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MULTIDIMENSIONAL POVERTY IN GREECE: A DEEP, PERSISTENT GREY?

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Abstract
This study fleshes out the picture of poverty and the poor in Greece, presenting findings with important implications for the Greek social inclusion strategy. Assessing poverty using both monetary and non-monetary dimensions of well-being it becomes evident that, for certain population groups, poverty risk is associated with deprivation risk (multidimensional nature of poverty). Focusing on the age dimension, the stochastic dominance analysis indicates that old age income poverty in Greece appears to be remarkably robust and is not simply due to the choice of poverty lines. Moreover, what is at work statistically is that old age income has an effective 'floor' which is constraining inequality among the poor. Such a floor is not evident in the case of the younger group whose distribution of income below the poverty line is much more dispersed. These findings support the argument that much of the effect of the old age poverty alleviation policies over the ten last years in Greece is concentrated on the formation of 'an effective floor' for the elderly population rather than on decreasing poverty rates.

JEL Classification: I31; I32.

Key words: poverty, composite deprivation index, stochastic dominance analysis

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1. Introduction

Is poverty in Greece 'grey in colour'? This paper investigates poverty in Greece focusing on the age dimension. Beyond monetary poverty the present empirical analysis deals with the concept of social and material deprivation, incorporating aspects such as financial stress, capacity to afford leisure and social activities, ownership of durable goods and housing conditions.

Given that information on income poverty is available, what extra information does additional evidence on material deprivation add? First and foremost, there is a widespread agreement that monetary measures are certainly instructive in assessing income poverty, but they might not capture fully non-monetary dimensions of well-being (Boarini and Mira d'Ercole, 2006; 2008). This is because the concept of poverty goes beyond income or consumption; it is further enriched with non-economic criteria such as vulnerability as well as aspects reflecting participation in social life. There are still many 'pragmatic' reasons why looking at material deprivation is not likely to be void of information. First, there are many markets where allocation of resources bypasses the price mechanism: health and education are the most prominent examples; many aspects of housing are subject to criteria wider than market ones. Second, measured income may be an imperfect measure of permanent income, but may also be subject to measurement and reporting errors. Moreover, these errors are not random but are likely to depend on social and economic characteristics; poverty profiles derived from income alone are likely to be biased. Third, we know that the distribution of resources within family units always bypasses the market. Given the very extensive transfer of resources between generations, especially prevalent in Greece and in Southern Europe, information on material deprivation of the aged can be valuable for social policy.

This analysis employs the data of EU-SILC, 2004, (Survey of Income and Living Conditions) for Greece. The EU-SILC data are the first release of a new database, designed to replace and improve on the ECHP (European Community Household Panel) and to form the basis on which European Union policy is formulated. This new dataset will be brought to bear on some of the key research questions, which have hitherto been investigated using the ECHP:

- How does the poverty rate vary across sub-groups of the society? What are the population groups facing significantly higher poverty risk?
- How much does income status affect material deprivation? How does deprivation vary by socio-demographic characteristics? Are there any population groups at high risk of both poverty and deprivation?
- Is poverty grey in colour in Greece, irrespective of the selection of a poverty line?

- Given that the elderly in Greece are the only group who enjoy effective income guarantees, how effective are these guarantees in securing well-being? Are there signs that this policy is bearing fruit?

The rest of this paper proceeds as follows: section 2 provides a brief background of poverty in Greece. Section 3 discusses conceptual and methodological issues related to the poverty analysis, while section 4 presents and comments on the empirical findings. A final section draws some conclusions for public policy.

2. Brief background of poverty and deprivation in Greece

This section aims to illustrate certain aspects and characteristics of poverty and deprivation in Greece. To serve this purpose, a number of recent poverty studies are reviewed, portraying some of the 'stylised facts' of poverty and material deprivation in Greece.

Starting from the poverty risk, using the threshold of 60% of equivalent median income (the central 'Laeken indicator' used by the EU in the context of the Open Method of Coordination –see Commission of the European Communities [CEC], 2002), estimates provided by Eurostat indicate that, since 1996, the poverty risk rate in Greece has never been far from 20%. Indisputably, this figure indicates that Greece's relative position with respect to poverty rate lags significantly and persistently behind the better-performing countries in EU (CEC, 2006a; Guio, 2005a; Dennis and Guio, 2003).

As regards trends over time, Tsakloglou (1990) documents a very clear declining trend in both absolute and relative poverty in Greece over the period 1974-1982. The period after 1982, is characterised in political terms by a reforming socialist government pledging 'Change', and a considerable increase in social expenditure focused on old age protection (ESSPROS data show total social protection expenditure rose from 10% of GDP in 1980 to 16% in 1985 and 22.9% in 1990). However, contrary to expectations, the poverty picture is characterised by constancy: Tsakloglou (1999) as well as Sarris and Zografakis (1997) using data of Household Budget Surveys until the mid-1990s show that relative poverty actually increased between 1982 and 1988, followed by a further decline during the period 1988-1994. The level of relative poverty then remained essentially unchanged over the period 1995-2003, ranging between 20% and 22%.

Regarding the poverty profile, the National Action Plans for Social Inclusion for 2003-2005 and for Pension Sustainability report that poverty is far more prominent among the elderly and is more prevalent in rural than in urban areas in Greece (Ministry of Labour and Social Security, 2003). At the same time, education is highlighted as the most fundamental factor associated with poverty. Interestingly enough, Tsakloglou and Panopoulou (1998) demonstrate that persons in old age, persons with

low educational qualifications and households residing in rural areas are consistently classified as high poverty-risk groups.

Focusing more on the old age dimension of poverty in Greece, Lyberaki and Tinios (2005; 2006; 2008) based on data obtained from the longitudinal SHARE survey (Survey on Health, Ageing and Retirement in Europe) report that the group of persons aged over 65 appears to be at substantially greater poverty risk compared to the group still of working age (50-65), documenting that advanced age remains an important poverty risk factor in Greece. It is noteworthy that most of the difference between Greece and the EU-15 in poverty risk is due to a worse performance for the over-65s. Interestingly, only Cyprus (and to a lesser extent Spain and Portugal) matches the Greek experience in this area (CEC, 2007).

All poverty studies in Greece underline the importance of housing tenure. Owner occupiers enjoy a stream of housing services which are an important input into household finances. Suffice it to say that low income tenants spend around 20% (and some around 30%) of their income on rents; owner occupiers (netting out mortgage payments) are correspondingly better off. EU-SILC income data do not (to date) include imputations for this type of housing income. Given the wide spread of owner occupancy in Greece, across all income and age classes, allowing for housing tenure effects (as is possible in Household Budget studies) reduces poverty rates by around three percentage points, from 20% to 17% (Lyberaki and Tinios, 2002). Moreover, more recent studies (Koutsambelas and Tsakloglou, 2008) suggest that poverty is reduced according to all versions of the FGT index after the inclusion of imputed rent in the concept of resources, while the reduction is slightly larger for the older groups than the non-elderly. A fuller housing analysis would also need to take other factors on board: quality differences, housing market imperfections affecting the welfare interpretation of the imputation procedure, second homes, as well as sample selection effects arising both from cohabitation with younger relatives and the existence of old age homes.

Finally, focusing on studies that have made use not only of household income but also of non-monetary dimensions, Tsakloglou and Papadopoulos (2001a) estimated that 47% and 41% of those classified as deprived in the fields of living conditions and necessities of life, respectively, in Greece were also falling below the poverty line. This is consistent with the findings of other poverty studies (Guio, 2005b; Förster, 2005; Tsakloglou, 1996; Tsakloglou and Papadopoulos, 2002a; 2002b) which indicate that although the overlap between income and material deprivation in Greece seems to be less than complete there is a remarkable share of income poor in Greece that also suffer from material deprivation.

3. Methodology

Next we discuss some methodological issues relevant to the empirical analysis. In particular, section 3.1 focuses on issues related to poverty measurement, while section 3.2 deals with the construction of a deprivation index. Finally, section 3.3 emphasises the issue of making poverty comparisons, describing the stochastic dominance technique.

3.1 Poverty: identification and aggregation

According to Sen (1981) the measurement of poverty can be split into two distinct operations: the identification of the poor and the aggregation of their poverty characteristics into a useable and meaningful measure of poverty.

The first step in the identification of poverty is to choose an indicator of welfare (Atkinson, 1989) such as consumption, expenditure or income. Lipton and Ravallion (1995) argue that consumption is often preferred over current income because it is believed to be a better indicator of long-term average well-being, reflecting the ability of saving to smooth out income fluctuations (it is thus a better measure of 'permanent income'). If the focus is on age comparisons, we might expect (following life cycle models) the relationship between the two measures to vary with age, while factors such as liquidity constraints will also play an important role. In addition to theoretical considerations, the provenance of the data is likely to affect data quality. In budget surveys total expenditure is thought more reliable than income; in income surveys (such as EU-SILC) the opposite is likely to hold. The present poverty analysis thus selects income as a monetary indicator of poverty, primarily because it is a well-developed module in the EU-SILC (2004) survey (Eurostat, 2005). Choosing income as the measure of access to resources thus follows well-established practice and allows comparisons with other studies.

Moreover, when computing poverty measures it has to be taken into account that household size and demographic composition vary across households. A widely-used approach that deals with both size and composition effects is the use of equivalence scales. Though equivalence scales and the interpersonal comparisons they encompass may be rigorously based on social welfare functions (e.g. Deaton and Muellbauer, 1980, ch. 9), we follow most researchers (and Eurostat) who on pragmatic grounds, choose the 'OECD modified scale', (1.0 for the head of the household, 0.5 for other adults and children over thirteen years and 0.3 for younger children). Nevertheless, as the choice of equivalence scales might have implications regarding the structure of poverty (de Vos and Zaidi, 1997; Förster, 1994; Tsakloglou and Panopoulou, 1998), the robustness of the findings regarding the age structure of poverty is tested in the present analysis by alternative equivalence scales (Table A1 in the Appendix). The detailed discussion in the next section concludes that use of any equivalence scales

(as opposed to simple per capita magnitudes) leads to qualitatively similar poverty results.

Having chosen the equivalent income as the measure of well-being at individual level, the next step is to define a poverty line in order to identify the poor. The relative poverty line used in the present poverty analysis follows European practice, as embodied in structural indicators: the poverty risk line is defined in relation to the overall distribution of equivalent income, and is set at 60% of the median equivalent income in Greece. The effects of selecting other poverty lines will, nonetheless, be investigated.

The next problem is aggregation; that is, to construct summary measures of the extent of poverty. The present poverty analysis focuses on the Foster-Greer-Thorbecke (1984) class of poverty measures, which is defined as follows:

$$P(\alpha) = \frac{1}{N}\sum_{i=1}^{k}\left(\frac{z - y_i}{z}\right)^{\alpha} \quad (1)$$

where y_i is the equivalent income of individual i; N is the total population; z is the poverty line; k is the number of the poor; and α is the parameter that reflects the degree of aversion to inequality among the poor. For instance, setting $\alpha=0$, derives the head-count index that corresponds to the fraction of individuals falling below the poverty line. For $\alpha=1$ the poverty gap index is derived, which presents the mean aggregate shortfall of the income of the poor from the poverty line. For $\alpha=2$ the squared poverty gap index is obtained, which takes into account the inequality among the poor, capturing the severity of poverty.

3.2 Deprivation index

How should one measure material deprivation in a way that it can be brought to bear on what we know about income poverty? In measuring material deprivation, there is a variety of typologies based on different measurement approaches (recent studies include Halleröd *et al*., 2006, for Britain, Finland and Sweden; Mckay and Collard, 2003, for Britain; Perez-Mayo, 2005, for Spain; Perry, 2002, for New Zealand; Tsakloglou and Papadopoulos, 2001b, for Greece; Whelan, and Maître, 2007, for Ireland).

Starting from a broader context, building a multi-dimensional measure of material deprivation requires, first, a selection of a subset of events (items) of deprivation at individual level which are then summed over individuals to form an aggregate index (Atkinson, 2003). With respect to the former, the selection of the events depends, *inter alia*, on the culture of a community, corresponding to socially perceived necessities. Having identified an appropriate set of events, their aggregation into a composite index is usually based either on a simple count or on a weighted approach.

The simple count approach is based on binary deprivation scores, namely one or zero, capturing whether a person lacks each of the selected events or not. Next, a

simple count index is constructed based on the number of events lacked. Townsend (1979) originally proposed this approach as a measure of deprivation assuming homogeneity in tastes for the members of a community – an assumption open to criticism when the focus of interest is on different age groups (or cohorts). The major shortcoming of the simple count approach is that a not-widely owned event is ranked equally with an event that is perceived as much more important to the society. As a result a single event may exert a disproportionate effect on the overall deprivation measure (Willits, 2006).

One way of weighting events unequally is the prevalence weighting approach, according to which each of the selected events is weighted by the proportion of the individuals possessing the particular event. The rationale underlying this approach is that assigning higher weights to the events that most people experience, makes the level of deprivation of those who are lacking such events more severe (Tsakloglou and Papadopoulos, 2001b). Going one step further, to control for the influence of tastes in consumption behaviour Desai and Shah (1988) introduced a two-stage econometric methodology for the construction of a deprivation index. This two-stage approach has been employed in other studies of relative deprivation (e.g., Delhausse, Luttgens and Perelman, 1993).

In line with Desai and Shah (1988) and Delhausse *et al*. (1993) the present empirical analysis employs an econometric methodology for the construction of a deprivation index, in order to control for the influence of tastes in consumption. In particular, a probit model is estimated for every selected event in which the dependent variable equals one if the individual experiences the event or zero if the individual lacks the event. The estimation of these probabilities constitutes a crucial aspect in the construction of the index, since it controls for socio-demographic characteristics and taste elements. The outcome of these estimations is presented as adjusted probabilities for each event and for each individual as a member of a particular group in the society. The distances between individual and community estimated probabilities are then computed and the index of relative deprivation is obtained as a weighted sum:

$$D_j = \frac{1}{I}\sum_{i=1}^{I} \lambda_i \delta_{ij} \quad \text{j=1,…J} \tag{2}$$

where i denotes the consumption event, δ_{ij} the estimated distance between the individual and the community experience for the i^{th} event and λ_i the weight given to the i^{th} event. To be more specific, following the approach employed by Delhausse *et al*. (1993) the distance δ_{ij} can be defined as follows:

$$\hat{\delta}_{ij} = -\left(\hat{\theta}_{ij} - \bar{\theta}_i\right) \tag{3}$$

where $\overline{\theta}_i$ is the estimated mean probability for the i^{th} event and $\widehat{\theta}_{ij}$ is the estimated probability for individual j to experience the i^{th} event controlling for socio-economic and demographic characteristics.

In essence, this approach assumes that being deprived of one good, matters more if that good is more widespread (and hence is more likely to be thought to be part of the 'social norm') than if it is not. Being able to assign a 'deprivation value' to each event depending on its distance from the social norm, the way is open to aggregate over all deprivation values to derive an (unobserved) 'overall pain of being deprived' for every household in the sample. Whereas on the individual level deprivation is always discrete (one is either deprived or not deprived), this procedure essentially gives a smoother overall picture, as many individual characteristics may be correlated with the probability of deprivation. If, however, the unobserved 'pain of deprivation' variable is thought itself to be continuous, the force of this objection is reduced.

3.3 Making comparisons

When comparing poverty measures over time or between groups, it is crucial to test the robustness of the observed changes in poverty indexes (Coudouel *et al*., 2002). This is because the robustness of poverty comparisons, as Ravallion (1992) argues, can be compromised by errors in survey data and arbitrariness about both the poverty line and the precise poverty measure. In order to deal with the sensitivity of the ranking of poverty levels (between individuals aged less than 65 years and individuals aged 65 years or more) to the use of different poverty lines, the poverty analysis employed in this paper is based on the stochastic dominance technique. As Deaton (1997) states, stochastic dominance is about ranking distributions. For instance, consider two income distributions y_1 and y_2 (for two groups A and B respectively) with cumulative distribution functions $F(y_1)$ and $F(y_2)$. These two cumulative distribution functions may also be thought of as the poverty incidence curve for each group, since each point of the curve gives the proportion of the population with income less than the amount on the horizontal axis. If the poverty incidence curve of group A is somewhere below and nowhere above the poverty incidence curve of group B, then poverty is lower for the first group than the second group, independently of the selection of a poverty line. This is called first order stochastic dominance. If poverty incidence curves cross each other, then some poverty lines are likely to rank the situation differently. In this case, the analysis can be restricted by applying the second order and the third order dominance tests. Second order stochastic dominance refers to the poverty gap only, while third order dominance refers to the squared poverty gap. Quisumbing *et al*. (2001) provide an application of both first and second-order dominance criteria in their study on the association between poverty and gender, while Justino and Litchfield (2003) used the stochastic dominance technique to examine poverty dynamics over the 1990s in Vietnam. However, poverty comparisons based on sto-

chastic dominance are rarely employed in poverty studies in Europe -to some extent this offers an opportunity for added value to the present study.

4. Empirical results

This part of the paper presents evidence from the empirical analysis. In particular, section 4.1 provides a detailed poverty profile (the incidence of poverty and the distribution of the poor along socio-economic and demographic characteristics of the population). Next, section 4.2 offers a broad assessment of material deprivation and its determinants in Greece. Finally, section 4.3 compares poverty measures for individuals aged less than 65 years and individuals aged 65 years or more using the stochastic dominance technique as well.

4.1 Poverty Profile

Table 1 presents summary statistics on income measures based on the data of EU-SILC, 2004, survey for Greece. As reported in the fourth column of Table 1, the poverty line set at 60% of the median equivalent income classifies one in five individuals (20.1%) as being poor. In order to give a more complete picture, Table 1 also decomposes the group of the poor and reports poverty odds ratios for each individual characteristic. Focusing on the demographic characteristics, age emerges as an important and overwhelmingly significant dimension of poverty in Greece. In particular, while poverty incidence is estimated at about 14% for individuals aged between 26 and 40 years, it rises steadily (reaching 23.2%) for persons aged between 65 and 74 years. Poverty appears to be most acute for the oldest members of the population, with the estimated poverty rate (34.4%) suggesting that one in three persons aged 75 years or more faces the risk of being poor. Given that household income is set, by construction, to be equivalently distributed to all members of a household, the gender dimension of poverty seldom produces meaningful results. Despite this, in Greece, women face significantly higher poverty risk — chiefly due to the poverty faced by widows who comprise the majority of female-only households.

One of the distinguishing features of poverty in Greece is the high percentage of owner-occupation amongst the poor (CEC, 2006b). Indeed, home owners are more likely to be poor than tenants. Taking a deeper look by focusing on the interaction of age with tenure status, this *prima facie* 'perverse' result is due to home owners aged over 65 years of age being at greater risk of poverty than tenants aged over 65 years. This is a noteworthy finding for the elderly population in Greece, given that in the majority of countries in EU the emerging picture (e.g., Zaidi et al., 2006) suggests that elderly tenants have much higher poverty rates than those observed for elderly home owners. The reverse, more expected relationship holds for the younger population group, since home ownership reduces the poverty risk for those aged less than 65 years. Another feature of the Greek poverty picture is that the presence of children is

Table 1: Summary statistics on income measures, EU-SILC, 2004

	Population share (%)	Average income as % of sample average	Poverty risk: (%) below poverty line	Poor share (%)	Odds Ratio*
Age and Gender					
<16 years	16.3	102.8	19.1	14.6	89.6
16 – 25 years	12.5	90.4	22.6	14.1	112.8
26 – 40 years	21.1	109.4	14.4	16.9	80.1
41 – 54 years	19.2	107.3	18.0	17.4	90.6
55 – 64 years	11.1	103.8	19.6	10.9	98.2
65 – 74 years	11.6	89.1	23.2	12.9	111.2
75 + years	8.2	76.4	34.4	13.2	161.0
< 65 years	80.2	104.0	17.9	74.0	92.3
65+ years	19.8	84.0	27.8	26.0	131.3
Male	48.0	102.4	18.5	44.9	93.5
Female	52.0	97.8	21.5	55.1	106.0
Marital Status and Nationality					
Single	25.2	102.1	17.7	22.9	90.9
Married	62.9	101.3	19.9	62.1	98.7
Widowed	9.1	85.2	28.1	12.3	135.2
Divorced / separated	2.8	98.3	19.8	2.8	100.0
Foreign-born	6.9	86.5	23.8	9.2	133.3
Greek-born	93.1	101.1	19.7	90.8	97.5
Education					
Compulsory 9-year or less	51.3	78.4	28.4	72.7	141.7
High School	32.9	106.5	14.2	23.3	70.8
Tertiary	15.8	156.9	5.0	4.0	25.3
Region and Health Status					
Urban	82.6	106.0	15.7	64.8	78.5
Rural	17.4	71.4	40.7	35.2	202.3
No Chronic Disease	79.9	104.4	18.2	73.5	92.0
Health Disability	20.1	81.2	27.9	26.5	131.8
Employment Status					
In Employment	48.2	114.7	13.5	32.6	67.6
Unemployed	5.3	79.6	29.3	7.7	145.3
Retired	21.2	89.4	26.1	27.7	130.7
Domestic tasks	15.5	83.2	24.6	19.1	123.2
Students / other inactive	9.8	88.4	26.3	12.9	131.6
# of children aged <16					
0	71.4	99.4	20.2	69.0	96.6

1-2	25.7	102.2	19.2	26.8	104.3
3 +	2.9	77.1	32.6	4.2	144.8
Tenure status and age					
Home owner/rent free	77.2	101.1	20.3	77.1	99.9
Tenant	22.8	94.6	18.7	22.9	100.4
<65 & Home owner	57.4	106.9	17.6	49.2	85.7
<65 & Tenant	20.4	95.2	18.5	20.0	98.0
65+ & Home owner	19.8	83.9	28.2	27.9	140.9
65+ & Tenant	2.4	86.5	21.1	2.9	120.8
Total	**100.0**	**100.0**	**20.1**	**100.0**	**100.0**

Note: * Odds ratio defined as [(Poor share % / Population share %)* 100]. Values over 100 indicate a greater representation of a group among the poor than in the total population.

Source: EU-SILC, 2004, authors' calculations.

a far less important poverty determinant than in other countries (CEC, 2006b). Disaggregating by the number of children, this result holds for households with two children or one child, where the poverty risk is indeed slightly lower than for households with no children. On the contrary, households with three or more dependent children face a poverty risk exceeding 32%. Thus, while overall the presence of children does not increase poverty risk, families with three children and more are at a definite disadvantage. It should be noted that in public discussion a live issue is the extent to which benefits intended for large families should be extended to the group with three children.

As expected, given that education is the chief correlate of permanent income, the results offer evidence of a strong inverse relationship between poverty and education level. Indeed, the emerging picture is quite straightforward: the poverty rate is estimated 28.4% for individuals with nine years of compulsory education or less, 14.2% for individuals possessing high school education and only 5% for those with tertiary education. Therefore, these results highlight the positive contribution of education in raising income and living standards. Concerning the geographical variation in poverty incidence, it becomes evident that four out of ten persons residing in rural areas fall below the poverty line, indicating that poverty is more acute in rural than in urban areas in Greece. Residence in rural areas (defined as townships with fewer than 1000 inhabitants) appears as one of the most potent predictors of poverty.

Finally, as in other countries, participation in the labour market reduces poverty risks considerably. In particular, the estimated poverty rates suggest that poverty incidence is higher than average for unemployed persons (29.3%), for retired (26.1%), for persons engaged in domestic tasks (24.6%), as well as for other inactive population groups (26.3%) –chiefly students. On the other hand, persons participating in the labour market face a considerably lower poverty risk (13.5%).

4.2 Income status and material deprivation

This section aims to explore certain aspects of deprivation, to identify population groups that are at deprivation risk and to investigate the relationship between income and deprivation in Greece. Twelve events that serve as indicators of material and social deprivation were selected. Starting from the subjective dimensions of deprivation, the event that captures the financial stress of the households is described as follows: (i) the household has not been in arrears on utility bills -electricity, water, gas- in the last 12 months. Turning to the objective dimension, these include eight events relating to the household's ability to afford basic leisure and the availability of consumer durables. In particular, the three events that capture the capacity to afford leisure and social activities are: (ii) ability to pay for one week's annual holiday away from home, (iii) ability to afford one meal containing meat or fish every two days, (iv) ability to face unexpected financial expenses. The selected durable goods are: (v) television, (vi) personal computer, (vii) washing machine, (viii) car and (ix) home-ownership. It is worth mentioning that in the case of durable goods the deprivation analysis is based on the ability to afford –not availability- of the four items (television; personal computer; washing machine and car). Finally, to capture the availability of basic facilities in housing, the three events that have been selected are: (x) heating, (xi) water closet and (xii) bathroom.

The second column of Table 2 presents the mean value of the deprivation index for population groups defined by age, gender, employment status, education, health, marital status, region and nationality. Generally, positive mean values of the deprivation index indicate high deprivation risk, while a value close to zero corresponds to the norm in the community. Consequently, if a population group exhibits a negative mean value of the deprivation index, this is a sign of low deprivation level among the group.

Starting from the age dimension, the emerging picture suggests that deprivation appears to be more prevalent for the elderly (the value of the index reaches 0.0211 for those aged 65+) than for the youngest (persons aged less than 65). Turning to the gender dimension, women exhibit higher mean value of the deprivation index (0.0038) compared to men (-0.0040). Married persons are, on average, less deprived than the unmarried, while persons of other marital status (such as widows, divorced etc) appear to be especially vulnerable to deprivation.

Focusing on ethnicity, it becomes evident that material hardship is on average higher among foreign-born, compared to Greek-born individuals. Turning to the education dimension, the emerging picture indicates that material deprivation is inversely related to the level of education. Thus, persons with low education are more affected, on average, by deprivation compared to individuals with higher level of education. Moreover, deprivation substantially diminishes among those with tertiary education.

Table 2: Levels of the deprivation index by population groups in Greece

Classes	Mean index value	95% Confidence interval	
Age			
Less than 65 years	-0.0060	-0.0072	-0.0048
65+ years	0.0211	0.0188	0.0234
Gender			
Male	-0.0040	-0.0055	-0.0025
Female	0.0038	0.0023	0.0054
Marital Status & Nationality			
Single	0.0087	0.0065	0.0110
Married	-0.0117	-0.0129	-0.0104
Widowed	0.0474	0.0435	0.0513
Divorced or separated	0.0340	0.0264	0.0416
Foreign-born	0.0863	0.0819	0.0907
Greek-born	-0.0072	-0.0082	-0.0062
Education			
Compulsory 9-year or less	0.0297	0.0284	0.0310
High School Education	-0.0178	-0.0195	-0.0162
University Education	-0.0595	-0.0615	-0.0575
Region – Type of household			
Urban	-0.0064	-0.0076	-0.0052
Rural	0.0308	0.0286	0.0330
Health Status			
No Chronic Disease	-0.0090	-0.0101	-0.0078
Health Disability	0.0384	0.0360	0.0408
Employment Status			
In Employment	-0.0146	-0.0161	-0.0132
Unemployed	0.0556	0.0508	0.0604
Retired	0.0142	0.0118	0.0166
Domestic tasks	0.0017	-0.0005	0.0041
Students or other inactive	0.0087	0.0054	0.0120
# of children aged <16			
0	0.0040	0.0027	0.0052
1-2	-0.0111	-0.0133	-0.0089
3 +	-0.0058	-0.0108	-0.0009
Equivalent Income			
1st quintile	0.0741	0.0724	0.0758
2nd quintile	0.0399	0.0382	0.0417
3rd quintile	0.0053	0.0037	0.0069

4th quintile	-0.0303	-0.0317	-0.0289
5th quintile	-0.0730	-0.0737	-0.0722

Source: EU-SILC, 2004, authors' calculations

As expected, income status is estimated to be inversely and monotonically related to the level of deprivation. In particular, people who are classified in the first (bottom) income quintile record, on average, higher level of deprivation compared to persons in higher income quintiles. In addition, moving towards higher income quintiles (that stand for higher incomes) the level of deprivation diminishes significantly, becoming remarkably low for those who are classified into the fifth (top) income quintile. Finally, in contradiction to the poverty profile, the presence of a third child is not associated with a greater deprivation risk.

Furthermore, material deprivation appears to be strongly associated with health status, though the direction of causation is, of course, indeterminate: the estimated results indicate that people who face sickness and disability problems record, on average, higher level of deprivation compared to the rest of the population. With reference to the employment status, being unemployed is associated, on average, with higher level of deprivation compared to individuals in any other labour market status, indicating that participation in the labour market is an important factor preventing deprivation.

Making the link to the findings of the poverty profile, it becomes evident that many groups that are found to be of high poverty risk, such as elderly persons, those with low education, persons with health disabilities, unemployed persons and persons residing in rural areas appear to be at high deprivation risk as well. This implies that for many vulnerable population groups, (income) poverty risk is associated with (material) deprivation risk (though the fit is not perfect).

4.3 Comparing poverty measures: the age dimension

This section compares poverty measures for individuals aged less than 65 years with those aged 65 years or more. In order to deal with the sensitivity of the ranking of poverty levels between these two age-groups to the use of different poverty lines, the poverty analysis is based on the stochastic dominance technique.

Table 3 shows poverty estimates of the Foster-Greer-Thorbecke (1984) group of indicators (headcount, poverty gap and squared poverty gap index) for those aged less than 65 and for those aged 65 years or more using a wide range of relative poverty lines. Estimates for the headcount index, which show the proportion of people counted as poor, indicate that the poverty rate is higher for those aged over 65 years than those aged less than 65 for all the selected poverty lines. For the baseline poverty line set at 60% of the median equivalent income, the poverty rate of those aged more

than 65 years (27.8%) exceeds almost by ten percentage points the corresponding figure of those aged less than 64 years (17.9%). Interestingly the percentage by which the older group is more poverty prone than the younger group is remarkably constant: around 50% of the value of the younger group.

Table 3: FGT class of measures across different poverty lines, by age group

	Poverty lines							
	40% of median		**50% of median**		**60% of median**		**70% of median**	
FGT index	**<64**	**65+**	**<64**	**65+**	**<64**	**65+**	**<64**	**65+**
Headcount ratio (a=0)	**7.1**	**10.4**	**11.4**	**18.3**	**17.9**	**27.8**	**24.8**	**36.8**
Stand. error	*0.27*	*0.57*	*0.34*	*0.73*	*0.42*	*0.84*	*0.47*	*0.9*
Poverty Gap (a=1)	**4.9**	**3.0**	**5.7**	**5.3**	**7.2**	**8.2**	**9.2**	**11.7**
Stand. error	*0.52*	*0.28*	*0.44*	*0.31*	*0.39*	*0.35*	*0.36*	*0.39*
Squared Poverty Gap (a=2)	**26.0**	**2.2**	**18.5**	**2.9**	**14.8**	**4.1**	**13.1**	**5.7**
Stand. error	*0.52*	*0.71*	*5.66*	*0.53*	*4.04*	*0.44*	*3.05*	*0.41*

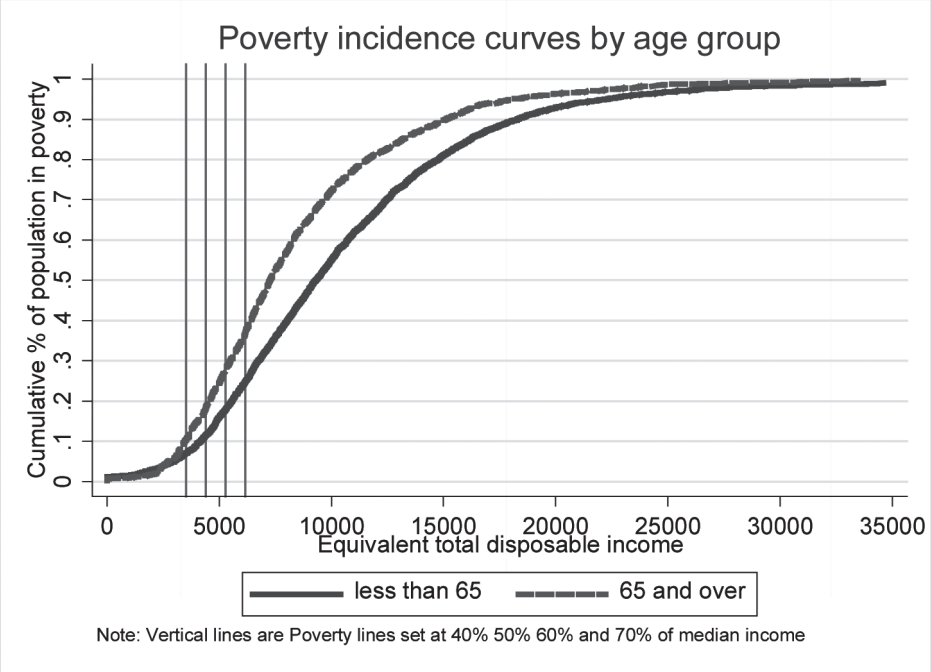
Source: EU-SILC 2004, authors' calculations

Turning to the poverty gap index, which presents the mean aggregate shortfall of the income of the poor from the poverty line, the emerging picture suggests that for relatively low poverty lines (set at 40% or 50% of the median equivalent income), poverty gaps are lower for those aged over 65 years compared to the younger group, reversing the familiar relationship. On the other hand, the reverse becomes evident according to the baseline poverty line (60% of the median) or the relatively high poverty line set at the 70% of the median equivalent income. Concerning the severity of poverty, the squared poverty gap index indicates lower income inequality among the elderly poor than the non-elderly, despite the fact that the latter group's poverty rate is lower.

The above analysis based on summary statistics is further confirmed by the stochastic dominance analysis. By plotting the poverty incidence curves, it is possible to check graphically which of the two age-groups shows a higher level of poverty. As already mentioned above, each point of the poverty incidence curves corresponds to the proportion of the population with income less than the amount given on the horizontal axis. Figure 1a confirms the results obtained by computing the poverty indices, indicating that poverty incidence is unambiguously lower for those aged less than 65 compared to those aged 65 years or more, over the relevant range of poverty lines. In the same way, Figure 1b focuses on the lower part of the distribution providing a

clearer exposition of the poverty incidence curves by age group for annual equivalent incomes up to 8000 euros.

Figure 1a: Stochastic Dominance Analysis: poverty incidence by age group in Greece

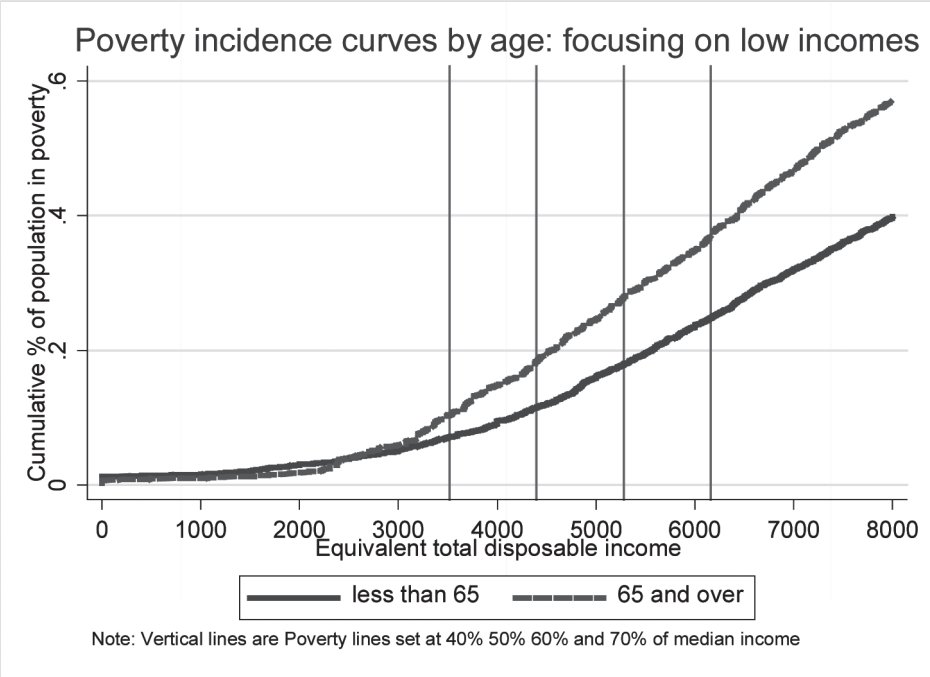


Source: EU-SILC, 2004, authors' estimates

Old age income poverty in Greece appears to be remarkably robust: it is not simply due to the choice of poverty lines. Even using a poverty line of 40% median the poverty risk index remains around 50% greater for the over 65s than the under 65s. Furthermore, the robustness of the findings regarding the age structure of poverty in Greece doesn't appear to be affected by the choice of alternative sets of equivalent scales (Table A1 in the Appendix): all three scales lead to qualitatively similar results; the results only differ if per capita quantities are used instead. The other results, together with the stochastic dominance analysis, indicate that what is at work statistically is that old age income has an effective 'floor' which is constraining inequality among the poor. Such a floor is not evident in the case of the younger group whose distribution of income below the poverty line is much more dispersed.

Furthermore, it is worth making a comparison of the estimated poverty rates with the corresponding picture of the mid-1990s, namely since the period of introduc-

Figure 1b: Stochastic Dominance Analysis by age group: focusing on low incomes



Source: EU-SILC, 2004, authors' estimates

tion of a supplementary pension benefit (EKAS) targeted at low income pensioners (described in more detail below). The emerging picture suggests that the poverty incidence of persons aged between 16 and 64 remained rather unchanged since the mid-1990s (18% in 1996). At the same time, the poverty rate of persons aged 65+ decreased by almost five percentage points over the period 1996-2004 (from 33% in 1996 to 27.8% in 2004).

Hence, it can be unambiguously argued that the continuous implementation of such measures almost for ten years has not dented the effect of old age as a poverty risk. This is certainly an important remark; however, it neglects other equally important aspects of the effectiveness of social policy in Greece. For instance, focusing on the relative poverty gap (defined as the difference between the median equivalent income of persons below the at-risk-of poverty threshold and the threshold itself, expressed as a percentage of the at-risk-of poverty threshold) it becomes evident that the relative poverty gap for the poor persons aged over 65 years — chiefly pensioners entitled to this benefit, has been significantly reduced from 40% in 1995 to 26.6% in 2004 — being less than 30% from 2000 onwards. Therefore, much of the effect of the

old age poverty alleviation policies over the ten last years in Greece is concentrated on the formation of 'an effective floor' for the elderly population rather on decreasing poverty rates.

Greece also has in-kind income not accounted for (housing income accruing to owner occupiers). However, that is fairly evenly spread amongst the age classes and does not account for the differential poverty results. Explanations may be sought in the structure of income of the aged in Greece, as well as in the structure and practices of what has been called the 'informal system of social protection':

- Around 50% of that is in the form of pensions. Though the pension system is extremely fragmented, a number of 'floors' in the form of guaranteed minima exist (Börsch-Supan and Tinios, 2001): The uninsured are entitled to a basic farmer's pension. The main private sector social insurance fund (IKA) has a minimum pension which 70% of IKA pensioners collect. To this informal employee floor is added a means tested pension top up called EKAS, which has been in force since 1996 and was explicitly introduced as a targeted measure to cope with old age poverty. The self-employed are also entitled to EKAS, which hence (added to the minimum pension which is differentiated by pension fund) should be the effective floor of urban sector income. The relationship of these floors to the poverty line, their relative size, together with household composition are thus the determinants of poverty incidence for pensioners. Indicative calculations bear this out: an elderly couple living on one IKA minimum pension would be well below the poverty line, their equivalent income in 2004 being 69% of the poverty line. Should they collect the low pension supplement EKAS, their income will rise to 89% of the poverty line, but they will still be poor. Thus the implementation of EKAS may be expected in this case to reduce the poverty gap but to leave the headcount ratio unaffected (the poverty line is crossed only in the case of self-employed minimum pension in a single member household). The data, unfortunately, do not distinguish EKAS from other pensions and preclude an analysis of its effect.
- Not all over 65s are pensioners. Based on EU-SILC 2004, 23% of those aged over 65 years don't receive income transfers from an old-age pension. Similarly, 13.6% of the persons aged over 65 years live within a household where no one receives an old-age income transfer.
- Family solidarity. Only 53% of pensioners' income is derived from old age pension.
- Cohort effects. Cohorts born before 1930 had to live through 10 years of war and civil war in the 40s, while they lived their productive years at times when social insurance was not universally available. Hence, the older old must be

expected to be worse off and old age poverty must be decreasing over time reflecting the maturation of social insurance.

A direct comparison with older results is not possible, given that SILC is different in important respects from ECHP. Yet, the existing evidence shows that the potency of old age as a poverty inducing factor remains. Its persistence surely implies that old age poverty is reproduced by features of the pension system and is systemic in nature.

5. Conclusions

Using data obtained from the EU-SILC, 2004, survey for Greece, the main objective of this paper has been the investigation of poverty in Greece, focusing particularly on the age dimension.

Overall, the poverty profile revealed that poverty in Greece has distinct and complex demographic and socio-economic dimensions, a finding that is in line with the conclusions of other poverty studies in Greece using ECHP. Thus, on the one hand, poverty rates are quite low among the well educated and among those who participate in the labour market. On the other hand, poverty increases with age and becomes quite acute for the oldest-old. Moreover, poverty risk is also high for those with low education, for individuals residing in rural areas and for individuals who face health disabilities. Finally, families with three or more children (though not those with one or two) are at greater poverty risk.

Housing tenure plays an interesting and complex role. While overall owner-occupation is associated with greater poverty risk, this only holds for the older group (aged over 65); for those aged less than 65 owner occupation is associated with lower poverty.

With respect to the identification of the population groups that are at deprivation risk, the empirical findings reveal that individuals aged over 75, the divorced or widowed, those with low education, individuals residing in rural areas, persons with health disabilities and unemployed persons exhibit, on average, high deprivation levels. In other words, many of the vulnerable population groups face both income poverty and material deprivation risk.

Concerning the poverty comparison between persons aged under and over 65, estimates for the headcount index indicate that poverty incidence is higher for those aged over 65 years over a wide range of poverty lines (ranging from 40% to 70% of the median equivalent income). These summary statistics are further supported by the stochastic dominance analysis.

These findings have an important implication for the Greek social inclusion strategy. That strategy forswears a generalised guaranteed income, in favour of a more pragmatic approach, focused on specific groups offering group-specific income guarantees (Ministry of Labour and Social Security, 2003). The idea is that by giving

priority to groups that can be clearly identified and where mechanisms exist for ascertaining and serving that need, targeted actions will be more effective in combating real need. Such groups are precisely those that are characterised by greater incidence of poverty risk. In this context two observations are in order.

First, most of the dimensions of poverty and deprivation have been identified for a long time and indeed have been subject to poverty-alleviating policies implemented in Greece for at least a decade. That the risk factors identified in our study, using 2004 data are not qualitatively different from those for the mid-1990s identified by Mitrakos and Tsakloglou (2006), who used HBS data, speaks volumes about the lack of effectiveness of such policies.

Secondly, persons aged over 65 (and indeed the very old — over 75) can be taken to be the group that fulfills the preconditions of the targeted approach. They can be easily identified, and given that their most significant income source is state pensions, can be easily reached. Indeed, low income pensioners have been the explicit object of targeted measures at least since 1996. Almost 10 years of continuous implementation of such measures have not dented the effect of old age as a poverty risk, though they might have increased the floor a little. Further progress must necessarily come to grips with those characteristics of the pension system that reproduce and seemingly accentuate poverty.

Most of the preceding analysis dealt with income poverty. However, it is undeniable that changes in the well-being of the elderly also depend on other factors: benefits in kind are a case in point, such as the provision of services at home by the promising 'Help at Home' programme (Ministry of Labour and Social Security, 2003). However, the small number of beneficiaries and lack of clarity in eligibility rules meant that in 2004 its overall effect was limited. Of greater quantitative importance are changes on the supply side of personal care services which resulted from the availability of (female) immigrant labour from the mid-1990s on. These '*Deae ex machina'* (Lyberaki, 2008) contributed to the availability and affordability of personal care services to the old, while they permitted the increase in female labour participation to take place, thus adding both directly and indirectly to real incomes of the elderly.

The poverty profile emerging from our work, together with the observation that it is no different from that holding a decade ago, means that the efficacy of the Greek social inclusion strategy is placed in serious doubt. If Greece is to take poverty alleviation seriously it should be more closely attuned both to the characteristics of poverty and to the mechanisms that give rise to them.

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Appendix

Table A1: FGT class of measures across different equivalence scales, by age group

Poverty line: 60% median income	Equivalence scale							
	OECD-modified scale *		Old-OECD (Oxford scale)**		Square root scale ***		Per capita income	
Age	<64	65+	<64	65+	<64	65+	<64	65+
Headcount ratio	**17.9**	**27.8**	**18.6**	**24.4**	**17.8**	**30.6**	**20.8**	**21.5**
Stand. error	*0.42*	*0.84*	*0.42*	*0.81*	*0.41*	*0.86*	*0.44*	*0.7*
Poverty Gap	**7.2**	**8.2**	**7.4**	**7.0**	**7.1**	**9.3**	**8.1**	**5.9**
Stand. error	*0.39*	*0.35*	*0.38*	*0.33*	*0.39*	*0.36*	*0.38*	*0.32*
Squared Poverty Gap	**14.8**	**4.1**	**14.4**	**3.5**	**15.3**	**4.6**	**13.9**	**3.0**
Stand. error	*4.04*	*0.44*	*3.83*	*0.43*	*4.24*	*0.46*	*3.42*	*0.43*

Notes:
* 1.0 for the head of the household, 0.5 for other adults and children over thirteen years and 0.3 for younger children.
** 1.0 for the head, 0.7 for adults and children over thirteen and 0.5 for younger children
*** Estimated as the square root of household size.

Source: EU-SILC 2004, authors' calculations