the total sum of the following :
  - the value of the Social Pension for each adult, for up to 2 adults;
  - 70% of the Social Pension for each adult, from the 3<sup>rd</sup> adult onwards;
  - 50% of value of the Social Pension for each child.

These conditions immediately raise two comments. First, the minimum value of resources per equivalent adult used as a benchmark (the value of the guaranteed minimum income) is indexed to the amount of the Social Pension which is determined and fixed on an annual base. Second, the equivalence scale implicit in the GMI is significantly different from the (modified) equivalence scale adopted by the OECD, which will be used in this paper. The weight given to adults other than the reference individual (in particular to the second adult in the household) and to young persons is higher than that of the (modified) OECD equivalence scale. The GMI benefit for the poorest individuals is paid in cash, its amount is variable, and is temporary (awarded for 12 months, with the possibility of being renewed). Its amount is calculated as the difference between the value of the minimum income per equivalent adult in the household and the value of the actual income per equivalent adult received by the household, in both cases using the legal GMI equivalence scale described above.

The social integration programme, designed to guarantee progressive social integration to GMI beneficiaries, is aimed to provide access to vocational training and to the labour market. Different integration programmes are drawn up at local level, to ensure greater proximity to beneficiaries, and they must be suitably adapted to the real situations of each individual or household.

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<sup>7</sup> The Social Pension is a non-contributory minimum pension. All persons aged 65 or more, not entitled to receive a contributory pension and with an income below 30% (single) or 50% (couple) of the minimum wage are entitled to receive it. The amount of the Social Pension in 2000 was €124.7.

## **2.2 Main difficulties in implementing a GMI Programme**

The implementation of a programme with the above-mentioned characteristics is usually beset with a set of difficulties to which the GMI Programme is certainly not immune.

First, monitoring the conditions for awarding the benefits. This issue is essential to prevent non-eligible individuals from receiving benefits that they are not effectively entitled to. Thus, correctly identifying the net incomes of households is a crucial question. The GMI legal framework lists the different sources of household monetary income that must be considered when assessing and quantifying its resources. The framework for assessing non-monetary income is not, however, clearly established in the law. Non-monetary income represents, in 2000, roughly 14% of household disposable income in Portugal. Failure to account for these other incomes may cause important biases in the awarding of GMI.

Second, knowing whether or not the programme is going to give rise to economic disincentives in the labour supply. This problem may be particularly relevant for individuals whose income level brings them close to the eligibility frontier. Several examples can be provided of situations in which a programme of the same type as the GMI may give rise to disincentives in the labour market: a worker whose income from work is only slightly above the minimum income may prefer to leave the labour market in order to benefit from the GMI benefit; an unemployed person facing the possibility of receiving the GMI may significantly reduce the intensity of his job-seeking efforts; low-wage worker may lose benefits if his wage were to rise slightly, which obviously acts as a disincentive towards seeking any progression in his profession .

This change in the behaviour of economic agents when faced with the possibility of receiving the GMI is often referred to in the literature as the “poverty trap”. It acts simultaneously as a disincentive for persons outside the labour market, discouraging them from making efforts to enter into it, and as an incentive to employed workers to give up their jobs, particularly those earning the lowest wages.

One way of making this type of disincentive less likely to occur is to consider only a part of income from work in the calculation of household income. This is why the GMI law only considers 80% of income from work in assessing the conditions of eligibility.

The greatest impediment to disincentives in the programme is, however, the level of the minimum income. In 2000, the value of the social pension was €124.7, which corresponded to roughly 39% of the national minimum wage, set at €318.2. Only for workers with extremely low wages the conditions would exist for the poverty trap to come into operation.

Finally, not all the individuals legally eligible actually apply for the benefit to which they are entitled. This problem, designated as “incomplete take-up”, is usually explained as resulting from two situations: first, the lack of information for potential beneficiaries about their entitlements, coupled with the complexity of the procedures involved in applying for the benefit; secondly, the social stigma that is attached to applying for this kind of support.

No studies have been made yet about the importance of this phenomenon in Portugal nor about the main causes for its existence. Some studies that have been carried out in Europe do, however, suggest that this problem is quite significant. Atkinson (1998) reviews some of these studies and concludes that “*there is evidence from a range of countries that incomplete take-up is a serious problem and that is not readily overcome*”. For example, in the case of the United Kingdom, Atkinson (1998) notes that only between 76% and 83% of those entitled to receive the 1994/95 Income Support Programme actually received the payments to which they were entitled.

### **3. Methodology for the Simulation of the GMI**

The methodology used for simulating the redistributive effects of introducing a GMI Programme in Portugal is based on the construction of a baseline scenario for the application of the GMI and on its comparison with the initial situation.

The main objective lying behind the construction of this scenario was that of attempting, in so far as the available information allows for this, to reproduce the legal framework established by the law that is currently in force. Identification of those households that are eligible to receive the GMI benefit, as well as identification of the amount of the transfer to which they are entitled, are essential steps for comparing pre- and post-GMI income distribution and identifying the main changes that have occurred

in the pattern thereof. Another objective is that of simulating the amount of funding that will be necessary for its implementation.

The main stages in building the baseline scenario of the GMI can be summarised as follows:

1. Construction of the equivalence scale underlying the legal framework of the GMI. In section 2.1 we analysed the differences between this equivalence scale (GMI scale) and the modified OECD equivalent scale that we will use for the analysis of equivalent income in this study. The construction of the GMI scale is necessary in order to move on to the next step;
2. Identification of the minimum income for each household. This minimum income, which is interpreted as the legal threshold of extreme economic poverty, is calculated by multiplying the value of the social pension in 2000 by the number of equivalent adults (GMI scale) in each household. Given that incomes in Household Budget Surveys are annual incomes, the minimum income for each household is also converted into annual values;
3. Construction of the Net Reference Income(NRI). The NRI is the amount of income that serves as a benchmark for determining eligibility for the GMI. It is obtained by the aggregation of all monetary sources of income of the household, but where only 80% of the wages and salaries are considered;
4. Identification of the eligible households. Any household whose net reference income is lower than its defined minimum income will be automatically included in the GMI programme;
5. Determination of the annual benefit for each household in the programme. The benefit for each household is given by the difference between its minimum income and its reference income;
6. Computing the post-GMI income distribution. The new income distribution is obtained from the initial one by adding the amount of the GMI transfer to the income of all those households that are eligible for the programme. Once the post-GMI distribution has been calculated, the new income per equivalent adult (using



the modified OECD scale) is similarly obtained in order to compare the two distributions and assess the impact of the GMI.

With this methodology it is possible to simulate the amount of transfers associated with the GMI Programme. However, as it was seen in section 2.1, the scope of the GMI is not limited to the awarding of transfers. One of the most innovative aspects of the current legal framework for the GMI is the existence of a Social Integration Programme, which complements the benefits' process for the awarding of subsidies. Unfortunately, it is not possible to take into account any assessment of its consequences in the construction of the baseline scenario.

The baseline scenario is constructed under the assumption that there is no behavioural change in both households and individuals as a consequence of the GMI Programme. It similarly presupposes that all eligible households apply to the programme.

#### 4. Main Simulation Results

Although it is a complex affair, by virtue of its multiple aspects, analysis of the impact of the implementation of a minimum income programme may be synthesised in the form of an answer to a series of simple questions: what proportion of the population benefits from its implementation? What is the economic and social cost of its application? And what are the gains that result from it in terms of social welfare and equity?

One of the first aspects resulting from the simulation has to do with the overall results of the implementation of the GMI Programme, which are summarised in Table 1

**Table 1**  
**Simulation of the Impact of the GMI Programme**  
**Main Indicators**

	Values	(%)
Household Participation Rate	198,755	5.3
Individual Participation Rate	667,753	6.5
Total Expenditure ( million euros/year)	263.4	
Mean Transfer per Household participating in the programme (euros / year)	1325	
Source: HBS 2000 and author's calculations using the microdata		

In Portugal, the GMI Programme covers 5.3% of households and 6.5% of individuals. Thus, it directly affects roughly 200,000 households and more than 650,000 persons. The total amount of benefits awarded equals 263 million euros. This value represents less than 3% of the total Social Protection Benefits paid in 2000, and less than 0.2% of the Portuguese Gross Domestic Product. The mean benefit awarded each year by the households participating in the programme is roughly 1325 euros.

A first impression that arises from these figures is that a very considerable number of Portuguese men and women live in extreme precarious conditions, with an equivalent disposable income smaller than the Social Pension.

#### **4.1 Reliability of the simulation and a preliminary assessment of the take-up associated with the program**

The following table compares the values of the simulation of the minimum income programme with the declared data on GMI in HBS and with information from administrative data. This table allows an initial validation exercise on the GMI simulated baseline income.

**Table 2**  
**Simulation of the Impact of the Guaranteed Minimum Income Programme**  
**Assessment of the Results**

	Official Data		HBS Declared Values		HBS Simulated Values	
	Values	(%)	Values	(%)	Values	(%)
Household Participation Rate	162490	4.3	67764	1.8	198755	5.3
Individual Participation Rate	480213	4.7	267188	2.6	667753	6.5
Total Expenditure (million euros/year)	250.9		121.4		263.4	
Mean benefit per household participating in the programme (euros / year)	1544		1792		1325	

Sources: HBS 2000. Author's calculations using the microdata.

IIES/MTS - Instituto de Informática e Estatística da Solidariedade.

NB: Portugal mainland and Azores. Official data for Madeira is not available.

To some extent, the lack of precision of the simulation when compared with administrative data can be ascribed to simplifying assumptions made in the simulation, namely the assumption of full take-up. Obviously, the quality of the underlying data also plays a role here.

The estimated number of potential beneficiaries is 22.3% higher than the actual registered number in the official records. However, the value of the estimated total benefit bill is close to the actual official bill. One possible explanation is that our simulation assumes that a number of households with a reference income slightly below the GMI threshold receive a very small amount of benefit, though in reality they have not applied for it. The previous table also allows us to do a preliminary assessment of the *take-up* rate associated with the programme. There are different ways to compute the *take-up* rate using the information available<sup>8</sup>. The simplified *take-up* rate we calculate now is defined as the ratio of the number of households receiving GMI benefit using official data over the same number estimated by us from the HBS microdata.

From Table 2 we calculate a *take-up* rate of 72%, meaning that 28% of the households didn't apply for the GMI benefit they are entitled to.

If we do not take into account this *take-up* rate, we will certainly over-estimate the redistributive effects of the GMI Programme to be presented in the next sections.

## **4.2 Impact of the GMI Programme on income distribution**

The most immediate effects of the GMI Programme on income distribution can be seen in Table 3. This table shows the increase brought about by the application of the GMI to the mean income per equivalent adult of the various deciles of the initial income distribution.

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<sup>8</sup> For a detailed discussion on methodologies to compute the take-up rate see Harris (1994).

**Table 3**  
**Simulation of the Impact of the GMI Programme**  
**Individual Distribution of Disposable Income per equivalent Adult**  
**Pre and Post-GMI**

Decile	Pre-GMI (€)	Post-GMI (€)	Rate of Change (%)
1	2579	2911	12.9
2	3915	3976	1.6
3	4867	4896	0.6
4	5775	5789	0.3
5	6717	6721	0.1
6	7691	7692	0.0
7	8799	8799	0.0
8	10488	10488	0.0
9	13453	13453	0.0
10	24903	24903	0.0
Total	8916	8960	0.5

*Source:* HBS 2000. Author's calculations using the microdata

The mean income per equivalent adult increases by 0.5%. As one would be expected, the main incidence of the programme occurs in the lower part of the distribution. The mean income of the first decile shows an increase of almost 13%. The programme's impact on the remaining deciles is practically insignificant. Furthermore, the programme is clearly progressive for the lowest 50% of the population as change rates decrease with income.

Table 4 shows the rate of individual participation in the GMI Programme and the distribution of the programme's beneficiaries throughout the various deciles of the distribution of disposable income per equivalent adult. In the first decile, the rate of participation is 48%, corresponding to 73.5% of the programme's total number of beneficiaries.

**Table 4**  
**Simulation of the Impact of the GMI Programme**  
**Participation Rate and Distribution of Beneficiaries by Decile**

Decile	Participation Rate (%)	Distribution of Beneficiaries (%)
1	48.1	73.5
2	9.4	14.4
3	5.3	8.1
4	1.6	2.4
5	1.0	1.6
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0
Total	6.5	100.0

Source: HBS 2000. Author's calculations using the microdata.

A puzzling fact that emerges from the table above is that the effects of the GMI are felt practically throughout the first half of the distribution, albeit to different extents. How is it possible that individuals situated in the middle deciles of the income distribution can receive GMI benefit, even if it is only marginally? The explanation lies in the different concepts of income used in the quantification of household income for the purposes of attributing the GMI and in the way that the deciles of disposable income per equivalent adult are defined. The fundamental difference results from the fact that the GMI programme does not take into account non-monetary income and, simultaneously, only considers 80% of the monetary income from work. This conceptual difference in income definition implies that only 74% of total household income is taken into account when assessing eligibility. As the difference between these two concepts is not uniformly distributed throughout the income scale, it is possible that, at the furthest limit, a household that is situated at the lower end of the distribution according to the income definition used by the programme, and therefore eligible, may actually be situated at the upper end of the distribution if its total income is considered.

Using the baseline scenario is also possible to analyse the effectiveness of the GMI as an instrument for reducing inequality. Table 5 compares the Lorenz curves for the distributions of income per equivalent adult before and after the implementation of the GMI.

The distribution resulting from the application of GMI is, as one would expect, more egalitarian than the initial one. What is particularly interesting to analyse here is the extent its effects are significant throughout the income distribution. As can be seen from Table 5 below, the GMI has a significant effect on the first decile of the distribution. The effect decreases progressively as we go up the income scale and is practically nil for deciles above the median.

**Table 5**  
**Simulation of the Impact of the GMI Programme**  
**Pre and Post-GMI Lorenz Curves**

Decile	Pre-GMI	Post-GMI	Rate of Change (%)
1	0.0289 (0.0004)	0.0325 (0.0003)	12.4
2	0.0729 (0.0007)	0.0769 (0.0006)	5.5
3	0.1274 (0.0011)	0.1317 (0.0010)	3.4
4	0.1922 (0.0014)	0.1961 (0.0014)	2.0
5	0.2675 (0.0018)	0.2711 (0.0018)	1.3
6	0.3538 (0.0022)	0.3570 (0.0022)	0.9
7	0.4529 (0.0026)	0.4556 (0.0026)	0.6
8	0.5702 (0.0029)	0.5723 (0.0029)	0.4
9	0.7208 (0.0029)	0.7222 (0.0029)	0.2
10	1.0000	1.0000	

*Note:* Standard errors in brackets

*Source:* HBS 2000. Author's calculations using the microdata

Given the relationship between the pre and post-GMI Lorenz curves, it can be assumed that all inequality measures calculated in Table 6 below<sup>9</sup> will decrease after the implementation of the programme. What seems particularly pertinent to us here is to consider the magnitude of this reduction.

<sup>9</sup> For a detailed description see, for example, Atkinson (1970,1983), Cowell (1994,1999) or Lambert (1993). For a description of the poverty measures presented in the next section see, for example, Sen (1979,1997), Ravallion (1994) and Foster *et al.* (1994).

**Table 6**  
**Simulation of the Impact of the GMI Programme**  
**Pre and Post-GMI Inequality Measures**

	Pre-GMI	Post-GMI	Rate of Change (%)
Gini Index	0.3508 <i>(0.0050)</i>	0.3450 <i>(0.0049)</i>	-1.7
Atkinson Index ( $\epsilon=0.5$ )	0.1006 <i>(0.0028)</i>	0.0963 <i>(0.0027)</i>	-4.3
Atkinson Index ( $\epsilon=1.0$ )	0.1873 <i>(0.0048)</i>	0.1761 <i>(0.0044)</i>	-6.0
Atkinson Index ( $\epsilon=2.0$ )	0.3885 <i>(0.0457)</i>	0.2987 <i>(0.0059)</i>	-23.1
Generalised Entropy Index ( $\alpha=0$ )	0.2074 <i>(0.0059)</i>	0.1937 <i>(0.0054)</i>	-6.6
Generalised Entropy Index ( $\alpha=1.0$ )	0.2186 <i>(0.0070)</i>	0.2116 <i>(0.0069)</i>	-3.2
Generalised Entropy Index ( $\alpha=2.0$ )	0.2939 <i>(0.0132)</i>	0.2878 <i>(0.0130)</i>	-2.1

*Note:* Standard errors in brackets

*Source:* HBS 2000. Author's calculations using the microdata

All measures show a reduction in the levels of inequality. There is a more significant reduction in the indices that are more sensitive to the lower part of the distribution. A reduction of roughly 23% in the Atkinson index (with a degree of aversion to inequality given by  $\epsilon=2$ ) indicates that there are significant alterations in the lower income groups, which confirms the analysis made earlier using the Lorenz curve.

### 4.3 Effectiveness of the GMI in fighting poverty

The impact of the GMI Programme in reducing poverty can be judged from Table 7 below. Defining the poverty line as 60% of the median income per equivalent adult, the baseline scenario of the GMI shows a reduction in the poverty rate from 19.3% to 18.9%. This relatively modest fall in the poverty rate is not surprising if we consider that the value of the Social Pension corresponds only to 34% of the poverty line. Considering that the legal minimum income is far below the poverty line, the programme should have no impact on the poverty rate, as no beneficiary should cease to be poor simply by receiving GMI transfers. Once again, the difference in the definition

of household income for purposes of the GMI Programme and the total household income explains how some households that were slightly above the poverty line and had sources of income not “controlled” by the GMI might be able to leave the situation of poverty by receiving the GMI benefit.

More significant than the reduction in the poverty rate, however, are the changes that took place in the severity and intensity of poverty. Table 7 below shows that the reductions in the intensity of poverty (Foster’s  $F_1$  measure) and in the severity of poverty (  $F_2$  ) were 18% and 36%, respectively. This is to us the most successful achievements of the programme: a significantly improving in the living conditions of the least protected households and individuals in the Portuguese society.

**Table 7**  
**Simulation of the Impact of the GMI Programme**  
**Pre and Post-GMI Poverty Measures**

	Pre-GMI	Post-GMI	Rate of Change (%)
<b>Poverty Line (60%)</b>	4350.4 (46.2)		
Poverty Rate (F0)	0.1926 (0.0055)	0.1895 (0.0058)	-1.6
Intensity of Poverty (F1)	0.0508 (0.0021)	0.0418 (0.0015)	-17.7
Severity of Poverty (F2)	0.0204 (0.0014)	0.0131 (0.0006)	-36.0

*Note:* Standard errors in brackets  
Source: HBS 2000. Author’s calculations using the microdata.

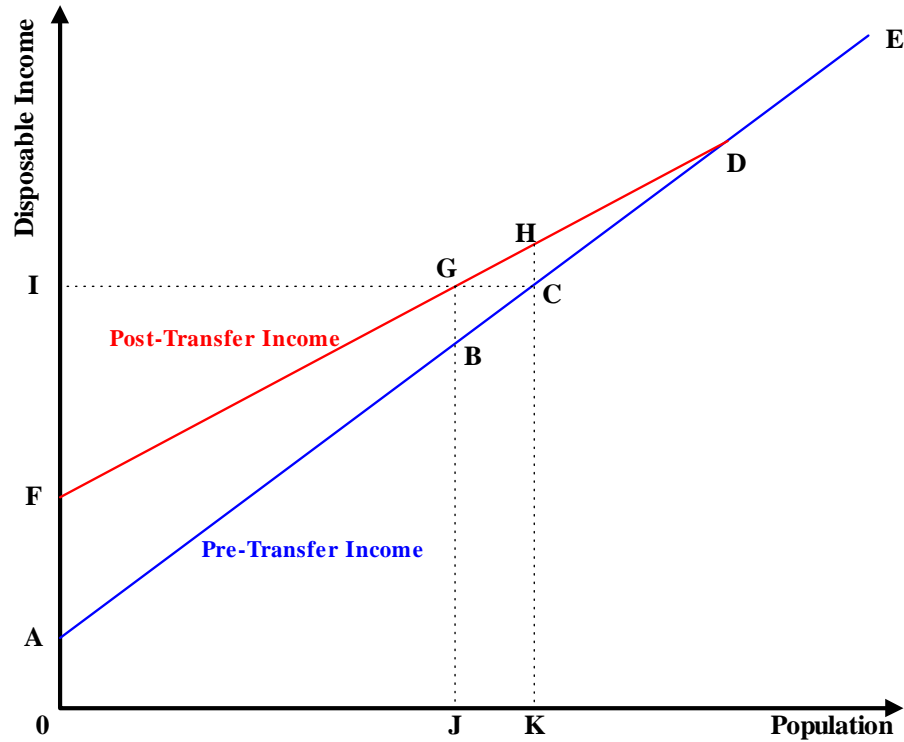
#### **4.4 Efficiency of the GMI in fighting situations of poverty**

The analysis carried out in the previous section points towards programme’s success as a measure of positive discrimination in favour of the least favoured individuals and households. However, this analysis must be complemented by studying the level of efficiency in the programme’s application, i.e. by an assessment of what proportion of the GMI benefits effectively contributes to reduce poverty.

The concept of *poverty reduction efficiency*, associated with social transfers, was developed by Beckerman (1979) and may be explained through the following figure.



**Figure 1**  
**Beckerman's Model for Analysing the Efficiency of Social Transfers**



Individuals or households, ranked in increasing order of income, are represented in the horizontal axis and their incomes are expressed in the vertical axis. The line  $AE$  represents the initial income of the population, whilst the post-transfer income is given by the line  $FDE$ . Considering that the poverty line corresponds to the distance  $OI$ , the population that is poor is represented in the initial situation by the distance  $OK$ . The area  $ACI$  expresses the poverty gap, i.e. the amount that would be necessary for the whole population to reach the level of income corresponding to the poverty line.

The State's intervention under the form of income redistribution is expressed in the amount of transfers represented by the area  $AFD$ . The effect of the programme expressed in terms of a reduction in the number of people who are poor is given by the distance  $JK$ . The amount of transfers received by poor families corresponds to the area  $ACHF$ , whilst the amount of the transfers received by the non-poor population is given by the triangle  $CHD$ . The reduction in the poverty gap can be measured by the area  $ACGF$ .

Beckerman suggests the following two efficiency measures for transfers in poverty reduction:

- i) **Vertical Efficiency of the Programme (VEP)** - proportion of total transfers received by the households that were poor before the programme:
- ii) **Poverty Reduction Efficiency (PRE)** - proportion of transfers that effectively contributes to a reduction in poverty, expressed by the poverty gap<sup>10</sup>.

The concept of poverty reduction efficiency takes into account the “waste of resources” associated with the transfers made to the non-poor population, but also the spillover to the households that were initially poor and that ceased to be so after the programme. This spillover corresponds to the area *GCH* in Figure 1. If the only objective of the programme was poverty reduction, then the spillover would amount to a kind of excess payment, as the population situated between *J* and *K* in Figure 1 receive transfers that are higher than those that they would need to reach the poverty line.

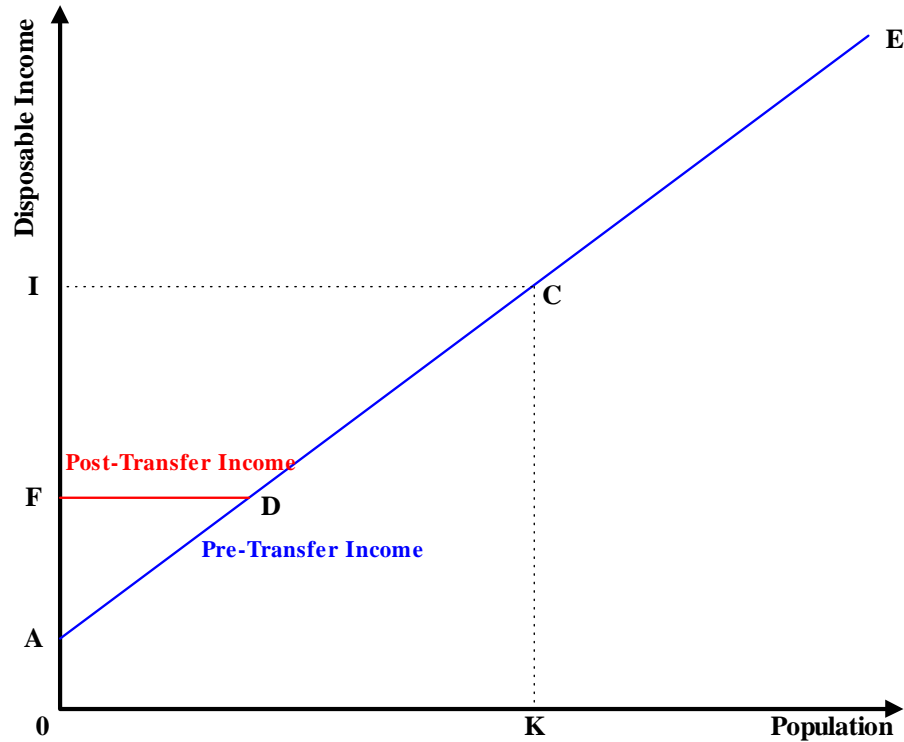
Beckerman recognises that the use of efficiency measures does not eliminate the need for measures of the effectiveness of the poverty reduction programme; indeed they are complimentary. It should be noted that a high level of efficiency for the programme does not mean that poverty is greatly reduced, nor does a low level of efficiency imply that there has been an insignificant reduction in poverty. Efficiency measures only explain why, given the amount of money spent, the programme has a particular impact.

In the case of a policy like the GMI implemented in Portugal, the graph of the changes brought about in the income distribution should be substantially different from that shown in Figure 1. The fact that the minimum reference income is clearly below the poverty line should mean that the post-GMI distribution is of the type shown in Figure 2.

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<sup>10</sup> **VEP** = area ACHF / area ADF ; **PRE** = area ACGF / area ADF.

**Figure 2**  
**Beckerman's Model for Analysing the Efficiency of Minimum Income**



The main effects of the theoretical model shown in the previous figure would be as follows: from the viewpoint of its effectiveness in fighting poverty, the reduction in the incidence of poverty would be nil, i.e. the poverty rate would remain unaltered; the reduction in the poverty gap would be given by the area *ADF*, which would correspond exactly to the total of transfers associated with the programme<sup>11</sup>; as far as efficiency measures are concerned, the programme would be 100% efficient, as all of the amount associated with the GMI would be transferred to the poor population and all of it would be used to reduce the poverty gap.

The practical implementation of the GMI does, however, come closer to the model shown in Figure 1 than to the model shown in Figure 2. Once again, the main reason for this is to be found in the fact that the resources condition of the GMI does take into consideration all the components of household income. Although the precise picture of the pre and post-GMI distributions is not shown in Figure 1, namely because the non-

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<sup>11</sup> It should be noted that in Figures 1 and 2 no consideration is made about the redistributive effects of the programme's costs on income redistribution.

linearity of the programme in relation to the true initial income distribution causes changes in the ranking of individuals and households, identification of the main areas associated with the impacts of the GMI is useful in assessing the programme's effectiveness and efficiency.

Let us therefore analyse the simulated impacts of the application of the GMI programme, taking Figure 1 as an approximate framework:

- i) The total amount of transfers is 263.4 million euros per year (area *AFD*);
- ii) The total amount of transfers to the population initially below the poverty line is 240.9 million euros per year (area *ACHF*);
- iii) The total amount of transfers to the population that was not initially poor is 22.5 million euros per year (area *CHD*);
- iv) The reduction in the incidence of poverty is given by the distance *JK*, with the poverty rate falling from 19.3% to 19.0%;
- v) The reduction of the poverty gap amounted to 233.6 million euros per year (area *ACGF*) falling from 1538 (area *ACI*) to 1304 million euros per year (area *FGI*);
- vi) The spillover amounted to 7.3 million euros per year, corresponding to the area *CHG*.

The simulated impacts of the application of the GMI using Beckerman's model confirm the analysis carried out in the previous section regarding the programme's effectiveness in fighting poverty: a small fall in the incidence of poverty accompanied by a significant decrease in the intensity of poverty; the poverty gap falls by 15%.

The indicators of efficiency proposed by Beckerman also help to explain the redistributive impact of the GMI Programme: the Vertical Efficiency of the Programme (VEP) reaches 92%, which means that roughly 8% of the total amount of transfers are awarded to households that were initially situated above the poverty line; the Poverty Reduction Efficiency (PRE) is roughly 89%, corresponding to the proportion of transfers that effectively reduces the poverty gap.

As was the case earlier with the analysis of effectiveness, assessment of the indicators of efficiency seems to us to be extremely encouraging with regard to the potentialities

of the GMI as a programme for combating situations of poverty and social exclusion. What these indicators express is the need for a more detailed analysis for assessing the resources of both households and individuals applying to the programme in order to be able to take into account those incomes sources that are not “controlled” under the current legal resources condition<sup>12</sup>. Thus, it would be possible to transfer a larger amount to those individuals that are effectively poor, increasing both the effectiveness and efficiency of the programme in fighting poverty.

## **5. Conclusions**

The simulation of the Guaranteed Minimum Income Programme carried out in this study allows for an ex-ante assessment of the scope of the programme, the number of beneficiaries involved, the budgetary costs associated with the transfers, the changes brought about in income distribution and inequality levels and its impact on the various dimensions of poverty.

The analysis of the effects of the GMI on income distribution makes possible to stress the fact that a government programme with a national scope, which is designed to fight situations of poverty and social exclusion, may have a significant positive impact on families living in a situation of greater precariousness.

Comparing the 2000 income distribution with one generated by the simulation of the implementation of the Guaranteed Minimum Income, we can observe the programme’s impact on inequality levels and on the poverty rate: the Gini index is reduced from 0.351 to 0.345, whilst the prevalence of poverty falls from 19.3% to 19.0%.

Consideration of the effects of the GMI on the severity and intensity of poverty does, however, enable us to identify what is in fact the programme’s greatest potentiality: to significantly alleviate situations of great precariousness. The Guaranteed Minimum Income Programme thus appears to be a policy that, rather than reducing the prevalence of poverty, seeks to alleviate its most extreme forms. The results achieved through the simulation of the effects of the GMI on income distribution clearly show it is

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<sup>12</sup> Consideration of the resources structure of households that are not poor, but yet are eligible for the GMI, shows that, on average, more than 50% of their total income comes from non-monetary income.

undoubtedly a programme with the potential to be very successful in the pursuit of this objective.

The simulation of the GMI also enables us to highlight possible insufficiencies and gaps in the programme's design, which, if they are corrected, will make possible to increase both its effectiveness and its efficiency. The analysis undertaken in relation to the limited scope of the concept of income underlying the GMI's resources condition seems to be a good example of how the methodology used to construct the GMI scenario may serve to highlight improvements and adjustments that might usefully be introduced into the programme.

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