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Anti-poverty effectiveness and efficiency of the Guaranteed Minimum Income Programme in Portugal

Carlos FARINHA RODRIGUES

CISEP, ISEG / Universidade Técnica de Lisboa

Abstract

The objective of this paper is to estimate the impact of the Portuguese Guaranteed Minimum Income (GMI) Programme on income distribution and to evaluate its effectiveness and efficiency in fighting situations of poverty and social exclusion. We estimate its impact on the distribution of household incomes and poverty as well as the amount of government expenditure necessary to finance the programme. The simulation shows that 4.8% of domestic households and 5.7% of the population are eligible to receive the GMI. The programme has a small but positive impact on reducing inequality. Similarly, analysis of the effectiveness of the GMI in terms of poverty reduction shows that it has a small but positive impact on the poverty rate. However, the most important consequences of the GMI are sharp gains in the measures of poverty intensity and severity. The efficiency indicators associated with the programme show that 85% of the transfers are awarded to poor people and that 82% of the transfers effectively contributes towards reducing the poverty gap.

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

JEL Classification: D63, I32, I38

Correspondence to:

Carlos Farinha Rodrigues, CISEP, Instituto Superior de Economia e Gestão, Rua Miguel Lupi 20, 1200 Lisboa, Portugal (E-mail: carlosfr@iseg.utl.pt)

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1. Introduction

Portugal was one of the last countries in the European Union to adopt a Guaranteed Minimum Income (GMI) Programme, aimed explicitly at guaranteeing the income support and social integration of those households and individuals that have low resources and either find themselves in a situation of social exclusion or are at risk of exclusion[1]. The Law that set up the GMI was approved by the Portuguese parliament in 1996[2], coming into full force as from 1 July 1997, after a trial period of a few months, introduced within a limited territorial scope.

Only after some years of implementation will it be possible to undertake an overall appreciation of the GMI programme. It is, however, possible to anticipate some of its results both through the analysis of some indicators of the programme's performance and through the simulation of its effects. The first of these two paths was followed by CIES (1997) in its assessment of the Experimental Phase, whilst the second analysis was attempted by Gouveia, M. and Rodrigues, C.F. (1999).

The simulation of the redistributive impact of the GMI that will be undertaken in this paper follows the methodology developed by these two authors. Using the micro-economic data obtained from the 1994/95 Household Budgets Survey (HBS) as the source of statistical data, a simulation will be carried out of the implementation of the main aspects of the Law that set up the GMI and, in particular, of the transfer of resources to the poorer households.

The Household Budget Survey has been used as the main source for characterising income distribution in Portugal in several studies, namely Pereirinha, J.A. (1988), Gouveia, M. and Tavares, J. (1995), Rodrigues, C.F. (1993,1996,1999), Costa, A.B (1994) and Ferreira, L.V. (1992,1997).

The 1994/95 HBS sample consists of 8130 households, which were considered representative of the whole population.

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[1] The terms poverty and social exclusion are frequently used as if they were synonymous, although they correspond to concepts that have been clearly differentiated. The concept of poverty is generally linked to the lack of such (predominantly monetary) resources as are 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 social integration.

[2] Law No. 19-A/96, published on 29 June.

The definition of disposable income used in this survey is very comprehensive: it includes income from work, investment income, transfer and capital receipts, income in kind as production for home consumption and imputed rents. Income is net of taxes and of social security contributions[3]. In analysing income distribution we use the (modified) OECD scale to deflate the household incomes and to obtain the equivalent income for each household.[4].

Comparison of income distribution before and after application of the GMI will make it possible to obtain the first set of indicators of its effectiveness in reducing inequality and alleviating the different dimensions of the poverty phenomenon. We measure the impact of GMI in various dimensions: an array of inequality measures (Gini, Atkinson and Generalised Entropy, these last two with several inequality aversion parameter values); and an array of Poverty Measures - including the poverty rate, the poverty gap, and other of the so-called Foster's measures (F).

The distinction between effectiveness and efficiency in the assessment of the social transfers associated with government programmes for poverty reduction has long been established in the economic literature[5]. Measurements of the effectiveness of transfers are designed to assess their impact in alleviating the various dimensions of poverty. The study of efficiency is designed to measure what proportion of the total amount of subsidies awarded effectively contributes to a reduction in poverty.

2. The Guaranteed Minimum Income Programme

2.1 The main characteristics of the GMI

The Guaranteed Minimum Income Programme was set up in Portugal by Law No. 19-A/96, of 29 June, as an active social policy measure designed to guarantee social

[3] For a detailed description of the Portuguese Household Budget Survey 1994-1995, see Instituto Nacional de Estatística (1997)

[4] The (modified) OECD equivalent scale gives a weight of 1 for the first adult, 0.5 for other adults and 0.3 for children aged under 14.

[5] Weisbrod, B. (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, W. (1979) developed the conceptual framework and the empirical model for its measurement. Regarding the distinction between the two concepts, see also Pereirinha, J. (1996).

cohesion[6]. 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 the first half of 1992[7].

The aim of the Guaranteed Minimum Income Programme is to guarantee all individuals the necessary resources for satisfying their minimum needs, whilst at the same time providing for their progressive social and professional integration. It therefore represents a measure with a national scope providing an organised response to situations of greater precariousness, as well as an entitlement belonging to families living in conditions of extreme poverty.

The GMI consists of a non-contributory benefit provided by the Social Security system, which guarantees all individuals restoration of the gap between their real incomes 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 is stressed by Pedroso, P. (1997), the Guaranteed Minimum Income Programme is based on a combination of the right to receive the benefit and the system of obligation-entitlement to social integration.

The intended recipients of the GMI are individuals and their respective families who are legally resident in Portugal, are aged over 18 and satisfy the following conditions in relation to their level of resources[8]:

i) individuals whose income is lower than 100% of the value of the Social Pension;

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[6] For a detailed description of the process followed for the introduction of the Guaranteed Minimum Income Programme in Portugal, see Pedroso. P. (1997).

[7] 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.

[8] Law No. 19-A/96 of 29 June.

ii) households whose income is lower than the sum total of the following values:

- 100% of the value of the Social Pension for each adult, up to 2 in number;
- 70% of the value of the Social Pension for each adult, starting from the third one onwards;
- 50% of the value of the Social Pension for each minor.

The conditions for eligibility to the GMI set out above immediately give rise to two observations: the first is that the minimum value of resources per equivalent adult that functions as a baseline (the value of the minimum income) is indexed to the legally established amount set each year as the value of the social pension from the non-contributory social security system. The second observation is that the equivalence scale that is implicit in the legal framework of the GMI is significantly different from the (modified) equivalence scale adopted by the OECD, which is used in this work. The weighting that is attributed to adults other than the reference individual and to young persons is higher than that of the (modified) OECD equivalence scale. Another important difference is the consideration of the weight of the second adult in the household as being identical to that of the reference individual.

The GMI subsidy for the poorest individuals is provided in the form of money, is of a variable amount and is temporary in nature (awarded for 12 months, with the possibility of its 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 equivalence scale that is implicit in the law setting up the GMI.

The social integration programme, which is designed to guarantee the progressive social integration of the beneficiaries of the GMI, has as its main priority the provision of access to vocational training and the labour market. The different integration programmes are drawn up at a local level, with a view to ensuring greater proximity to the beneficiaries, and these same programmes must be suitably adapted to the concrete situation of each individual and each household.

2.2 Main difficulties in implementing a Guaranteed Minimum Income programme

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

One of the first difficulties is to be found in the control exercised over the conditions for the award of the subsidy. This question is fundamental for preventing individuals that do not fulfil the conditions of eligibility from receiving benefits that they are not effectively entitled to. In such a context, correctly identifying the net incomes of households becomes a crucial question.

The legal framework that sets up the GMI lists the different sources of household monetary income that must be taken into consideration when assessing and quantifying its resources. The framework for assessing non-monetary income is not, however, clearly established in the law. In Portugal non-monetary income represents roughly 18% of net household income. Failure to take these other incomes into consideration may cause biases in the requirements for awarding the subsidy and lead to households being considered eligible when their incomes are effectively higher than the minimum income.

A second problem associated with the introduction of a minimum income programme is that of knowing whether or not it is going to give rise to economic disincentives in the labour market, through alterations in the behaviour of individuals, particularly with regard to their labour supply. This difficulty may be particularly relevant for individuals whose income level brings them close to the frontier between entitlement to the GMI and the absence of such entitlement.

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 subsidy; an unemployed worker faced with the possibility of receiving the GMI may significantly reduce the intensity of his job-seeking efforts; a worker earning low wages might lose a series of benefits to which he

was previously entitled if his wages were to rise slightly, which obviously acts as a disincentive towards seeking any advancement in professional terms.

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

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

The greatest impediment to the occurrence of disincentives in the programme is, however, to be found in the value of the minimum income itself. In 1997, the value of the social pension was 21000$00, which corresponded to roughly 37% of the national minimum wage, set at 56700$00. In principle, only in the case of workers with extremely low wage levels would the conditions exist for the "poverty trap" to come into operation.

One final difficulty associated with the application of the GMI has to do with the fact that not all the individuals legally recognised as having the appropriate conditions of eligibility actually apply for the benefit to which they are entitled. This problem, designated as *take-up*, is usually explained as resulting from two situations: first of all, from the lack of information that the potential beneficiaries have about their entitlements, coupled with the complexity of the procedures involved in applying for the subsidy; secondly, the social stigma that is attached to applying for this type of support.

No studies have yet been made 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 indeed quite significant. Atkinson, A. (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 notes that only

between 76 and 83 per cent 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 Guaranteed Minimum Income 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 basic 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 subsidy, as well as identification of the amount of the subsidy to which they are entitled, are essential steps for thereafter comparing pre- and post-GMI income distribution and identifying the main changes that have occurred in the pattern thereof. Another objective underlying the modelling of the GMI obtained with the construction of the baseline scenario 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. As was said earlier, this equivalence scale is substantially different from the modified OECD scale that we have used for the analysis of equivalent income in this study, so that construction of this 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 threshold that makes it possible to classify a household as being in a situation of extreme economic poverty under the terms of the legislation itself, is calculated by multiplying the value of the social pension in 1997 (converted to 1996 prices) by the number of equivalent adults (GMI scale) existing in each household. Given that the 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, i.e. the amount of income that serves as a reference for determining eligibility for the GMI. The reference income is obtained by the aggregation of all monetary sources of income of the household, but where only 80% of the wages and salaries are included;

4. Identification of the households that are eligible for the GMI programme. Any household whose net reference income is lower than its defined minimum income will automatically be included in the GMI programme;

5. Determination of the annual subsidy for each household in the programme. The subsidy that each household receives under the scope of the GMI programme is equal to the difference between the minimum income calculated for this household and its reference income;

6. Calculation of the post-GMI income distribution. The new post-GMI income distribution is obtained from the initial one by adding the amount of the GMI subsidy 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 (modified OECD scale) is similarly obtained in order to compare the two distributions and assess the impact of the GMI.

The methodology used makes it possible to simulate, as accurately as possible, the amount of the transfers resulting from the application of the GMI programme. However, as we saw earlier, the scope of the Guaranteed Minimum Income 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 is complementary to the 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 for the application of the GMI is constructed under the assumption that there is no behavioural change made by either households or individuals in response to the existence of the minimum income programme. It similarly

presupposes that all households that are potentially entitled to receive the subsidy do in fact do so.

4. Main Results of the GMI Simulation

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 Guaranteed Minimum Income Programme, which are summarised in Table 1

Table 1
Simulation of the Impact of the Guaranteed Minimum Income Programme
Main Indicators

	Values	(%)
Household Participation Rate	150170	4.8
Individual Participation Rate	533514	5.7
Total Expenditure (10^6 escudos/year)	30575	
Mean Transfer per Household participating in the programme (10^3 escudos/year)	203.60	

Notes: Values at 1996 prices

Source: HBS 94/95. Calculations made by the author from microdata.

In mainland Portugal, the Guaranteed Minimum Income Programme covers roughly 4.8% of households and 5.7% of individuals[9]. The GMI thus directly affects roughly 150000 households and more than 500000 persons. At 1996 prices, the overall amount of the subsidy to be granted amounts to 30.6 billion escudos. This estimated amount

[9] Although the scope of this study is restricted to both the territory and population of mainland Portugal, the methodologies and analyses developed here could quite easily be extended to include the whole of the national territory. The values associated with the simulation of the GMI baseline scenario for the country as a whole show that the GMI will affect 5.2% of households and 6.3% of individuals nationwide.

represents less than 1% of total Social Protection Benefits in 1996 and less than 0.2% of the Portuguese Gross Domestic Product. The mean subsidy awarded each year for each household participating in the GMI is roughly 203.6 thousand escudos.

A first impression that arises from these figures is that a very considerable number of Portuguese men and women live under conditions of extreme precariousness, with an equivalent disposable income that is less than that of the Social Pension, for which reason they are eligible to receive the GMI subsidy.

4.1 Impact of the GMI on income distribution

The most immediate effects of the Guaranteed Minimum Income Programme on income distribution can be seen in Table 2. 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.

Table 2
Simulation of the Impact of the Guaranteed Minimum Income Programme
Individual Distribution of Disposable Income per equivalent Adult
Pre-GMI and Post-GMI

Decile	Pre-GMI	Post-GMI	Rate of Variation (%)
1	440.5	483.5	9.8
2	649.6	656.0	1.0
3	811.7	814.8	0.4
4	951.7	953.3	0.2
5	1094.1	1094.5	0.1
6	1259.0	1259.5	0.0
7	1454.6	1454.9	0.0
8	1724.4	1724.6	0.0
9	2218.7	2219.8	0.0
10	3984.2	3984.4	0.0
Total	1459.7	1465.3	0.4

Notes: Values at 1996 prices

Source: HBS 94/95. Calculations made by the author from microdata

The mean income per equivalent adult increases by 0.4%. As 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 roughly 10%. The programme's impact on the remaining deciles is practically insignificant.

Table 3 shows us the rate of individual participation in the GMI, as well as the distribution of the programme's beneficiaries throughout the various deciles of the distribution of disposable income per equivalent adult. In the first decile of the distribution, the rate of participation is 38.9%, which corresponds to 68.6% of the programme's total number of beneficiaries.

Table 3
Simulation of the Impact of the Guaranteed Minimum Income Programme
Participation Rate and Distribution of Beneficiaries by Decile

Decile	Participation Rate (%)	Distribution of Beneficiaries (%)
1	38.9	68.6
2	10.5	18.5
3	4.1	7.3
4	0.7	1.2
5	0.7	1.3
6	0.4	0.7
7	0.3	0.6
8	0.4	0.7
9	0.6	1.0
10	0.2	0.2
Total	5.7	100.0

Source: HBS 94/95. Calculations made by the author from microdata.

In view of the resources condition that underlies eligibility for the GMI, we may wonder how it is possible for the effects of the GMI to be felt practically throughout the distribution, albeit to different extents. How is it possible that individuals situated in the last decile of income distribution can receive GMI transfers, even if only in a marginal form? 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 established.

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 monetary income from work. **This conceptual difference in the definition of income implies that in assessing eligibility for the GMI only 68.1% of the total of household incomes is taken into account**. As the difference between these two concepts is not uniformly distributed throughout the income scale, this means that, at

the furthermost limit, a household that is situated at the lower end of the distribution according to the definition of the GMI, and is therefore eligible to participate in the programme and receive the respective subsidy, may effectively be situated at the upper end of the distribution if its total income is taken into account.

Another question which the baseline scenario makes it possible to answer is that of the effectiveness of the GMI as an instrument for reducing inequality. Table 4 compares the Lorenz curves associated with the individual distribution of income per equivalent adult before and after application of the GMI.

As would be expected, the curve resulting from the application of the GMI is more egalitarian than that of the distribution prior to implementation of the programme. What is particularly interesting to analyse here is to what extent its effects can be said to be significant throughout the income distribution. As can be seen, the GMI has a significant effect on the first decile of the distribution. These effects are progressively less the further up the income scale one moves and are practically nil for values above the median.

Table 4
Simulation of the Impact of the Guaranteed Minimum Income Programme
Pre-GMI and Post-GMI Lorenz Curves

Decile	Pre-GMI	Post-GMI	Rate of Variation
1	0.0302	0.0326	7.90
	(0.0004)	(0.0003)	
2	0.0746	0.0777	4.07
	(0.0008)	(0.0007)	
3	0.1303	0.1332	2.23
	(0.0012)	(0.0011)	
4	0.1953	0.1983	1.53
	(0.0016)	(0.0016)	
5	0.2702	0.2731	1.08
	(0.0020)	(0.0020)	
6	0.3564	0.3592	0.78
	(0.0024)	(0.0024)	
7	0.4562	0.4585	0.50
	(0.0029)	(0.0028)	
8	0.5747	0.5762	0.27
	(0.0032)	(0.0032)	
9	0.7263	0.7273	0.14
	(0.0033)	(0.0033)	
10	1.0000	1.0000	

Note: Standard errors are show between brackets

Source: HBS 94/95. Calculations made by the author from microdata

Given the relationship between the pre-GMI and post-GMI Lorenz curves, it can be assumed that all inequality measures considered show a reduction in the levels of inequality after application of the programme. What seems particularly pertinent to us here is to consider the importance of this reduction. Table 5 shows the changes that have taken place in the inequality of income as a result of the programme's application[10].

[10] For more detailed information on these measures see Atkinson, A.B.(1970,1983), Cowell, F.(1981,1994,1999) or Lambert, P. (1993). For a description of the poverty measures presented in the next section see Sen, A.(1979,1997), Ravallon, M.(1994) and Foster, J., Greer, J. and Thorbecke, E.(1994).

Table 5
Simulation of the Impact of the Guaranteed Minimum Income Programme
Pre-GMI and Post-GMI Inequality Measures

	Pre-GMI	Post-GMI	Rate of Variation
Gini Index	0.3446	0.3403	-1.26
	(0.0051)	*(0.0050)*	
Atkinson Index (ε=0.5)	0.0967	0.0937	-3.14
	(0.0030)	*(0.0029)*	
Atkinson Index (ε=1.0)	0.1790	0.1716	-4.13
	(0.0048)	*(0.0046)*	
Atkinson Index (ε=2.0)	0.3154	0.2932	-7.04
	(0.0070)	*(0.0061)*	
Generalised Entropy Index (α=-1.0)	0.2304	0.2074	-9.96
	(0.0075)	*(0.0061)*	
Generalised Entropy Index (α=0)	0.1972	0.1883	-4.54
	(0.0058)	*(0.0056)*	
Generalised Entropy Index (α=1.0)	0.2109	0.2058	-2.39
	(0.0077)	*(0.0076)*	
Generalised Entropy Index (α=2.0)	0.2870	0.2824	-1.60
	(0.0162)	*(0.0161)*	

Note: Standard errors of the estimates are shown between brackets
Source: HBS 94/95. Calculations made by the author from microdata

As can be seen, all indices show a reduction in the levels of inequality, and this reduction is greater when the index is more sensitive in relation to the lower part of the distribution. A reduction of 7.0% in the Atkinson index of inequality (with a degree of aversion to inequality given by α=2) indicates that there are significant alterations in the lower income scales, which confirms the analysis made earlier in relation to the changes in the Lorenz curve.

An overall consideration of the effects of the GMI in terms of its equalising impact cannot be anything other than positive, although it could be argued that a programme that has the sort of objectives that are proposed by the GMI should go further, bringing about more significant changes in the distribution of income .

4.2 Effectiveness of the GMI in combating situations of poverty

The results of the application of the Guaranteed Minimum Income Programme in terms of poverty reduction are shown in Table 7. Taking as the frame of reference the central values corresponding to a poverty line defined as 60% of the median income, the baseline scenario of the GMI shows a reduction in poverty, expressed in terms of the number of individuals, from 18.1% to 17.8%. Although, at first sight, this reduction may seem to be quite modest, it does in fact mean that, thanks to the implementation of the GMI, roughly 9800 households and more than 34000 individuals are able to leave their situation of poverty[11].

The relatively modest fall in the poverty rate is not surprising in view of the amount established as the baseline value. The value of the social pension corresponds to only 34% of the poverty line, which is defined as 60% of the median income per equivalent adult. With a minimum defined income that is far below the poverty line, the impact of the GMI on the poverty rate ought to be nil, i.e. no poor person should cease to be so simply by receiving transfers from the Guaranteed Minimum Income Programme. Once again, the difference between the income categories considered under the resources condition and the total household income explains how some households that were slightly above the poverty line and simultaneously had incomes that were not "controlled" by the GMI might be able to leave the situation of poverty by receiving the GMI subsidy.

More significant than the reduction in the poverty rate, however, are the alterations that took place in the severity and intensity of poverty. Table 6 shows that the reductions in the intensity of poverty (Foster's F_1 measure) and in the severity of poverty (Foster's F_2 measure) were 14.5% and 29.5%, respectively. This would seem to us to be one of the most successfully achieved objectives in the programme: that of significantly improving the living conditions of the least protected households and individuals in Portuguese society.

[11] The exact values obtained in the baseline scenario of the GMI, for the whole of mainland Portugal, are 9806 households and 34044 individuals leaving a situation of poverty thanks to the implementation of the GMI.

Table 7
Simulation of the Impact of the Guaranteed Minimum Income Programme
Pre-GMI and Post-GMI Poverty Measures

	Pre-GMI	Post-GMI	Rate of Variation
Poverty Line (40%)	**462.29**	**462.29**	
Poverty Rate (F0)	0.0511	0.0378	-26.15
	(0.00007)	(0.00006)	
Poverty Gap (F1)	0.0113	0.0052	-54.13
	(0.00002)	(0.00001)	
Severity of Poverty (F2)	0.0041	0.0011	-73.08
	(0.00001)	(0.00000)	
Poverty Line (50%)	**586.60**	**586.60**	
Poverty Rate (F0)	0.1131	0.1045	-7.56
	(0.00010)	(0.00010)	
Poverty Gap (F1)	0.0252	0.0184	-26.73
	(0.00003)	(0.00002)	
Severity of Poverty (F2)	0.0090	0.0048	-47.13
	(0.00001)	(0.00001)	
Poverty Line (60%)	**703.93**	**703.93**	
Poverty Rate (F0)	0.1812	0.1776	-1.99
	(0.00013)	(0.00012)	
Poverty Gap (F1)	0.0456	0.0390	-14.52
	(0.00004)	(0.00003)	
Severity of Poverty (F2)	0.0171	0.0120	-29.46
	(0.00002)	(0.00001)	

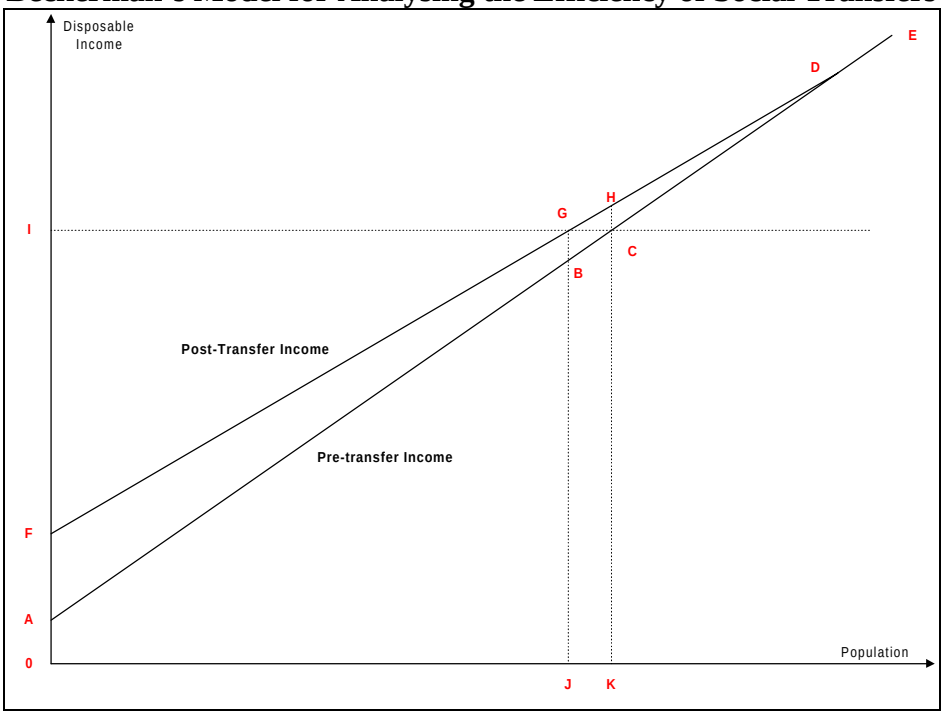
Note: Standard errors of the estimates are shown in brackets
Source: HBS 94/95. Calculations made by the author from microdata.

4.3 Efficiency of the GMI in combating situations of poverty

The analysis carried out in the previous section in relation to the effectiveness of the Guaranteed Minimum Income Programme in fighting situations of poverty represents a crucial indicator of the programme's success as a measure of positive discrimination in favour of the least favoured individuals and households. This analysis must, however, be complemented by a consideration of the level of efficiency in the programme's application, i.e. by an assessment of what proportion of the GMI transfers effectively contribute to a reduction in poverty.

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

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



The horizontal axis represents individuals or households ranked in increasing order of income and the vertical axis represents their respective incomes. The line *AE* represents the initial income of the population, whilst the post-transfer income is given by the line *FDE*.

If we consider that the poverty line corresponds to the distance *OI*, the poor population 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 in 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 poor persons is given by the distance *JK*. The part of the transfers received by poor families corresponds to the area *ACGF*, whilst the part

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)** - Represents the proportion of total transfers received by those households that were poor before the programme.

$$\textbf{VEP} = \frac{\text{area ACHF}}{\text{area ADF}}$$

ii) **Poverty Reduction Efficiency (PRE)** - Represents the proportion of transfers that effectively contributes to a reduction in poverty, expressed by the poverty gap.

$$\textbf{PRE} = \frac{\text{area ACGF}}{\text{area ADF}}$$

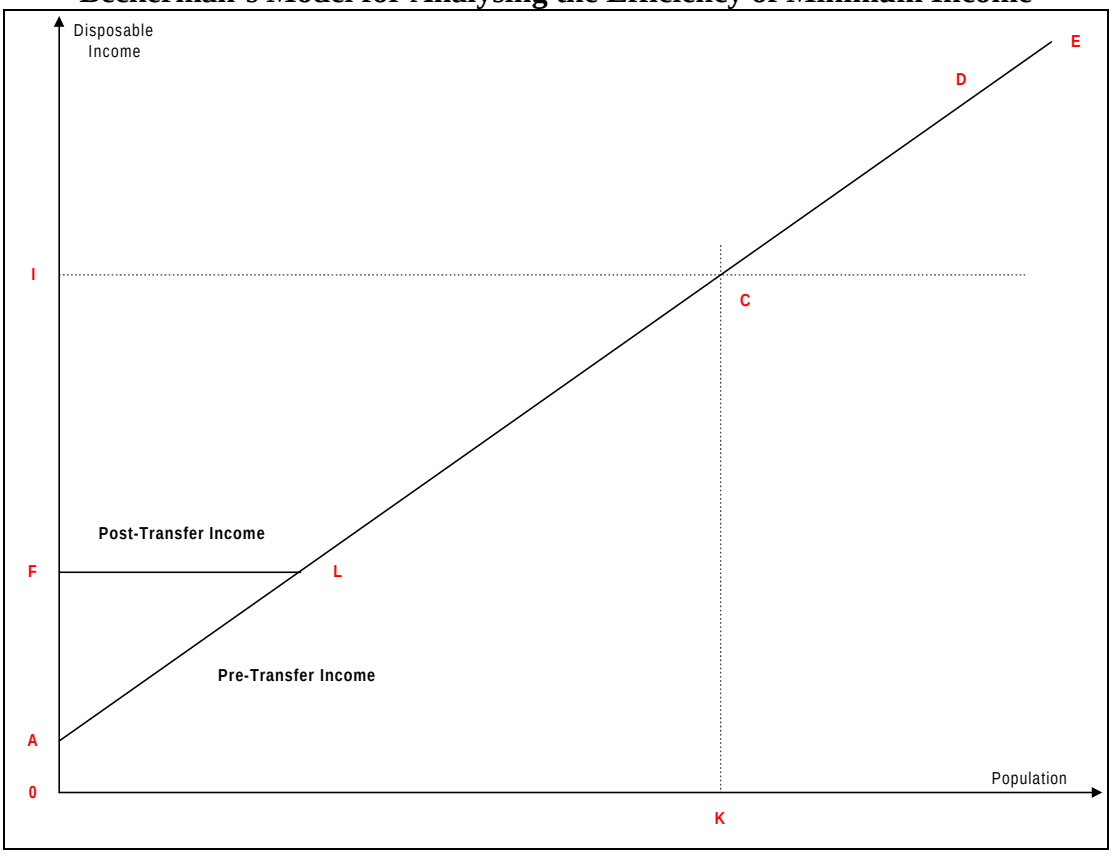
The concept of poverty reduction efficiency takes into account the "waste of resources" associated with the transfers made to the non-poor population, but also the spillover to the households that were initially poor and that ceased to be so after the programme. This spillover, corresponds to the area *GCH* in the graph. If poverty reduction were the programme's only objective, the spillover would amount to a kind of excess payment, in so far as the population situated between *J* and *K* in Figure1 receives transfers that are higher than those that they would need to reach the poverty line.

Beckerman himself recognises that the use of efficiency measures does not dispense with the need for effectiveness measures of the poverty reduction programme. Instead, the former actually complement the latter. 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 had a certain impact.

In the case of a measure with the characteristics of the Guaranteed Minimum Income Programme implemented in Portugal, the graph of the changes brought about in 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.

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



The effects of the application of the theoretical model shown in the previous figure would be as follows: from the viewpoint of its effectiveness in combating 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 *ALF*, which would correspond exactly to the total of transfers associated with the programme[12]; as far as efficiency measures are concerned, the programme would be 100% efficient, in so

[12] In the two graphs shown here, it should be borne in mind that no consideration is made of the redistributive effects of the programme's costs on income redistribution.

far as all of the amount associated with the GMI would be destined for the poor population and it would all 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-GMI and post-GMI distributions is not shown in Figure 1, namely because the non-linearity of the GMI in relation to the true initial distribution of income 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 frame of reference:

i) The total amount of transfers is 30.6 billion escudos per year (area *AFD*);

ii) The total amount of transfers to the population that was initially below the poverty line is 26.0 billion escudos per year (area *ACHF*);

iii) The total amount of transfers to the population that was not initially poor is 4.6 billion escudos per year (area *CHD*);

iv) The reduction in the incidence of poverty is given by the distance *JK*, with the poverty rate falling from 18.1% to 17.8%;

v) The reduction of the poverty gap amounted to 24.9 billion escudos per year (area *ACGF*) falling from 201.9 (area *ACI*) to 176.9 billion escudos per year (area *FGI*);

vi) The spillover amounted to 1.0 billion escudos per year, corresponding to the area *CHG*.

The simulated impacts of the application of the GMI using Beckerman's model as a reference confirm the analysis carried out in the previous section regarding the programme's effectiveness in combating poverty: a small fall in the incidence of poverty accompanied by a significant decrease in the intensity of poverty; the poverty gap falls by 12.3%.

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 85%, which means that roughly 15% 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 82%, 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 that are not "controlled" under the current resources condition[13]. It would thus be possible to transfer a greater amount to those individuals that are effectively poor, increasing both the effectiveness and efficiency of the programme in combating poverty.

5. Overall Assessment of the Programme

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, as well as its impact on the various dimensions of the poverty phenomenon.

Analysis of the effects of the GMI on income distribution make it 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 very positive impact on those families living in a situation of greater precariousness.

If we compare the 1995 income distribution with a distribution in which there has been a simulation of the implementation of the Guaranteed Minimum Income, we can see that the programme's impact on inequality levels and the poverty rate is in fact quite

small. The Gini index is reduced from 0.345 to 0.340, whilst the prevalence of poverty falls from 18.1% to 17.8%.

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 programme 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 that the GMI is 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 it 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 would seem to us 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.

[13] Consideration of the structure of the resources 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.

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