THE CONTRIBUTION TO POVERTY PERSISTENCE OF CHILDREN, ADULTS, AND ELDERLY: SOME EMPIRICAL EVIDENCES FROM ELEVEN EUROPEAN COUNTRIES

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1. Measuring longitudinal poverty

Most of recent studies on poverty agree on the importance of studying poverty in longitudinal perspective to identify people in status of severe economic disadvantage. Several approaches can be found in the literature, but one of the most recent is based on the use of indices of chronic (or longitudinal) poverty summarizing the sequence of individual poverty spells across time-span.

Many of cross-sectional poverty studies focus on the more deprived groups such as elderly people, children, women, single parent and divorced. Cohort studies report the impact of poverty on the individual life courses and among generations: childhood poverty is associated with low income in adulthood (Duncan et al., 1998), low income in adulthood is associated with poverty in old age (Blanden and Gibbons, 2006), and there are clear evidences of the intergenerational transmission of poverty (Jenkins and Siedler, 2007). All these studies are based on cross-sectional evaluations of poverty, even when life course information are used to explain it.

Our interest here is focused on the persistence of poverty, with a particular attention paid to gender and age differences. To address these issues, in this paper we refer to the class of measures proposed by Mendola *et al.* (2011), which takes into account the way poverty and non-poverty spells follow one another along individuals' life courses. It is worthwhile to highlight here that the indices collapse all the longitudinal information inside the sequence of poverty statuses in a single number accounting for the duration and intensity of poverty persistence at once. The property of decomposability by subgroups of all the indices in the class offers an effective instrument to investigate longitudinal poverty in specific age-groups in the population and, if necessary, to address specific poverty reduction policies.

Our empirical analyses, made on a sample from the European Community Household Panel, intend to show how longitudinal poverty impacts different subpopulations, revealing interesting differences among European Countries, often attributable to the influence of welfare state models.

2. Measures and methods

As mentioned above, in order to measure the longitudinal poverty of individuals, we use one index in the class of Longitudinal Poverty Indices (*LPI*) proposed in Mendola *et al.* (2011). This set of indices is based upon the idea that the closer (and the deeper) two years of poverty are, the more they contribute to the overall longitudinal poverty measure. This is know as cumulative hardship hypothesis or closeness approach, and is adopted also in Bossert *et al*. (2011), and Hoy and Zheng (2011). In Mendola *et al*. (2011), this idea is operazionalized working on all the pairwise distances between the waves that an individual spent in poverty, and on the sequencing of the poverty gaps in the poverty profile. The class of indices takes into account the sequences of poverty statuses (poor /not poor)[1], associated with each year (wave) observed, for each individual. The main characteristic of the class is that, playing with the parameters of the indices, one can give more or less importance to different aspects of the poverty experience, such as the intensity of the experiences of poverty and/or their sequencing, and/or their recentness, and/or the chances for an individual to escape poverty.[2] Here, we use the full version index, named in the original paper as *LPI_SE*, but ignoring the "emergence", or recentness, effect.

The consequent class of Aggregate Longitudinal Poverty Indices (in the following, for the sake of shortness, named simply *ALPI* instead of *ALPI_SE*) is derived from a simple arithmetic mean of the individual longitudinal poverty indices *LPI_SE*, since longitudinal poverty of a population is viewed as a synthesis of longitudinal poverty of its members. In this way we assume that no compensation is allowed among individuals for the same year, whereas compensations among individual poverty profiles (sequences) are possible. So, at population level, the higher intensity of the longitudinal poverty of an individual can be compensated by the lower intensity of the longitudinal poverty of another individual. But the intensity of poverty, or even simply the

[1] The status of poverty/non poverty is assigned to all the individuals in a household who have net equivalised income less than the 60 per cent of the median net equivalised income (poverty line), for each country and each year using the OECD modified equivalence scale).

[2] Permanence probabilities are estimated for each pair of years spent in poverty in the individual poverty profile. There are evaluated at country-level, and act on the value of the *LPI* index in so that the higher is the number of persons who were poor in a certain wave and are not poor in the other wave considered, the worst is evaluated the situation of an individual who, on the contrary, persists in poverty in both the waves considered. Note that this parameter is very useful for country comparisons, since it accounts indirectly for the different income mobility across countries. A deeper presentation of the class of indices and its properties is in Mendola *et al.* (2011).

status of poverty, of an individual in a single year (i.e. cross-sectional poverty) should not be compensated (at aggregate level) by the non poverty of another individual in the same year.

All the indices of the class (both at individual and aggregate level) are normalized (i.e. span over [0,1]), where 0 implies minimum longitudinal poverty and 1 maximum longitudinal poverty.

An interesting feature, shared by all the indices in the class of *ALPI*, is the decomposability property, which puts in evidence how different groups contribute differently to the overall evaluation of the longitudinal poverty in a society. So, if we divide the entire population in *M* subgroups according to any characteristic of interest, and if, for each year, all the groups share the same poverty line and permanence probabilities are estimated at population level, the aggregate level index for the overall population can be re-written as:

$$ALPI = \sum_{m=1}^{M} ALPI_m N_m \Big/ \sum_{m=1}^{M} N_m \qquad (1)$$

where $ALPI_m$ is the index for the subgroup *m*, and N_m is the number of individuals in the *m-th* group.

As a consequence, the proportional Contribution to the Poverty Persistence of group *m* (here named CPP_m) can be decomposed by the following ratio:

$$CPP_m = \frac{C_m}{N_m / N} \quad \text{where} \quad C_m = \frac{N_m}{N} \frac{ALPI_m}{ALPI} \qquad (2)$$

Hence if the contribution to the aggregate level index of the sub-group *m* (C_m) equals its contribution to the demographic size of the population (N_m/N), the ratio CPP_m is equal to 1 (that is, the m^{th} sub-group has an average contribution to the global poverty in the population). If m^{th} group is more affected by longitudinal poverty than prescribed by its demographic size, the ratio will be greater than 1, whereas if the group has a lower longitudinal poverty risk CPP_m will be lower. So that for example if women have higher risk of longitudinal poverty, their *CPP* will be greater than 1, whereas if they have a lower risk the index will be lower than 1.

3. Data and results

The aggregate and individual longitudinal poverty indices proposed above are now used to analyze data on people from the European Community Household Panel survey (ECHP). The sample is a balanced panel of individuals living in 11 European Countries with complete information about household income along all the waves of the panel (from 1994 to 2001). The sample size is around 300 thousands individuals and, among those, only a small part (less than 15%) never experimented poverty.

The general belief that women are more at risk of experiencing poverty at every stage of the life course seems to be controvert in a longitudinal perspective. Most of the gender studies maintain that at every stage of the life course women are more at risk of experiencing poverty (European Commission, 2006). This fact is mostly imputed to inequalities and discrimination in education and labour market opportunities and to the impact on both of these of family care responsibilities. Moreover differences in gender and in educational level are often overlapped since, among older generations, women had fewer educational opportunities and lower qualification levels.

Figure 1 shows some first analyses on the differential incidence of longitudinal poverty, as defined *via LPI_SE*, by gender and age classes in each countries. This is made by using the information provided by CPP_m ratios.

[insert Figure 1 here]

The curves for men and women intersect each other in all European countries highlighting no clear discrimination. But the study by gender and age groups shows relevant differences in terms of the impact of chronic poverty. Poverty risks appear to accumulate at the extremes of the life course (childhood and older age) but not in the same countries. Indeed, some European countries (such as Denmark, France, Belgium, Greece, and Germany) are characterized by a high poverty persistence in older age, whereas others (such as Italy and Spain) are branded by high levels of longitudinal poverty for childhood and young people. The comparison of countries sheds light on the fact that not all the countries are equally able to take care of oldest old people. This is largely evident from the situation experienced by people over 75 in Denmark, Belgium, France, Greece and Germany, who contribute to the overall poverty persistence in their country around two times more than expected according to their demographic weight.

Indeed the overall picture of the persistence of poverty in a population is the resulting of three driving forces acting together: *diffusion* in the population (how many longitudinally poor people are there?), *duration* of the hardship (how long do they remain poor?), and *severity* of the experience (how poor they are?). The longitudinal version of the TIP curves -originally from Jenkins and Lambert (1997), and here renamed TIPP curves (where double P stands for Poverty Persistence)- provides a comprehensive view of the complexity of the phenomenon of longitudinal poverty. In the following figure 2 there is a clear representation of the information that could be drawn from a TIP curve (for further explanations see Jenkins and Lambert, 1997) if computed resorting to a longitudinal poverty index.

[insert Figure 2 here]

Figure 3 shows the TIPP curves on the distribution of the values of the index *LPI_SE* for three subgroups of age in our sample: children (i.e. aged less than 16 years), middle age-group (from 16 to 59 years old), and elderly (over 65 ys).

It is well known from the literature that the European countries differ greatly for diffusion, duration, and severity of poverty (Fouarge and Layte, 2005), and this information can be readily drawn by inspecting TIPP curves in figure 3. However here we put our attention on three interesting patterns of chronic poverty. A first pattern is that in some countries (Netherlands, Spain, Italy, and UK) elderly are exposed to lower levels of poverty persistence, and this is likely due to a welfare system which protects elderly better than other groups. In particular in Italy and Spain there is some evidence of *reversed* progressivity (poverty persistence decreases moving toward higher age classes). On the contrary in Germany, Denmark, Belgium, France, and Greece it emerges a second pattern according to which elderly experience higher levels of poverty persistence, and in particular Belgium and Denmark show *direct* progressivity of poverty with age. Perhaps most striking is the third pattern represented by the case of Ireland and Portugal where there are no clear evidences of differences among age groups both in term of duration, severity and intensity of the poverty experiences.

[insert Figure 3 here]

4. Conclusion

There has been an ongoing debate regarding the extent to which information on longitudinal poverty can be summarized and usefully used to address better social policies. Clearly, we do not claim that the preliminary analyses in this paper are enough to explain the complex phenomenon of longitudinal poverty. However, we view our approach as an attractive option which could give a substantial help in interpreting chronic poverty. Moreover the decomposability property of the *LPI* allowed to indentify the groups who contributed more to the overall longitudinal poverty in European countries, and in particular to put in evidence the difficult situation of people over 75 years old in many European countries. These results could be a useful starting point for deeper analyses.

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Figure 1. *Proportional contributions to longitudinal poverty in European countries (CPP_m) by age groups and gender*

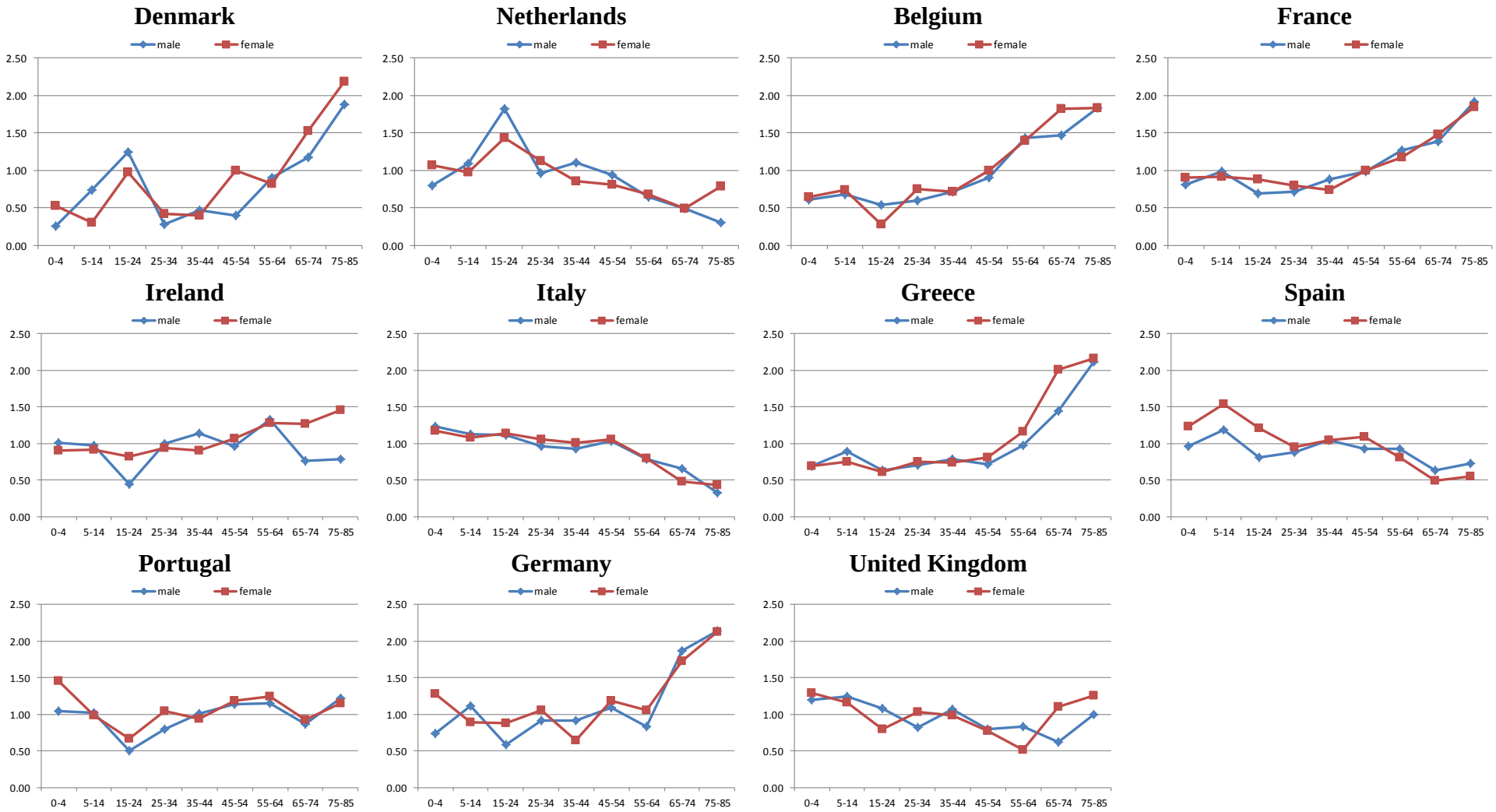

Figure 2. *TIPP curve*

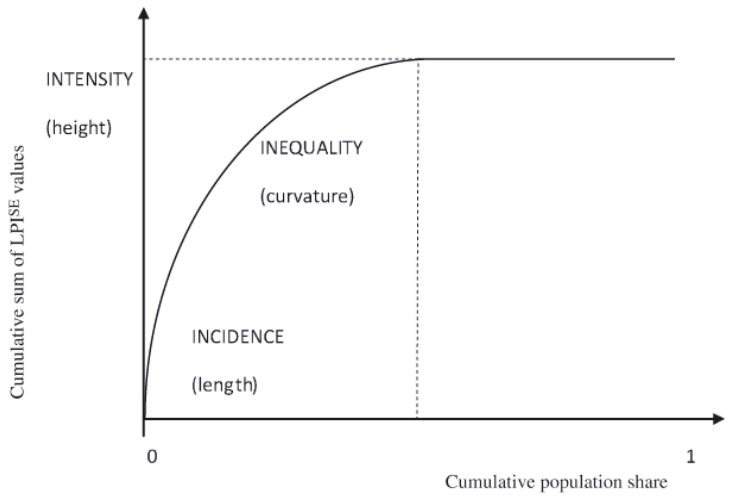

Figure 3. *TIPP curves based on LPI_SE index in European countries by three age groups*