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Manos MATSAGANIS
University of Thessaly and CERES

Fotis PAPADOPOULOS
Athens University of Economics and Business

Panos TSAKLOGLOU
Athens University of Economics and Business, IMOP and CERES

ESTIMATING EXTREME POVERTY IN GREECE

and the cost of eliminating it through a minimum guaranteed income scheme

Abstract

The poverty reducing impact of social transfers is weaker in Greece than in the rest of the EU. Institutional aspects of the country's social protection system (and among them, the absence of a national minimum social safety net) bear much responsibility for this. Interest in the desirability and feasibility of introducing a minimum income scheme in Greece seems to have revived recently. The paper aims to provide answers to key questions about the effects of such a scheme: the extent and depth of extreme poverty in the country, the number of individuals or households likely to be affected by it and its estimated cost. Alternative scenaria about the extent of non-take up by eligible households and leakages to non-eligible ones are also examined. The results of the analysis suggest that the introduction of a minimum income scheme could go a long way towards effectively mending the country's social safety net, while at the same time greatly contributing to eliminating extreme poverty and reducing inequality. A phased implementation of the scheme would allow careful monitoring of its effects, leading to modifications of its institutional design if needed, while also providing the necessary time to upgrade the administrative capabilities of the authorities charged with the task of its implementation.

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Address for correspondence:
Panos Tsakloglou,
Department of International and European Economic Studies,
Athens University of Economics and Business,
76 Patission Str.,
Athens 10434
GREECE
e-mail: panos@aueb.gr

1. Introduction

The fight against poverty, though not the exclusive *raison d'être* of the welfare state, undoubtedly constitutes one of its main objectives. As recent research has shown [EC (1998a); Heady Mitrakos and Tsakloglou (1999)], Greece's social protection system performs poorly against this objective[1]. The reasons for this are twofold: on one hand, expenditure on social transfers in Greece is lower, though not much lower, than the European Union average[2]; on the other hand, perhaps more significantly, the pattern of social expenditure is out of balance, as it places heavy emphasis on retirement pensions (often paid to relatively young pensioners), while allocating insufficient resources to areas such as family benefits, support to the unemployed and social assistance[3].

In particular, social assistance, that part of the welfare state most ideally suited to poverty relief, remains rather marginal in Greece. However, as a recent survey found [Matsaganis (2000)], its significance is greater than previously thought and its profile is set to rise due to a renewed emphasis on notions of selectivity and targeting. Still, the debate on the role social assistance ought to play within a reformed welfare state inevitably involves addressing, among other things, the issue which various analysts [e.g. Ferrera (1996), Gough (1996)] had previously identified as a defining feature of social protection in southern Europe as a whole: the absence of a national minimum social safety net[4].

Although there are almost as many minimum guaranteed income schemes in the EU as there are member countries, all such schemes share a few broad characteristics. In the description of a recent report [EC (1998b)], minimum income schemes operate as a final safety net for individuals unable to make their living otherwise, covering essential needs in situations of extreme poverty. The schemes are non-contributory, financed by tax revenues. Minimum incomes provide a differential financial aid, by

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1. European Community Household Panel data for 1993 show that while the poverty rate *before* social transfers in Greece was lower than the average for 12 European countries (37.4% vs. 39.4%), the position regarding the poverty rate *after* social transfers was reversed (23.7% in Greece vs. 17.1% in the EC-12). Put another way, poverty reduction in Greece was only 13.7 percentage points, compared to an average of 22.3 percentage points in the 12 countries covered by the ECHP [EC (1998a)].

2. According to the same source, social transfers as a proportion of household income in 1993 were 24.8% in Greece compared to an average of 30.4% in the 12 countries covered by the ECHP [EC (1998a)].

3. Social transfers other than retirement pensions in the European Union represent an average of about 25% of all social transfers, while this proportion in Greece is approximately 10% [EC (1998a).

4. In the meantime, other south European countries moved to remedy this deficiency: Portugal introduced *Rendimento Minimo Garantido* (as a pilot scheme in 1996, generalised the year after), while in Italy formal experimentation with *Reddito Minimo d'Inserimento* began in 1998. These developments leave Greece as the only EU country where no such scheme yet exists.

making up the shortfall between the guaranteed minimum on one hand, and the household's own resources on the other, whether in the form of earnings from work or other incomes (including social benefits).

The present paper attempts to simulate the effects of a minimum guaranteed income scheme in Greece should it be introduced in the year 2000. The simulation is based on the following assumptions:

(a) that the amount of the minimum income guarantee for a single individual is set equal to the social pension (paid to those over 65 with insufficient contributions for a social insurance pension), i.e. 131 Euros a month, paid 14 times a year;

(b) that the equivalence scale applied in order to establish the guaranteed amount for multimember households is that of the Portuguese minimum income scheme (1.0 for each of the first two adults, 0.7 for each additional adult, and 0.5 for each child under 18); and

(c) that in order to reduce the implicit marginal tax rate (withdrawal of benefit as income rises), the reference income used to determine eligibility includes only 80% of all earnings from work, plus 100% of all other incomes.

The paper is intended as a contribution to providing preliminary answers to some of the key questions about the effects of a minimum guaranteed income scheme in Greece: the extent and intensity of extreme poverty in the country, the proportion of individuals and households likely to benefit from such a scheme, its estimated cost. Alternative scenaria about the extent of non-take up by eligible households, leakages to non-eligible ones and their distributional implications are also examined.

The material presented here is organised as follows: the next section describes the European Community Household Panel data set, that is, the source of information on very low incomes used in this paper; following that, the methodology of the analysis is presented in some detail, before attention turns to the findings of this analysis in terms of both extreme poverty in Greece and the simulated effects of a minimum guaranteed income scheme; the policy implications of the introduction of such a scheme are further discussed, before the paper finally winds up with a brief recapitulation of the main conclusions.

2. Data

The data used in the paper come from the European Community Household Panel (ECHP). The ECHP is a panel survey of a sample of households carried out annually in most EU member states. Detailed information is collected on incomes, demographic and socio-economic characteristics of the population members, their labour market situation, health, education and training, etc. It is expected that when

the panel matures, its longitudinal structure will make possible to follow the trajectories of the same families and individuals over a long period of time. Further, since the survey questionnaire and the method of information collection are almost identical across countries, the ECHP is likely to become a very useful tool for cross-country comparative studies. ECHP information was first collected in 1994 in twelve member-states and the second wave was carried out in 1995, with 1994 being the reference year for incomes[5].

The present paper utilises the data of the second wave of the Greek section of the ECHP. The sample consists of 5,350 households with 15,163 members and, moreover, sample weights are used at the household and the individual level in order to bring the ECHP sample in line with a number of characteristics of the entire Greek population in 1995. The concept of income used is "net monetary income after income taxes and social security contributions". It includes wages, salaries, income from self-employment, capital income, rents, private transfers and social transfers. At the moment, no information on private incomes in-kind is collected in the framework of the ECHP. The latter may have serious consequences for the measurement of poverty and inequality in Greece, since a very considerable proportion of those classified as poor live in owner-occupied accommodation and have other incomes in-kind (particularly from consumption of own production in agriculture)[6].

The distributions used are distributions of equivalent income per capita or per household. The distribution of equivalent income per capita results from the division of the total income of each household's members by the household's equivalence scales (see below) and the assignment of the resulting figure to each member of the household. Likewise, the distribution of equivalent income per household results from the assignment of this figure to each household.

Ideally, for the examination of the likely impact of the introduction of a minimum guaranteed income scheme we would wish to have access to a dynamic tax-benefit model. Such a model does not exist in Greece[7]. Nonetheless, since the corresponding transfers are considered as "benefits of last resort", their interaction with the income tax side of a tax-benefit model is likely to be minimal, while their interaction with the rest of the social benefits is captured satisfactorily using the methodology outlined below. With respect to the impact of such a scheme on incentives to work, we try to

5. For a description of the methodology used in the ECHP and its implementation, see Eurostat (1996).

6. Using the data of the 1993/94 Household Budget Survey, Tsakloglou and Papadopoulos (2000) estimate that the omission of income in-kind increases the recorded level of inequality by 11-20% and the recorded level of poverty by 13-35%, depending on the indices of inequality and poverty used.

7. For a good introduction to tax-benefit modeling see Atkinson and Sutherland (1988). The only existing Greek tax-benefit model is that of Papapanagos (1994), which is static and rather dated with respect to its database (it utilises tax data for 1985).

limit the corresponding disincentives to work by building into the scheme an allowance for a particular proportion of earnings disregard.

3. Methodology

As mentioned earlier, the latest wave of the European Community Household Panel that was available at the time of writing contained information on incomes earned in the year 1994. The estimation of extreme poverty and the effects of minimum income in the year 2000 made it necessary to adjust ("uprate") our data set. This involved the following adjustments:

1. The 1994 sample was re-weighted on the basis of the latest data from the Labour Force Survey (data for the second quarter of 1998), in order to reflect more accurately the current composition of the population as regards employment.
2. Incomes from old age benefits around the level of the social pension in 1994 were set equal to its current level.
3. All other incomes were increased at the rate of growth in GDP per capita over the period 1994-2000.

These three adjustments created an "uprated" data set, which was then used for the estimation of poverty and extreme poverty in the year 2000.

At this point we ought to note that the procedure described above is subject to risks. Possible errors include the following:

(a) Although total social expenditure has broadly kept in pace with GDP growth, its incidence among low-income groups is difficult to estimate. On one hand, most benefits (with the exception of social and agricultural pension) rose at a rate approximately equal to the retail price index, which was about half the rate of GDP per capita growth. On the other hand, the number of beneficiaries continued to increase, as a result of demographic change but also because of the post-1994 introduction of new benefits or an expansion of already existing ones.

(b) Earnings are unlikely to have risen in a uniform manner, equal to the growth of GDP per capita. Almost certainly, there has been variation in earnings growth between sectors of the economy, between occupations, and between regions. These variations may have influenced the distribution of income, and therefore render partly inaccurate some of our estimates, although the results of earlier studies [Tsakloglou (1993, 1997), Mitrakos and Tsakloglou (2000)) suggests that it is unlikely that the overall results have been significantly affected.

(c) Some other incomes (non-work and non-transfer) are likely to have increased at a rate higher than the one presumed in the paper. In particular, the spectacular

growth of stock exchange transactions and share prices in the late 1990s has greatly increased the realised capital gains of many people, most of whom had never invested (or, perhaps more accurately, speculated) in stocks before[8]. Nevertheless, this omission is unlikely to have an important impact on our estimates since, on the one hand, these gains are directed towards the top end of the distribution and, on the other hand, the poverty lines used here do not depend on the mean of the income distribution.

Although the above list of possible errors is certainly rather disconcerting, very little can be done in the absence of more recent information about how these factors have affected the distribution of income (especially in the low end of the income scale).

The extent and depth of extreme poverty in Greece was estimated on the "uprated" data set, on the assumption that (a) the extreme poverty line for a single individual is equal to the amount of the social pension, and (b) the equivalence scale applied is that of the Portuguese minimum income scheme, which assigns a weight of 1.0 to each of the first two adults, 0.7 to each additional adult, and 0.5 to each child under 18 [Gouveia and Rodrigues (1999)].

Alongside extreme poverty we also estimated "conventional" poverty, as defined by the European Commission: poverty line equal to 60% of median equivalent income, and an equivalence scale ("modified OECD scale") which assigns a weight of 1.0 to the first adult, 0.5 to each additional adult, and 0.3 to each child under 16 [Hagenaars, de Vos and Zaidi (1994)]. It should be noted that the equivalence scales used for the analysis of extreme poverty are far more generous (i.e. they imply lower household economies of scale in consumption) than those used for the analysis of "conventional" poverty. Taking into account that at extremely low income levels there are limited possibilities for the realisation of economies of scale in consumption, this differentiation does not seem unjustifiable, although it may have implications for some of the findings presented below.

More specifically, the poverty rate, contribution to aggregate poverty and poverty gap of the population's various sub-sets (whether defined by household composition or by the employment status of the head or individual members of each household) were all estimated for both conventionally defined as well as extreme poverty.

Once poverty and extreme poverty were dealt with, the next task was to simulate the effects of a minimum income scheme, should it be introduced in the year 2000. This involved taking into account the theoretical "rules" of the scheme. For the purposes of the paper, it was assumed that the following conditions applied:

8. Note that capital gains in Greece are not taxable, nor are they recorded in the National Accounts.

1. The reference income disregards 20% of all earnings from work, although it includes incomes from all other sources (including social transfers) in full.

2. Farming households whose annual monetary income appears to be less than 1.2 million Drs. (3625 Euros) are assumed to have an "implicit income" equal to that amount[9].

3. Households headed by students in full-time education are excluded, since low-income students are eligible for various in-kind benefits (such as free or subsidised accommodation and meals).

4. A household is eligible for a minimum income benefit if its reference income is below the extreme poverty line (i.e. the "minimum income guarantee") that applies to that household, taking into account the previous three points.

5. The minimum income benefit received by each eligible household is equal to the difference between that household's reference income and the relevant minimum income guarantee.

The total cost of the scheme is computed by simply adding up the minimum income benefit transfers provided to all eligible households.

In the final part of the analysis, we estimate the effect of the simulated minimum income scheme on a number of indices of poverty and inequality. This task involved constructing the post-transfer income distribution and comparing it to the original one. The post-transfer income distribution was built by adding the minimum income transfer to each eligible household to the household's original income.

The inequality indices used for these comparisons are the Gini index (G) and the Atkinson (1970) index (A). The relevant formulae are:

$$G = 1 + \frac{1}{n} - 2\sum_{i=1}^{n} \frac{n+1-i}{2n\mu} \qquad (1)$$

$$A = 1 - \frac{1}{\mu}\left(\frac{1}{n}\sum_{i=1}^{n} y_i^{1-\varepsilon}\right)^{\frac{1}{1-\varepsilon}} \qquad (2)$$

where n, μ, and y_i denote, respectively the size of the population, the mean income of the population and the equivalent income of population member *i*. For the estimation of G, the members of the population are ranked in ascending order according to their (equivalent) income. In comparison with other indices of inequality, G is relatively more sensitive to changes close to the middle of the distribution, whereas in the case

9. This income corresponds to the lowest "insurance class" applied to determine the social insurance contributions due under the new contributory pension scheme for farmers, in operation since 1997.

of A as the value of the "inequality aversion parameter" (ε) rises the index becomes more sensitive to changes close to the bottom end of the distribution [Cowell (1995)]. Estimates of A were derived for three values of ε (0.50, 0.75 and 1.50).

For the purposes of poverty comparisons we relied on the poverty rate, P, and the index of Foster, Greer and Thorbecke (1984), F,

$$P = \frac{q}{n} \tag{3}$$

$$F = \frac{1}{n}\sum_{i=1}^{n}\left(\frac{z - x_i}{z}\right)^{a} \tag{4}$$

where z is the poverty line, q the number of poor population members and x_i a variable that takes the value of z if the income of the population member is greater than z and y_i if his income is below z. In line with most similar studies, the value of the "poverty aversion parameter" (α) in the case of F is set at α=2. P has an intuitive appeal and is, certainly, the most widely used poverty indicator but suffers from the disadvantage that it takes into account neither the average shortfall of the poor from the poverty line (poverty gap)[10] nor the extent of inequality in the distribution of resources among the poor. Unlike P, F (α=2) does not suffer from these disadvantages.

It should be noted that the effects of the minimum income scheme on these indices of poverty and inequality have been computed with reference to the income position after the transfer of *individuals* (household members), despite the fact that the size of the transfer itself is determined on a *household* basis.

Income-tested benefits are subject to two errors: type I, known as "false negatives" or "non-take up" (the non-provision of benefit to eligible applicants), and type II, known as "false positives" or "leakage" (the provision of benefit to non-eligible applicants)[11]. In view of this, the effect of the minimum income scheme was simulated for a variety of assumptions concerning the accuracy of targeting.

The baseline scenario was that of perfect targeting (i.e. a 100% take up rate and no leakages). Alternative scenaria involved combinations of non-take up (10%, 20% and 30%) and potential leakage (25%, 50% and 100%). Potential leakage at the rate of ***x***% was computed as follows:

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10. The formula of the poverty gap, g, is: $g = \frac{1}{q}\sum_{i=1}^{q}\frac{z - y_i}{z}$

11. For a succinct discussion of imperfect targeting, see Atkinson (1995). For an interesting survey of non-take up of social security benefits in Europe, see Van Oorschot (1991).

(a) A certain number of non-eligible households, equal to ***x***% of eligible households in the perfect targeting scenario, were assumed to conceal a proportion of their income in order to become eligible.

(b) The supposedly "income concealing" households were randomly selected from those above the guaranteed minimum but below the median according to a predetermined pattern[12].

(c) The proportion of income concealed by the selected households was assumed to be equal to 50% of income from work (if earned in the private sector), plus 100% of non-work and non-transfer income. Transfer income and income earned in the public sector were assumed to be declared in full.

(d) An income concealing household was included in the potential leakage group if the resulting transfer was positive. In other words, households whose reference income remained above the eligibility threshold despite income concealing were assumed to remain ineligible.

4. Results

The poverty profile of the population of Greece as regards household composition is presented in Table 1. As the Table's last row shows, the "conventional poverty rate" (equivalent income below 60% of median) for the country as a whole was estimated at 20.2%. The household types experiencing the highest poverty rates were those of elderly people, living alone (43.8%) or with a spouse (44.7%). Households headed by a single parent[13] followed at not much above the overall rate (23.5%). Persons living alone and aged below 65 had a poverty rate of 20.5%, about the same as households in the category "other types" (21.3%). Childless couples had a below-average poverty rate (16.1%), while couples with children also appeared to experience relatively low poverty rates (ranging from 8.1% for couples with only one child aged less than 18, to 16.2% for couples with children of which at least one was over 18).[14] The picture

12. More specifically, it was assumed that households closer to the poverty line had a stronger incentive to conceal their incomes in order to benefit from the minimum guaranteed income scheme. As a consequence, all households with income above the guaranteed minimum but below the median were divided into five groups of equal size. Then, 36% of the supposedly "income concealing" households were selected from the first quintile (nearest the guaranteed minimum), 28% from the second, 20% from the third, 12% from the fourth and 4% from the fifth quintile (nearest the median). While the total number of "income concealing" households was allowed to vary (from 25% to 100% of "truly eligible" households), their composition was always made to follow the pattern described here.

13. Note that the definition of a "single parent household" used by Eurostat includes in this category many single parents with children aged over 16. This explains the relatively high – in comparison with other studies – population share of the group (5.2%).

14. This result is in line with the findings of recent research showing that Greece is one of the very few EU countries where child poverty is lower than the national average [Immervoll, Sutherland and de Vos (2000)].

changes if we focus instead on contributions to aggregate poverty, as this weights each group's poverty rate by its population share. As the same Table shows, couples with children account for over 37% of total poverty, while elderly people living alone or with a spouse for about 30%. Single parent households account for 6% and childless couples or persons living alone (aged less than 65) for less than 8% of total poverty. The remaining 16.7% of total poverty can be attributed to households in the heterogeneous category "other household types". The poverty gap ranges from 30% (couples with two children both aged less than 18) to 44% (one person aged less than 65), while it averages across all household types at about 34%.

As regards "extreme poverty" (defined as income below the guaranteed minimum), the overall rate was estimated at 5.5%. The group with the highest extreme poverty rate was, by far, elderly people living with their spouses (14.2%), though those living alone appeared to fare considerably better (5.2%).[15] Couples with one or two children below 18 had low extreme poverty rates (2.5% and 3.7% respectively), while all other household types clustered around the average, ranging from 4.5% (childless couple below 65) to 6.0% (one person aged less than 65). Over one quarter of aggregate extreme poverty was attributed to elderly people living with their spouses, and about one fifth each to couples with children over 18 and "other household types", the rest being almost equally divided between couples with young children and the other types of household listed in Table 1. Perhaps not surprisingly, given that the extreme poverty line was fixed at the level of the social pension, single persons over 65 had the lowest "extreme poverty gap" (less than 19%); on the other hand, single persons *below* 65 had the highest (42%). The overall extreme poverty gap was estimated at 26.4%.

The poverty profile as regards employment status is presented in Tables 2a and 2b, the latter referring to the employment position of household heads, while the former to that of individual household members. As Table 2a shows, the extreme poverty rate was highest among pensioners (11.0%) and self-employed in the agricultural sector (10.5%), followed by unpaid family workers (7.6%) and unemployed (6.8%). Taking into account that the overwhelming majority of the unemployed in Greece do not receive unemployment benefit, the latter result may at first sight seem paradoxical. The explanation lies in the definition of resources used in the paper (equivalent household income per capita). Most of the unemployed are either young persons living with their parents who work or receive a pension, or spouses of employed persons. At the other end, extreme poverty was low among private sector employees or self-employed (2.4% and 2.5% respectively), and almost zero among

15. To a considerable extent, the discrepancy in the poverty rate estimates of these groups reported in the two parts of Table 1 should be attributed to the differences in the equivalence scales used in these parts.

public sector workers (0.2%). Very similar patterns can be observed with respect to conventionally defined poverty[16]. Pensioners accounted for 34.2% of aggregate extreme poverty, while housewives and children below 16 accounted for 14.6% and 13.2% respectively. With the exception of public sector employees (whose contribution to aggregate extreme poverty did not exceed 0.3%), all other groups contributed from about 3.5% to 6.5% of total extreme poverty each. Again, this is quite similar to the pattern observed for poverty defined by reference to the 60% of median income line.

Switching attention to the employment status of the household head rather than that of individual members allows a further insight on the nature of extreme poverty. As Table 2b shows, the group experiencing the highest extreme poverty rate was that of members of households with unemployed heads (12.9%)[17], closely followed by those headed by a farmer (12.2%), a pensioner (11.1%), or a student (10.8%). Nevertheless, given the differences in population shares, only households headed by pensioners and farmers appeared to contribute significantly to aggregate extreme poverty, accounting for about one third and one quarter respectively, while only 0.2% of households headed by a public sector employee were affected by extreme poverty, contributing to 0.7% of total extreme poverty[18].

Rates of participation to the minimum guaranteed income scheme, under alternative assumptions concerning the rate of non-take up as well as leakages to non-eligible applicants, are presented in Table 3, together with the total cost implications of each scenario. As the Table's first row indicates, 6.7% of all households (6.4% of Greece's population) would be expected to participate to the minimum income programme, assuming perfect targeting. The benefits provided under the scheme would total 277 million Euros, equivalent to 0.23% of the country's GDP.

Naturally, the effects of non-take up and leakages to non-eligible applicants go to opposing directions, to a certain extent cancelling each other out. This is shown clearly in the remaining rows of Table 3. At one extreme, participation and costs are greatest if a non-take up rate of 10% and a potential leakage of 100% are assumed.

16. The difference in the figure for the overall poverty (and extreme poverty) rate between the Tables 1, 2a and 2b can be attributed to differences in the sample used for their estimation due to a small number of missing cases in the estimation of the latter two Tables.

17. This result, combined with the corresponding results of Table 2a possibly implies that it is not lack of employment of the individual per se but lack of links of any household member with the labour market that affects significantly the probability of falling into a situation of extreme poverty (most households with unemployed head do not have any other employed member).

18. It should be noted that our results concerning conventionally defined poverty are broadly in line with the results of earlier studies [Kanellopoulos (1986), Karayiorgas et al (1990), Tsakloglou (1990), Eurostat (1990), Hagenaars, de Vos and Zaidi (1994), Tsakloglou and Panopoulou (1998)] whereas no detailed study of extreme poverty in Greece has been undertaken so far.

Under this twin assumption, the number of recipients would be increased by 30%, while total costs would rise by 23% reaching a total of 339 million Euros, equal to 0.28% of GDP. At the other extreme, if we combine a high non-take up rate with a low potential leakage (30% and 25% respectively), participation to the scheme would *decrease* by 20% (21% on the basis of households), while total costs would be 23% lower. The "average" scenario of 20% non-take up with 50% potential leakage would produce results almost identical (in terms of costs and participation rates) to the perfect targeting scenario.

Any benefit scheme targeted to the poorest households would be expected to leave unaffected the poverty rate as defined conventionally (equivalent income below 60% of median). On the contrary, the conventional poverty rate would be reduced only if, as a result of imperfect targeting, benefits "leaked" to households with incomes above the guaranteed minimum but not much below the standard poverty line, lifting them out of "conventional" poverty. This is exactly the underlying situation depicted in Table 4. As the Table shows, the effect on the poverty rate becomes stronger as the proportion of leakage rises *irrespective of non-take up*: a proportional decline of 3% for a potential leakage of 100%, dropping to 2% and 0.5% for a potential leakage of 50% and 25% respectively.

While the poverty rate P ("headcount") seems to be affected in this counter-intuitive manner, the same is not the case with the Foster, Greer and Thorbecke index, F, since this is sensitive to the distribution of income within the group of poor households. Indeed, the greatest decline in poverty as measured by F is achieved under conditions of perfect targeting (29%). Conversely, the greater the non-take up rate the *smaller* the poverty decline, although leakages offset some of this effect. Still, increasing the potential leakage rate from 25% to 100% would fail to cancel out the rise in poverty (as measured by F) brought about by a corresponding increase to non-take up from 10% to 20%. In other words, the gain of benefit by those near the standard poverty line due to leakage is given less weight by F than the loss of benefit by those further down the income scale due to non-take up.

A similar pattern can be observed with respect to the effects of imperfect targeting on inequality. The Gini index, which is not particularly sensitive to changes close to the tails of the distribution, changes little as a result of variations in non-take up or leakage around its value under perfect targeting. However, the Atkinson index which is far more sensitive to changes close to the tails of the distribution, registeres the largest decline in inequality under perfect targeting, while increases in non-take up reduce this impact far more than increases in leakage enhance it. As an example, the proportional decline in inequality measured by the Atkinson index for $\varepsilon=1.5$ is the same under 20% non-take up plus 25% leakage as it is under 30% non-take up plus

100% leakage (8.7%, that is clearly below the 11.6% achieved under perfect targeting).[19]

5. Conclusions

As the preceding analysis clearly demonstrated, the proportion of population affected by extreme poverty in Greece (approximately 5.5%) is considerable. As a rule, such households are ineligible for any of the existing social benefits because they do not correspond to the "ideal type" imagined by legislators and, therefore, fail to fulfil the narrow categorical conditions demanded by the various programmes. Examples include the long-term unemployed whose eligibility to benefit has been exhausted; new entrants to the labour market excluded from unemployment benefit because they have never been employed; those precariously employed with no social insurance entitlements to draw upon in the event of a temporary loss of earnings; persons incapable to work who have failed to establish a claim to an invalidity pension or any of the categorical disability benefits; retired farmers on flat-rate pensions with dependents; and so on. In the absence of a last resort benefit, targeted in nature though universal in scope, the social safety net in Greece remains perforated [Matsaganis (2000)]. Introducing a minimum income programme could go a long way towards effectively mending the country's social safety net, while at the same time greatly contributing to eliminating extreme poverty and reducing inequality.

The decision to introduce a minimum guaranteed income scheme in Greece is likely to hinge upon two crucial considerations: budgetary implications and administrative requirements. Our estimates put the total cost of monetary transfers provided under the minimum income programme at approximately 0,23% of GDP, i.e. less than 1% of all expenditure on social benefits. This finding, that the costs of the programme are unlikely to prove prohibitive, is in line with the experience of other European Union countries where minimum income schemes are in operation [EC (1998b)].

Public administration in Greece is not distinguished by its efficiency, neither does it have a long tradition of providing income-tested support. Tax records are unlikely to be adequate for the purposes of assessing claimants' income: most of these would be exempt from the obligation to submit an income declaration for taxation purposes, while tax evasion has been somewhat contained recently but by no means defeated. Moreover, social security benefits are handed by different authorities with little or no co-ordination among them, whereas the attempt to provide each citizen with a single social security number (with the associated aim of storing all information on benefit

19. Note also that, as anticipated, the impact of the simulated benefit on inequality increases as the value of the inequality aversion parameter, ε, rises.

claims in individual computerised records) seems to have run into difficulties. These (and other) problems would have to be sorted out before a minimum income scheme can be fully and successfully implemented, though this, given some effort, need not be a forbidding condition.

Such administrative difficulties raise the obvious risk that the authorities who would administer the programme might be inundated with false claims. In order to control for this eventuality, we allowed for imperfect targeting with "potential leakages" of up to 100%. Put simply, that meant assuming that a large number of households (equal to the number of households receiving the benefit under perfect targeting), originally ineligible due to higher income, would under-declare their real income (to the tune of 50% of earnings from work in the private sectors and 100% of income from property or other assets) in order to become eligible. As explained earlier, the combination of a 100% "potential leakage" with a 10% non-take up rate would raise costs by 23%. In fact, 50% leakage with 20% non-take up would be financially neutral, while lower leakages or higher non-take up rates would *reduce* rather than increase total costs. In view of the above, tackling imperfect targeting is likely to require improving take up as well as fighting false claiming.

Finally, the minimum income scheme discussed here has, for the sake of simplicity, been presented as a pure monetary transfer. In practice, this is highly uncommon. On the contrary, entitlement to minimum income is almost everywhere linked to social integration measures. Moreover, programme rules typically require minimum income recipients to make themselves available for work or training, although exceptions apply in case of illness, disability or caring responsibilities for young children or disabled adults [Guibentif and Bouget (1997)]. Combining income support with "reactivation" measures is, from an administrative point of view, likely to prove more demanding. However, well designed programmes of social integration hold the promise of enabling recipients of state support to escape poverty rather than becoming dependent on benefits. Moreover, in the long run, the participation of beneficiaries to paid employment has the added effect of reducing expenditure on minimum income as well as other social benefits.

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Table 1. Poverty profile according to household type (Greece 2000)

Population group	Population share by household type (%)	Poverty[1]			Extreme poverty[2]		
		Poverty rate	Contribution to aggregate poverty (%)	Poverty gap	Poverty rate	Contribution to aggregate poverty (%)	Poverty gap
One person aged below 65	2.7	0.205	2.7	0.440	0.060	3.0	0.420
One person aged 65 or more	3.8	0.438	8.2	0.418	0.052	3.6	0.188
Childless couple (both below 65)	6.2	0.161	4.9	0.336	0.045	5.1	0.255
Childless couple (at least one person 65 or more)	9.9	0.447	21.9	0.342	0.142	25.6	0.202
Couple with one child (below 18)	8.3	0.081	3.3	0.328	0.025	3.8	0.269
Couple with two children (both below 18)	18.2	0.138	12.4	0.297	0.037	12.2	0.334
Couple with three or more children (all below 18)	3.9	0.130	2.6	0.309	0.044	3.1	0.265
Couple with one or more children aged 18 or more	25.9	0.162	20.8	0.319	0.046	21.7	0.207
Single parent household	5.2	0.235	6.1	0.324	0.053	5.0	0.344
Other household types	15.8	0.213	16.7	0.334	0.060	17.2	0.345
GREECE[3]	100.0	0.202	100.0	0.336	0.055	100.0	0.264

Notes:
1 Eurostat poverty lines and equivalence scales
2 Greek (theoretical) minimum income poverty lines and equivalence scales
3 n= 15160

Table 2a. Poverty profile according to employment status of *individuals* (Greece 2000)

Population group	Population share by employment status (%)	Poverty[1]			Extreme poverty[2]		
		Poverty rate	Contribution to aggregate poverty (%)	Poverty gap	Poverty rate	Contribution to aggregate poverty (%)	Poverty gap
Private sector employee	12.0	0.106	6.2	0.281	0.024	5.1	0.300
Public sector employee	8.4	0.026	1.8	0.253	0.002	0.3	0.353
Self-employed (not in agriculture)	8.8	0.108	4.6	0.303	0.025	3.9	0.274
Self-employed (agricultural sector)	3.5	0.325	5.6	0.371	0.105	6.6	0.300
Unemployed	4.7	0.257	5.9	0.328	0.068	5.7	0.273
Pensioner	17.4	0.369	31.3	0.373	0.110	34.2	0.199
Student	6.9	0.186	6.3	0.316	0.045	5.5	0.325
Housewife	16.0	0.236	18.4	0.305	0.051	14.6	0.293
Unpaid family worker	4.4	0.232	5.0	0.353	0.076	6.0	0.277
Other	2.0	0.316	3.1	0.347	0.094	3.4	0.263
Child below 16	15.7	0.159	12.2	0.318	0.047	13.2	0.329
GREECE[3]	100.0	0.205	100.0	0.335	0.056	100.0	0.264

Notes:
1 Eurostat poverty lines and equivalence scales
2 Greek (theoretical) minimum income poverty lines and equivalence scales
3 n= 14683

Table 2b. Poverty profile according to employment status of *household heads* (Greece 2000)

Population group	Household share by employment status of head (%)	Poverty[1]			Extreme poverty[2]		
		Poverty rate	Contribution to aggregate poverty (%)	Poverty gap	Poverty rate	Contribution to aggregate poverty (%)	Poverty gap
Private sector employee	22.6	0.148	16.9	0.288	0.035	14.9	0.284
Public sector employee	18.5	0.029	2.7	0.193	0.002	0.7	0.164
Self-employed (not in agriculture)	23.4	0.127	15.0	0.281	0.028	12.4	0.243
Self-employed (agricultural sector)	10.6	0.330	17.7	0.390	0.122	24.4	0.337
Unemployed	3.8	0.363	7.0	0.382	0.129	9.2	0.310
Pensioner	16.0	0.397	32.0	0.364	0.111	33.5	0.185
Student	0.9	0.333	1.5	0.340	0.108	1.8	0.288
Housewife	2.9	0.354	5.2	0.319	0.044	2.4	0.332
Other	1.4	0.337	2.4	0.287	0.062	1.6	0.391
GREECE[3]	100.0	0.198	100.0	0.335	0.053	100.0	0.264

Notes:
1 Eurostat poverty lines and equivalence scales
2 Greek (theoretical) minimum income poverty lines and equivalence scales
3 n= 14716

Table 3. Participation to minimum income guarantee scheme under alternative assumptions (Greece 2000)

Scenario[1]	Eligible households		Eligible persons		Cost		
	Proportion of all households	Perfect targeting =100	Proportion of total population	Perfect targeting =100	Million Euros[2]	Proportion of GDP (%)	Perfect targeting =100
Perfect targeting	6.7	100	6.4	100	277	0.23	100
10% non take-up / 25% potential leakage[3]	6.6	97	6.2	97	261	0.21	94
10% non take-up / 50% potential leakage	7.4	109	7.2	113	306	0.25	111
10% non take-up / 100% potential leakage	8.6	127	8.4	130	339	0.28	123
20% non take-up / 25% potential leakage	5.8	85	5.6	87	238	0.19	86
20% non take-up / 50% potential leakage	6.6	98	6.6	103	284	0.23	102
20% non take-up / 100% potential leakage	7.8	115	7.7	120	317	0.26	114
30% non take-up / 25% potential leakage	5.3	79	5.1	80	214	0.18	77
30% non take-up / 50% potential leakage	6.1	91	6.1	95	260	0.21	94
30% non take-up / 100% potential leakage	7.3	109	7.3	113	293	0.24	106

Notes:
1 Number of observations: 5350 households with 15163 members
2 Exchange rate of last week of January 2000 (mid-point): 1 Euro = 331 Drs.
3 Computation of ***x***% potential leakage: a number of non-eligible households (equal to ***x***% of all eligible households in the perfect targeting scenario) were assumed to conceal a proportion of their income in order to become eligible. This proportion was set equal to 50% of income from work, if earned in the private sector, plus 100% of all non-work and non-transfer income (income earned in public employment or from transfers was assumed to be declared in full). These households were then included in the potential leakage group if the resulting transfer was estimated to be positive.

Table 4. Distributional impact of minimum income guarantee scheme under alternative assumptions (Greece 2000)

Scenario[2]	Proportional decline[1] in:					
	Poverty[3]			Inequality		
				Atkinson		
	Poverty rate	Foster et al.	Gini	ε=0.5	ε=0.75	ε=1.5
Perfect targeting	0.0	29.0	1.8	9.4	9.2	11.6
10% non take-up / 25% potential leakage[4]	0.5	26.6	1.5	4.2	5.6	9.8
10% non take-up / 50% potential leakage	2.0	27.5	1.8	5.2	6.3	10.2
10% non take-up / 100% potential leakage	3.0	28.1	1.8	5.2	6.3	10.5
20% non take-up / 25% potential leakage	0.5	24.1	1.5	4.2	5.6	8.7
20% non take-up / 50% potential leakage	2.0	25.4	1.8	4.2	5.6	9.1
20% non take-up / 100% potential leakage	3.0	26.0	1.8	5.2	6.3	9.5
30% non take-up / 25% potential leakage	0.5	21.7	1.2	3.1	4.9	8.0
30% non take-up / 50% potential leakage	2.0	22.9	1.5	4.1	5.6	8.4
30% non take-up / 100% potential leakage	3.0	23.2	1.8	4.1	5.6	8.7

Notes:
1 Base estimates were as follows. Poverty rate: 0.202; Foster et al: 0.0332; Gini: 0.339; Atkinson (ε=0.5): 0.096; Atkinson (ε=0.75): 0.142; Atkinson (ε=1.5): 0.275.
2 n= 15163
3 Eurostat poverty lines and equivalence scales
4 Computation of ***x***% potential leakage: see Table 3.