POVERTY AND MATERIAL DEPRIVATION ENTRIES AND EXITS: DOES WELFARE MATTER IN ITALY?

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ABSTRACT

Assessing the impact of social policies on income poverty and material deprivation dynamics is crucial in order to develop effective policy responses. Yet, this kind of analysis has seldom been attempted with longitudinal data. This manuscript begins to fill this gap, and investigates the micro and macro determinants of year to year income poverty and material deprivation transitions in Italy over the period 2004-2015, focusing on the impact of social benefits received at the individual level and of average per capita expenditures for social services by Municipalities at the aggregate level.
We define year to year transitions as dichotomous variables, and estimate probit models on pooled data from 9 longitudinal components of IT-SILC (complemented with data on macro-structural factors, from ISTAT source). This allows us to analyze year to year poverty and deprivation transitions over 11 years characterized by different economic cycles. The effect of the crisis is clearly reflected in the behavior of (declining) poverty exits rates and (increasing) deprivation entry rates. A set of novel results emerges. Among others, regarding the role of social policies: i) expenditures in social services speed poverty exits and prevent deprivation entries; ii) social benefits at the individual level increase the probability of poverty exit and reduce the probability of poverty entry for unemployed and inactive individuals.

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1. Introduction

Nowadays a growing discussion is emerging on which options vulnerable people have for working their way out of poverty. The statistics on income and wealth demonstrate that for some countries, like Italy or Greece, increasing growth perspectives are not going hand in hand with decreasing risk of poverty, raising questions about who will be benefiting from any return to prosperity. The problem can be traced back to the protracted period of instability and stagnation that followed the 2008 crisis[4], which not only determined an increase in poverty levels but also caused deep social transformations. In fact, lifestyle deprivation cannot be only related to a lack of financial resources: we need to have a better understanding of the standard of living or quality of life concepts and on their variations. To assess an individual's welfare one cannot rely only on objective measures as in the case when an individual's income falls short of a pre-defined income poverty line, but one must also use subjective information about the experienced level of financial difficulties (Deaton, 2010). Indexes of material deprivation reflect this latter concept.

A strand of recent literature is concerned with the problem arising from a separate analysis of poverty and deprivation, highlighting the importance of a comprehensive estimate (Whelan et al., 2004; Breen and Moiso, 2004; Polin and Raitano, 2014). The interrelated dynamics of income poverty and social exclusion employing longitudinal measures appear to be capturing different phenomena (Devicienti and Poggi, 2011; Devicienti et al., 2014). These results seem to us very important to disentangle the different nature of policies devoted to cope with persistent poverty or deprivation from that thought to prevent people from falling into poverty and accelerating the exit from deprivation. The latter type of concept is related to current variation of poverty or/and deprivation indicators, or poverty and deprivation transitions.

There is a bulk of literature using longitudinal data to study the duration of poverty and its effects on poverty transitions, stemming from the seminal papers by Bane and Ellwood (1986) and Stevens (1994; 1999) (Duncan et al., 1993; Jenkins, 2000; Cappellari and Jenkins, 2004; Andriopoulou and Tsakloglou, 2011; Giarda and Moroni, 2018, to name but a few) and some papers consider the same aspects for social exclusion (Devicienti et al., 2014).

A few papers have considered these aspects for Italy: Devicienti et al. (2014) use multiple spell hazard rate models on income and lifestyle deprivation to estimate individual poverty persistence over 1994-2001; Giarda and Moroni 2018 use dynamic random effects model in a comparative analysis on poverty state dependence in Italy and the UK over the period 2009-2012; Devicienti and Poggi (2011) model the joint dynamics of poverty and social exclusion over 1994-2001. Baldini and Ciani (2011) study the changes of inequality and poverty in Italy during the recession and the role of public subsidies in integrating income of those affected by a reduction of employment.[5]

The focus on poverty duration and on the characteristics of the persistently poor has somehow left in the background a few important aspects related to other covariate effects on poverty/deprivation transitions. For example, although assessing the impact of welfare on income poverty and material deprivation transitions is crucial in order to develop effective policy responses, this analysis has seldom been attempted with longitudinal data. Yet some papers suggest that the generosity of social benefits (and especially of family benefits) may have significant negative effects on the odds of poverty (Brady et al., 2009, Moller et al., 2003), even if there is not a common consensus on this. Similarly, the macro determinants of transitions are seldom considered, while their potential relevance for the odds of poverty has been sometimes suggested (Callens and Croux, 2009;

[4] Duiella and Turrini (2014); Bosco and Poggi (2019).

[5] Coppola and Di Laurea (2014) analyze persistent poverty in a static logit model.

Reinstadler and Ray, 2010; Coppola and Di Laurea, 2016; Duiella and Turrini, 2014). The literature on material deprivation is comparatively smaller (Nolan and Whelan, 2010; Poggi 2007; Ayllòn and Fusco, 2017) and the consensus on the empirical analysis is not always shared (Guio et al., 2017).
This paper wants to fill these gaps. Using longitudinal data from IT-SILC (integrated with macro data at the territorial level, from ISTAT sources), we concentrate on the micro and macro determinants of year to year income poverty and material deprivation transitions in Italy over the period 2004-2015, focusing on the impact of social benefits which integrate individual income and of average per capital expenditure for social services by Municipalities at the macro level.
Our approach is different from the ones prevailing in the literature.[6] We define year to year transitions out of and into poverty/material deprivation as dichotomous variables capturing the change of status, and estimate probit regression models on pooled Italian data from 9 longitudinal components of IT-SILC covering the period 2004-2015.[7] This allows us to analyze the probability of exiting/entering from/into the states of poverty and material deprivation over a long period of time, characterized by different economic cycles. We focus on year to year transitions, and do not study the length and recurrence of individual poverty spells, also because the short time observation window for each individual in IT-SILC longitudinal data[8] does not allow this kind of analysis. On the other hand, by pooling the available panels we observe over a long time period (11 years) thousands of changes of status of different individuals, which allows us to efficiently estimate the effects of the various determinants of transitions (in particular of trigger events) and their relative importance, avoiding the problems which afflict hazard rate models when transition variables are considered as covariates.[9]
We control for several covariates besides the above mentioned micro and macro expenditures on social policies, including trigger events, controls for individual and household characteristics, as well as structural controls for the macroeconomic environment, and controls for NUTS-1 macro regions, for a better understanding of the role of territorial dualism plaguing the Italian economy. Moreover, we make use of Instrumental Variable (IV) probit method to take care of potential endogeneity problems (deriving in particular from the inclusion of the history of poverty/deprivation among the covariates).
The rest of the paper is organized as follows. Section 2 describes the database, defines our dependent variables, and presents some preliminary descriptive analysis. Section 3.1 describes our models and the covariates included in the regressions, and presents the estimation strategy. The results for poverty and deprivation exits and entries probabilities are in section 3.2. Section 4 concludes.

2. Data, dependent variables and descriptive analysis

Our main source of data is the EU Statistics on Income and Living Conditions for Italy (IT-SILC). The survey provides detailed information on individuals' and households' socio-economic characteristics,[10] as well as non-monetary indicators of lifestyle deprivation. The reference population is all current members of private households residing in the national territory in the period of data collection. In particular, we use the longitudinal components of IT-SILC, which follow a rotational sample design. In each year a new sample is drawn and followed over a 4-year period, to track changes

[6] For example hazard rate or duration models. To our knowledge the only paper using an approach similar to ours (but applied on a much shorter time interval, 2004-2005) is Polin and Raitano (2014).
[7] Which we integrate with macro data at the macro-regional level, from ISTAT source.
[8] 4, as a maximum.
[9] Endogeneity problems as well as problems related to the period of time over which trigger factors should be kept switched on.
[10] The survey covers all household members, but only members aged 16 or more are interviewed. The data also contain information on the macro-region of residence.

over time, while in a given year the cross-sectional sample is composed of individuals and households belonging to four different panels (at the first, second, third and fourth interview). At the moment of this analysis, 9 longitudinal components of IT-SILC are available, from 2004-2007 to 2012-2015. We pool the panels of the 9 longitudinal components,[11] so that our pooled database covers the period 2004-2015. This allows us to analyze year to year poverty and deprivation transitions over a relatively long time span (11 years) encompassing periods characterized by different economic cycles.
Individual and household data from IT-SILC is also complemented with data on aggregate structural factors at the macro-regional level, regarding in particular spending for social services and indicators of macroeconomic performance, from ISTAT source.
Our analysis considers all individuals included in the interviews, aged 16-80, because the patterns of poverty and deprivation transitions may be different for the young and the elderly.

Dimensions of poverty and deprivation
We will focus on two key poverty and lifestyle deprivation indicators defined by Eurostat, which we construct using information in IT-SILC data: the "at risk of poverty" (ARP) indicator and the material deprivation indicator. Using standard indicators gives us the possibility to compare our findings with other results in the literature (i.e. Devicienti and Poggi, 2011; Duiella and Turrini, 2014; Giarda and Moroni, 2018).
The ARP indicator is a monetary measure of relative income poverty, which classifies as at risk of poverty (or income "poor"[12]) the individuals whose annual equivalent disposable household income (after taxes and social transfers) falls below a conventional threshold, set at 60% of the median national equivalent household income. Using this indicator is a common practice in the literature focusing on Europe, which will allow us to compare our results with those of other studies[13]. The ARP indicator is a relative measure of low current income in comparison to other residents of the country, and it does not necessarily reflect low standards of living and material deprivation. Not only current income is an imperfect proxy for "permanent" income, but also other resources (like assets or debts, or non-cash transfers from public provision of services or from social networks) may matter. These resources determine the household living conditions, which in turn may differ between individuals with identical income and resources depending on health conditions, geographical location and so on. In fact, the definition of the relevant dimensions of poverty is still an open issue, and many different perspectives on the causes of poverty have been adopted in the literature, classifying them as either individual or structural (Iceland, 2003). The analysis of deprivation, measured using a sum-scoring approach as in Guio (2009) and Whelan et al. (2008) may be used to complement and to corroborate the key findings of the income-centered poverty analysis.
We will follow this strategy, and we will complement the analysis on the monetary indicator of relative income poverty with the analysis of the EU non-monetary indicator of material deprivation, defined as the *enforced lack* of a combination of items depicting material living conditions, which is closer to the concept of absolute poverty rate used in Italy by ISTAT.
Following the EU practice, individuals are classified as "deprived" if their households *cannot afford* at least 3 out of the 9 items reported in table 1. Notice that the aggregation structure of deprivation is limited to two dimensions: economic strain and enforced lack of durables, whose access is linked to

[11] All longitudinal components include one complete 4-years panel, while the 2012-2015 longitudinal component includes one complete panel with 4 yearly interviews, as well as 2 incomplete panels, with 3 and 2 yearly interviews respectively.
[12] We will use the word "poor" as synonym of "at risk of poverty".
[13] See Jenkins (2000) for a review; Devicienti and Poggi (2011) and Coppola and Di Laurea (2014) for an application to Italy.

the financial strain encountered by the household (Guio, 2009: 7). In line with Whelan et al. (2008) we use unweighted items.[14]

- INSERT TABLE 1 -

For each individual, we construct both the ARP indicator and the material deprivation indicator using information available in IT-SILC data.
In order to reduce sample selection and attrition errors, we use personal longitudinal weights both in the calculation of the above indicators and in all our estimates.

Empirical evidence on poverty and deprivation transitions

A total of 425 223 observations are available in the pooled dataset, corresponding to a total of 144 401 individuals: 67 251 individuals followed for 4 years, 26 597 followed for 3 years, 25 875 followed for 2 years and 24 678 individuals followed for 1 year (this last group will be dropped from our analysis of transitions).
Table 2 reports the classification of all individual observations in our pooled database according to the above "poverty" and "material deprivation" indicators.

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In the pooled sample of 425 223 individual observations, 74 297 are classified as income "poor" and 59 469 as materially deprived. A glance to the table reveals that income poverty and material deprivation do not necessarily go hand in hand, as only 25 661 observations are classified as both poor and deprived: material deprivation afflicts only 34.5% of the "poor" and only 43.2% of the materially deprived are income "poor". [15]
The average annual poverty and deprivation rates during the period 2004-2015 for the whole Italian sample have been 17.4% and 14.0% respectively.[16] These aggregate national figures hide wide geographical differences which characterize the well-known North-South divide, as one can see in the first two columns of Table 3, which report both national and disaggregated data for the 5 NUTS-1 macro regions. Poverty rates range from 9.4% in the North East to 30.8% and 35.1% respectively in the South and in the Islands.[17] Slightly lower but still wide differences exists for deprivation rates,[18] which range from 7.9% in the North East to 23.3% and 30.3% in the South and in the Islands respectively.

- INSERT TABLE 3 -

[14] They are preferred given the complexity of the weighting schemes, both in terms of methodology, transparency and communication.
[15] These data are in line with the findings of Devicienti and Poggi (2011: 3553), even if their definition of social exclusion is wider than our standard concept of material deprivation. The authors analyze poverty and social exclusion for the Italian sample of EHCP from 1994 to 2001, and find that 41% of the socially excluded in a given year have their income below the poverty line, but only 16% of poor are found in social exclusion.
[16] Devicienti and Poggi (2011) have find quite different values, 20% were poor and 8% socially excluded respectively. Their definition of social exclusion, however, does not coincide with our material deprivation indicator.
[17] Sicily and Sardinia.
[18] That North-South differences are lower for deprivation rates than for income poverty rates is expected, as the deprivation index is an "absolute" measure, while the at risk of poverty index is a "relative" measure constructed on the national median.

The last two columns of table 3 report the "poverty prevalence rates" and "deprivation prevalence rates", calculated as the percentage of the population which has experienced income poverty (material deprivation) at least once during the observation period. Notice that the rates of poverty (deprivation) prevalence are much higher than the average annual poverty (deprivation) rates. Considering income poverty, the difference is around 5 percentage points for the whole national sample, around 4 points in the Northern and Central areas and between 7 and 8 points in the Southern areas. Similarly, considering material deprivation, the difference is of 6 percentage points for the national aggregate, between 4 and 5 points in the Northern and Central areas and between 10 and 11 points in the Southern areas.

These differences are a rough indication that the composition of the group of individuals at risk of poverty (or materially deprived) changes over time, or in other terms that mobility exists, and that for a substantial proportion of the ever poor (or ever materially deprived) poverty (or material deprivation) is a transient situation.

In what follows we will concentrate on the analysis of mobility into and out of income poverty and material deprivation.

Exploiting the panel structure of our dataset, we will focus on individual poverty and material deprivation transitions. We define transitions as dichotomous variables representing the change of an individual's state from poverty to non-poverty or from deprivation to non-deprivation, and vice versa.[19] In particular, we define *Poverty exit*$_{it}$ (or *Deprivation exit*$_{it}$) as a dummy variable which is equal to 1 if the i^{th} individual is not poor (or not-deprived) in period *t* but was poor (deprived) in the previous period, *t-1*, and 0 otherwise. Conversely, *Poverty entry*$_{it}$ (or *Deprivation entry*$_{it}$) is equal to 1 if the i^{th} individual is poor (deprived) in period *t* but was not poor (not deprived) in *t-1*, and 0 otherwise.

For the analysis of the determinants of *Poverty exit*$_{it}$ (*Deprivation exit*$_{it}$) our sample is going to be the group of poor (deprived) individuals at time *t-1* that are still present in the survey at time *t*, which can be either still poor (deprived) or exited from poverty (deprivation).[20] Similarly, the sample for the analysis of *Poverty entry*$_{it}$ (*Deprivation entry*$_{it}$) is going to be the group of non-poor individuals at time *t-1* that are still present in the survey at time *t,* which can be either still non-poor (non-deprived) or entered into poverty (deprivation) at time t. Thus, in our analyses we identify two different "transient groups", poverty/deprivation leavers and poverty/ deprivation entrants (as in Mood and Jonsson, 2016) and two "reference groups", the "constantly poor" and the "never poor" in each year respectively (table 4).

Table 4 displays the characteristics of the pooled samples of poverty and deprivation transitions for the whole period 2004-2015.

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The sample for poverty exits includes 49 411 individuals and 14 190 "exits", corresponding to an average poverty exit rate of 28.72%. As expected, there are wide geographical differences in average poverty exit rates which vary from over 36% in the North-Western regions to around 25% and 21% in the southern and insular regions. As to poverty entries, the sample includes 231 411 individuals and 13 250 entries: the average poverty entry rate is 5.73%, while regional rates range from 3.38% in the North-Eastern regions to 10.61% and 10.85% in the Southern and insular ones.

[19] Remember that "poverty" is synonymous of "at risk of poverty".

[20] This avoids bias due to right-censoring, which would be present if we considered all poor individuals in t-1.

As to material deprivation, the sample for exits includes 37 571 individuals and 16 442 exits. The average deprivation exit rate is 43.47%, while regional rates range from 52.87% in the north-eastern regions to 40.92% and 33.41% in the southern and insular regions. The sample for entries includes 243 251 individuals and 17 752 entries, which correspond to an average deprivation exit rate of 7.30%; again, the lowest deprivation entry rates are in the North-Eastern regions (4.32%) and the highest in the Southern and insular regions (12.50% and 15.42% respectively). Notice how exits rates are much higher for material deprivation than for income poverty, while the difference is not so marked for entry rates.

Annual aggregate entry and exit rates over 2005-2015 are displayed in table 5. The effects of the crisis are clearly reflected in the behaviour of poverty exit rates and of deprivation entry rates: ARP rates display a continuous decline starting in the second phase of the crisis, in 2012, and by 2015 they are 8 percentage points lower with respect to the pre-crises period; deprivation entry rates sharply increase in 2011, and although the decreasing trend since 2012 they remain quite higher than in the pre-crises years. On the other hand, poverty entry rates increase at the beginning of the crises, specifically in 2010 and 2011 but they start decreasing in 2012 and by 2015 they are lower than in the pre-crises period; this result is expected, if one considers that periods of declining economic activity are characterized by decreasing median income and a decreasing poverty threshold. As to deprivation exits, instead, no clear pattern emerges.

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We will now turn to the analysis of the determinants of poverty and material deprivation exits and entries.

3. Regression analysis of poverty and deprivation entry and exits.

3.1. The model

Given the features of our pooled samples and the binary nature of our outcome variables, we will estimate 4 pooled probit regression models for the changes of status, of the general form:

$$Pr\,(Y_{it}=1 \mid \boldsymbol{X}) = \Phi(\boldsymbol{X'\beta}) \qquad (1)$$

Where Y is the outcome variable (alternatively $Poverty\ exit_{it}$, $Poverty\ entry_{it}$, $Deprivation\ entry_{it}$ or $Deprivation\ exit_{it}$), $\boldsymbol{X}$ includes different sets of explanatory variables (specific to each of the 4 sets of estimates), $\boldsymbol{\beta}$ is the vector of parameters and Φ is the cumulative distribution function of the Standard Normal distribution. Subscripts i and t of the dependent variable refer to individuals and years respectively.[21]

[21] The subscripts of **X** will be described later in this Section because they are different on the basis of the observations' dimension (individual, household, or macro-regional).

The use of both qualitative and quantitative controls is admitted with this technique that employs maximum likelihood to assess the regression's function.

The set of explanatory variables **X** which we use in the 4 sets of regressions can be grouped in 4 categories:

i) Economic and demographic events (E_{it}),

ii) Characteristics (C_{it})

iii) Macroeconomic controls (M_{it}) (which are the same for all the *i*'s in a macro-region)

iv) Other controls (Z_j and Z_t for macro-regional and time dummies, respectively).

Specifically, our models can be formally written as follows:

$$Pr\,(Y_{it}=1 \mid \boldsymbol{X}) = \Phi(E_{it}, C_{it}, M_{it}, Z_j, Z_t) \qquad (2)$$

Notice that the sample units (the *i's*) in the model are individuals rather than households, which is justified both because Eurostat measures poverty (deprivation) as the share of individuals living in at risk of poverty (materially deprived) households, and because the dataset defines longitudinal weights at the individual level to correct for selective non-response. Events and characteristics at the household level are applied to all household members, but we also use events and characteristics at the individual level, both in order to increase the variability of regressors and to capture the effects of individual aspects which may affect the changes of status. Time (*t*) refers to the year of the interview; in particular, as the poverty status (deprivation status) is defined with reference to the flow of equivalent household income (or to material deprivation experienced) in the twelve months preceding the interview, all the level explanatory variables ("characteristics") are constructed so as to refer to the twelve months preceding the interview, while "events" reflect the change between the last twelve months and the previous ones.

We now turn to the detailed description of the regressors, many of which are common to the estimates for income poverty and deprivation transitions.

i) *Economic and demographic events*

Event variables for both poverty and deprivation transitions include first of all economic events explaining the change in individual labor income (hence in household labor income). To proxy all labor market changes potentially affecting individual labor income we use the change in individual work intensity (*Ind WI change*) between *t-1* and *t*. Individual work intensity in each period is constructed using IT-SILC data as the number of months spent in employment[22] divided by 12. The variable is constructed from the individual's statements on her main activity in each of the twelve

[22] As an employee or self-employed, full time or part time.

months. It can vary between 0 and 1, hence its change, *Ind WI change*, is a continuous variable varying between -1 and 1.

In some specifications the continuous variable *Ind WI change* is substituted by the dummy variables *Find job main* (in the regressions for exits) or *Loose job main*, (in the regressions for entries) which capture the change (between *t-1* and *t*) of the individual's main activity over an year from not-employed[23] to employed (or from employed to not-employed[24] respectively). The main activity over an year is "employed" if the individuals declares employment to be her main activity for most of the previous twelve months.[25]

As to demographic events, we include some controls capturing changes in household size and composition, including the discrete variable *Change of household size*,[26] as well as and the dummy variable *New household*, which takes value 1 if the individual belongs to different households in *t-1* and *t*.[27]

Finally, an "event" variable specific to regressions for material deprivation transitions is the (log of) total disposable household income,[28] which captures the effect of changes in any kind of household income (from household's sources, from social benefits or from private transfers) on the chances of changing the material deprivation status.

ii) Individual and household characteristics

The set of "characteristics" common to poverty and deprivation transitions models include first of all a set of dummy variables capturing the individual's main activity in the previous twelve months: *Employed main*, *Unemployed main*, *Inactive main* and *Retired main* are dummy variables which are equal to 1 if the individual declares to be, respectively, unemployed, inactive[29] or retired for most of the previous twelve months (*Employed main* is going to be the omitted dummy).[30]

Moreover, to investigate whether unemployment benefits and social benefits received by some categories of inactive people (in particular illness and disability benefits, or scholarships) affect the

[23] Unemployed, inactive or retired. We include retirement as retired people may work to increase their income.
[24] Unemployment or inactive. We do not include retirement in this case, since retiring in general does not imply a relevant loss of income.
[25] More specifically: we sum the number of months the individual declares to spend in each activity (employed, unemployed, student/trainee, retired, or other inactive person), and define the "main activity" as the one with the maximum number of months.
[26] Representing the variation in the number of household members between *t* and *t-1* for a given family ID
[27] A new household may derive from separation or divorce or from adult members leaving the original household to form a new one.
[28] Given by the sum of all household members' personal income components (labor income, private pensions, unemployment benefits, old age and survivors benefits, sickness and disability benefits and education related allowances) and income components at the household level (income from rented property or land, interests dividends and profits from capital investments, family/children related allowances, housing allowances, benefits for social exclusion and regular inter-household cash transfers). The disaggregation of the income components at the household level is available only starting in 2007.
[29] The category inactive includes students/trainees, disabled and other inactive persons.
[30] The dummy *Retired main* is strongly correlated with age, and we will therefore omit it from the estimated regressions, as the effects of such variable are going to be captured by the linear and non-linear effects of age which we include in the model.

probability of poverty exits and entries for the unemployed and inactive, we introduce two interaction terms: *Unemployed_main*unemployment_benefits* and *Inactive_main*inactive_benefits*, where *Unemployment_benefits* and *Inactive_benefits,* are dummy variables taking value 1 if the individual receives income from unemployment benefits and from illness and disability benefits or scholarships respectively.

The set of characteristics common to all regressions is completed with a series of standard individual controls capturing the effects of education, gender, age[31], marital status and health status, two discrete controls reflecting household's size and composition (*Number of adults* and *Number of children*), and a dummy capturing the degree of urbanization (*D_urbanization*), which takes the value 1 if the household lives in a densely populated area.

As to characteristics specific to income poverty transitions regressions, past periods of poverty experienced by the individual, and/or her starting level of income (which is highly correlated with the length of poverty spells) may play an important role. We try to capture these "hysteresis" effects by introducing in the poverty regressions the dummy variable *Previous poverty* (which is equal to 1 if in the period preceding the change of status (i.e. in *t-1*) the individual had experienced more than one year of poverty) or, as an alternative, a discrete control for the lagged income class ($Income\ class_{t-1}$).[32] To check whether being at the same time in a state of poverty and material deprivation is particularly problematic for the chances of exiting/entering income poverty, we include a control for the lagged state of material deprivation in some specifications.

As to characteristics specific to material deprivation transitions, we capture the effects of previous spells of deprivations with the dummy *Previous deprivation* (taking value 1 if in t-1 the individual had experienced material deprivation for more than one period), and in some specifications we include the lagged state of income poverty to check the effects of being both deprived and poor on the subsequent chances of exiting or entering material deprivation.

In one specification for material deprivation transitions we are also able to control for the effects of the presence of different kinds of household income, and of other specific variables capturing household's living conditions, which are strongly connected to the deprivation status.[33] In particular we control for different kinds of social benefits received by the households, with a series of dummies equal to 1 if the specific benefits are included in total household income: family and children related allowances (*D_social benefits famchild*), housing allowances (*D_social housing*) and other social exclusion benefits (*D_social benefits exclusion*); we also control for the presence in total household disposable income of private transfers received from other households (*D_transfers from other*

[31] Six standard age classes are considered: <25, 25-34, 35-44, 45-54, 55-64, >65.

[32] Seven income classes are considered: 1. less than half the poverty line, 2. from half to three quarters of the poverty line, 3. from three quarters of the poverty line to the poverty line, … and so on up to 7. more than twice the poverty line. Income class and spells of poverty are highly (negatively) correlated, and we will use them as alternatives in the various specifications for poverty transitions.

[33] As in Caranci et al. (2010) we select some traits that operationally combine to represent the multidimensionality of the social and material deprivation concept as: low level of education, unemployment, non-home ownership, one parent family and overcrowding. Better representative variables with a deepening on wellbeing was disposable only in a module of year 2013.

households),[34] and income from rented property/land or from interest, dividends and profits from invested capital (*D_asset)*. Finally we include the dummies *House owned* which is equal to one if the household owns the house where it lives and *House owned damaged* if the owned house where the household lives is in bad conditions.[35]

iii) Controls for the macroeconomic context

Besides the above controls at the micro level, we also consider two controls at the macro level which have typically been neglected by the literature despite their potentially important role in poverty and material deprivation transitions. The individuals/households of our sample are grouped into five different macro-regions that are: North East (NE), North West (NW), Centre, South and Islands. We employ the following variables: i) the growth rate of total hours worked and ii) the growth rate of per capita expenditure of Municipalities for social services ("social spending" in short).[36] Both variables are aggregated at the macro regional level, which is the only level of geographical disaggregation available in IT-SILC longitudinal data.[37]

iv) Other controls

Additional standard controls include geographical dummies capturing the macro-region in which households live, and time dummies capturing time shifts.

Tables A1-A4 report the descriptive statistics of all variables included in our regressions.

3.1.1 Methodology and endogeneity issues

As previously mentioned, we estimate probit regressions on pooled data over the 2004-2015 period. This method is suitable when the dependent variable is binary. Robust standard errors are estimated, and longitudinal weights are used.

To cope with potential endogeneity problems, we make use of the Instrumental Variable (IV) probit method, which requires the identification of at least one instrument that must be correlated with the key explanatory variable, but not with the error term. In our models, endogeneity problems are mainly due to the variables capturing previous poverty experiences (*Previous poverty*) in the income poverty transitions regressions and those capturing previous deprivation experiences (*Previous deprivation*) in the material deprivation transitions regressions. The previous experience in both income poverty

[34] We use lags for both the "social benefits" dummies and the "transfers" dummies, to avoid possible problems of reverse causality: the households may receive these social benefits and private transfers because it has not climbed out of deprivation or because it has slipped into it.

[35] Leaking roof, damp walls/floor/foundations, rot in windows frames or floor).

[36] Data are collected from 2003 and refer to the "Survey on social actions and services of single and associated municipalities" gathering annually information on social services and related expenditures managed by municipalities as part of the Integrated Network of local Social Services.

[37]Both data on per capita social expenditure of Municipalities and on total hours worked at the macro-regional level are from ISTAT source.

and material deprivation could lead to endogeneity problems given that the poor/deprived individuals' history can be due to the difficulty of climbing out from the status of poverty/deprivation, and, conversely, for individuals that have not experienced poverty/deprivation in the past, it is less likely to enter income poverty/material deprivation status.

As for the instrument, we identify the lag of the declared employment status at the moment of the interview as a good exogenous explicative variable for poverty/deprivation history. This information is provided by the individuals and it explains the previous experience in poverty/deprivation, which is instead determined for exceeding the income poverty/material deprivation threshold.[38]

Finally, we correct standard errors to address heteroskedasticity and we cluster them at the macroregional level in order to remove potential bias affecting the estimates.

3.2 Results

The results of the pooled probit estimates for ARP exits and entries are reported in tables 6 and 7, those for material deprivation exits and entries in tables 8 and 9. Estimated marginal effects are displayed in columns 1-5 of each table, and IV approach is used for columns 6-10.

3.2.1 Income poverty exits and entries

Let's start focusing on estimates for ARP exits and entries, reported in tables 6 and 7, respectively. The basic specifications are in columns 2 of the tables.

- INSERT TABLES 6 AND 7 -

Labor market events, as captured by the change of the individual work intensity *(Ind WI change)*, have highly significant effects of the expected sign on both the probability of exit and entry. Focusing on ARP exits (table 6), a unit increase (decrease) of an individual's change of work intensity[39] increases (decreases) her probability of exiting poverty by around 9%. The result is robust across the different specifications of columns 3 and 4. The importance of changes in the individual employment status is confirmed in column 5, where the coefficient of the dummy *Find job main* is positive and significant: a change of the individual's main activity from non-employed to employed increases her chances to be lifted from the risk of poverty by 11%. As to the effects on entries, the probability of entering the risk of poverty is negatively related to changes in the individual work intensity, with a marginal effect around -2% which is robust across specifications (columns 2, 3 and 4).[40] Estimates in column 5 confirm the strong positive effect of the change of an individual's main activity from mainly

[38] The employment status as explicative variable of the switch from poor to non-poor and *vice versa* (and also from deprived to non-deprived and *vice versa*) is included in our models using the information refereed to the main activity carried out by the interviewee in the same period for which our dependent variables are defined.

[39] This would be the change experienced by an individual who did not use to be employed at all in periods before *t*, and during period *t* is employed for 12 months.

[40] The sample size is much larger with respect to the exit regressions, which may partly explain the relatively lower magnitude of the estimated marginal effects compared to the exit case.

employed to mainly unemployed or inactive (*Loose job main*), which increases the probability of slipping into poverty by a remarkable 9%.

Demographic events related to changes in the number of household members or to forming a new household do not seem to make any significant difference for the probability of ARP exits (table 6), but have robust significant marginal effects on the chances of ARP entry (table 7). In particular, a change of household (due to separation, divorce or adult members (typically grown-up children) living the original household) implies an increase of the probability of poverty entry around 3.4%, while a unit increase in household members lowers it by around 1.7%. This last effect is probably driven by changes in the adult components, as a glance to the marginal effects for the variables *Number of adults* (-1%) and *Number of children* (+2%) suggests. The result is robust across all specifications.

As to individual characteristics, the one which has the main impact on the probability of both poverty exit and entry is being in a state of unemployment for most of the previous 12 months (*Unemployed_main*), which lowers the chances of ARP exits by 15-19% depending on the specification and increases the chances of ARP entry by around 8%.

Notice, however, how unemployment benefits play a fundamental role to counteract these perverse effects, as one can see from the coefficients of the interaction variable *Unemployed_main*un_benefits*. Focusing on exits (table 6), a mainly-unemployed individual who receives unemployment benefits has a 12-13% higher likelihood to exit the risk of poverty with respect to an individual who does not receive them. Overall, being in a state of unemployment lowers the probability of ARP exit by 3-7% (or 2-6%, depending on the specifications) for an unemployed who receives unemployment benefits compared to 15-19% for an unemployed who does not receive them. When considering that only 20% of the mainly-unemployed in the exits sample receive income from unemployment benefits, the importance of extending the group of unemployed supported by such subsidies in order to speed ARP exits, and possibly reducing average ARP rates, is self-evident. The result is similar in the case of entries (table 7): a glance to the negative sign of the effect of the interaction variable confirms that unemployment benefits partly counteract the positive effects of unemployment on the probability of entry, although not as strongly as in the case of ARP exits: being mainly unemployed and receiving unemployment benefits increases the entry probability by 7% compared to 8% if unemployment benefits are not present.

Not surprisingly, also being mainly-inactive has a negative and significant impact on the probability of ARP exits, and a positive and significant impact on the probability of ARP entries. The marginal effects are 9-10% for exits (table 6) and around 4% for entries (table 7).

Public benefits enjoyed by some categories of inactive people (education-related allowances, or illness and disability benefits), do not have any significant effect for ARP exits, while they are quite important for ARP entries (table 7), where the marginal effect of the interaction variable *Inactive_main*inactive_benefits* is significantly negative in all specifications. For inactive people receiving benefits like education related allowances and health and disability benefits the probability of slipping into poverty is halved (from 4% to 2%) compared to inactive people not receiving them. Unfortunately, however, only 7,34% of the mainly-inactive in the exit sample receives these categories of benefits: 5,73% of the inactive receive illness or disability benefits and 1,73% receive education-related allowances.

The estimates also confirm the relevance of education in increasing the chances of ARP exits and decreasing the chances of ARP entry: having a secondary or (first level) tertiary education level increases the probability of exit by around 6% and 10% respectively, and reduces the chances of slipping into poverty by a remarkable 6% and 3%.

The effects of the dummies capturing marital status and gender are low in magnitude but highly significant for ARP exits: the probability of exits increases by 2-2.7% for married individuals, and of 1-1.6% for females. As to entries, the probability is lower for females and for married individuals, although with low marginal effects (below 1% in both cases) and not always significant in the case of marital status.

On the other hand, we never register robust effects of *(Bad) Health*, which has no significant effects in all but one specification for exits, and is never significant for entries.

Non-linear effects, robust across specifications, are estimated for the age class, for both exits and entries. They are equal in sign in the two sets of estimates, and for both exits and entries an increases in the income class has positive marginal effects for the "young" classes (class 1 and 2), and negative effects which become stronger and stronger for the "old" classes (class 3, 4 and 5). Focusing on exits, for example, an individual in the age class 2 (age 25-34) has a probability of ARP approximately 1.8% higher with respect to an individual in class 1 (age<25); the difference is +1.2% if we compare class 3 (age 35-44) with class 2; on the other hand, for an individual in class 5 (age 55-64) the probability of ARP exit is 7% lower with respect to an individual in class 4 (45-54), and the difference widens to -15% if we compare class 6 (>64) with class 5. Being poor in retirement age, therefore, has the second strongest (negative) effect on the probability of exiting the risk of poverty.[41]

For ARP exits the effects are equal in sign, but much lower in magnitude: the positive marginal effects are mildly positive for classes 1 and 2 (+0.6 and +0.2% respectively) and negative for older classes (-0.2%, -0.6% and -1% for classes 3, 4 and 5 respectively).

Turning the attention to household characteristics, all of them with the exception of the dummy capturing the degree of urbanization have strongly significant effects in both sets of regressions for poverty entry and exit. As to the variables capturing the effects of household size and composition, the probability of ARP exit is negatively related to the number of young children in the household, and positively related with the number of adult components, which are potential income earners. Specifically, one additional adult in the household rises the probability of ARP exit by around 2.2%, and one additional children lowers it by 2.4%. As expected, the signs are reversed in the estimates for ARP entries: one additional adult lowers the probability of slipping into poverty by 1%, and one additional children increases it by 2%.

An important effect is estimated for the dummy *Previous poverty*, which decreases the chances of exit poverty and increase the chances of entering it. The probability of ARP exit for individuals who in the starting period have been at risk poverty for two or more years[42] is around 9-9.9% lower with respect to individuals which in the starting period were poor for the first time. The result is robust across specifications, and in particular is confirmed in column 5 where the lagged income class (which is strongly negatively correlated with the total number of periods spent in poverty up to that

[41] Specifications including the dummy "*Retired main*" in place of the age class (not included in table 6 due to strong collinearity between this variable and the age class, available from the authors upon request) confirm the strong negative effect.

[42] Either consecutive or non-consecutive.

time) is included in place of the dummy for past periods of poverty: its marginal effect is 9.8%, so that for a poor individual in the lowest income class (the 1st) the probability of exit is 9.8% lower with respect to an individual in the 2nd class, and 19.6% lower compared to an individual in the 3rd.[43] As to the probability of entering the risk of poverty, it is higher for individuals which, although non-poor in the starting period, had experienced poverty in previous years, with the estimated marginal effect close to 5.8% in most specifications, which increases to 10% in the specification of column 3 which includes the lagged deprivation state. Similarly, the lower the lagged income class (which in column 4 replaces the dummy for past periods of poverty) the higher the probability of slipping into poverty, with a marginal effect of 4%: for a non-poor individual belonging to the 4th income class the probability of entering poverty is 4% higher with respect to an individual of the 5th class, 8% higher compared to one of the 6th class and 12% higher compared to one of the 7th.

As one can see in the specification of column 3 of both table 6 and table 7, a state of material deprivation in the starting period lowers the probability of ARP exit and increases the probability of entry. The marginal effect is -6.3% for the probability of exit: the states of income poverty and material deprivation are not necessarily associated, but when they are, the individual's chances to exit the risk of poverty are quite lower[44]. Similarly, for a non-poor individual, being in a state of deprivation in the starting period increases by 4% his probability of slipping into poverty in the following one.

Turning the attention to the macroeconomic controls, the growth rates of hours worked at the macro-regional level does not seem to have significant effects either on ARP exits or entries probabilities. On the other hand, the (growth rate of) average per capita expenditure for social services by Municipalities,[45] although not significant in preventing ARP entries,[46] has a strong positive effect on the probability of ARP exits: a 1% increase of such spending increases the probability of ARP exit by around 15%. Unfortunately, despite expenditures in social services are relevant in reducing the poverty permanence risk, they have been declining from 2010, during the economic crisis, in all macro-regions but the North East (Istat, 2019).[47] In fact, welfare problems are evident in the South and in the Islands, where the total expenditure in social benefit is 10% of the total national expenditure while the resident population is 23% of the total. This leads to a large North-South per capita social benefit gap: from a minimum of 22 euros in the Region Calabria to 517 euros for the Autonomous Province of Bozen. In so doing Italy continuing to breach Article 30 of the European Social Charter, which states "the right to protection against poverty and social exclusion", because of the lack of an adequate and coordinated overall approach.[48]

The estimated effects for the macro-regional dummies confirm the relevance of territorial differences. Ceteris paribus, compared to an individual living in the Southern regions, those living in the Northwestern, Northeastern and Central regions have a substantially higher probabilities of exiting

[43] Remember that income classes 1, 2 and 3 are below the poverty line, while classes 4, 5 ,6 and 7 are above it (see note *xx* in the previous paragraph).

[44] And so are the chances to exit deprivation, as we will see in the next paragraph).

[45] Data refers from 2003 to the "Survey on social actions and services of single and associated municipalities" and collects annually information on social services and related expenditures managed by municipalities as part of the Integrated Network of local Social Services.

[46] In table 2 the coefficient is significant only in the specification of column 4, and only at a 10% significance level.

[47] The total social expenditure is declining from 2011 to 2013.

[48] The conclusions of the European Committee of Social Rights for 2017.

poverty while for people living in the Islands the probability is 2% lower. Similarly, individuals living in Northern and Central regions have a substantially lower chance of slipping into poverty with respect to those living in the South.[49]

3.2.2 Material deprivation exits and entries

Let's now turn the attention to the results for material deprivation exits and entries, displayed in tables 8 and 9.

- INSERT TABLES 8 AND 9 -

Focusing on labor market events, changes in the individual work intensity do not seem to have robust significant effects on the probability of either climbing out or slipping into material deprivation: the estimated coefficients are never different from zero except in the specifications including lagged poverty as an explanatory variable (column 3 in both tables 8 and 9). Similarly, as one can see in column 4 of table 8, the dummy *Find job main* does not affect exit probabilities. However, a glance to column 4 of table 9 reveals that the dummy *Loose job main* is highly significant in the case of exits: changing the main economic status from mainly employed to non-employed (i.e. to mainly unemployed or inactive) increases by 2% the probability of entering material deprivation.

As expected, changes in (the log of) total disposable household income, given by the sum of all household members personal income components[50] and income components at the household level[51], have highly significant and robust effects for both exits and entries, with marginal effects around +3% and -2% respectively, which are robust across specifications: as total household disposable income increases the chances of climbing out of material deprivation, and decreases the chances of slipping into it. In the specifications of columns 3, notice how household income levels below the poverty line in the starting period (lag of the dummy *Poverty*) have harmful effects for both exits and entries: for ARP individuals the probability of exiting deprivation is 9% lower, while the probability of becoming deprived is 5% higher. Conversely, the coefficients of the dummy *D_assets* in the specifications of columns 5 show how the presence in total household disposable income of earnings from rented property or land or from invested financial capital, increases the probability of exiting material deprivation by 16%, and reduces the probability of slipping into it by 7%; as that the presence of household income from assets is concentrated in higher income classes[52] this result confirms the relevance of the income class in affecting material deprivation transition probabilities.

On the other hand, as one can see in the specifications of column 5, the presence in total household disposable income of social benefits like housing allowances (*D_social housing*) and of other benefits for social exclusion (*D_social benefits exclusion*) have the opposite effects: they lower (by 8% and

[49] The dummy Islands, on the other hand, is not significant in this case.

[50] Including not only labor income, but also private pensions, unemployment benefits, old age and survivors benefits, sickness and disability benefits and education related allowances.

[51] Income from rented property or land, interests' dividends and profits from capital investments, family/children related allowances, housing allowances, benefits for social exclusion and regular inter-household cash transfers.

[52] In the sample for exits, 73% of individuals with household income from assets belong the 4th, 5th, 6th or 7th income class (42% in the 6th and 7th and 31% in the 4th and 5th). In the sample for entries 93% of individuals with income from assets belong to the higher classes (75.3% in the two highest and 18% in the 4th and 5th).

6%, respectively) the probability of climbing out material deprivation and increase (by 4% and 2%) the probability of slipping into it. Notice that lagged values of these dummies are used, in order to avoid reverse causality as much as possible. These results should not be taken to mean that these kinds of social benefits have harmful effects (after all their increase would mean an increase of total household disposable income, which helps lifting individuals out of deprivation (and prevents them falling into it). Rather, they signal that individuals receiving these social benefits are in a situation of particular vulnerability (not otherwise detected in the regressions) which makes exits harder and entries more likely. The same arguments apply for the estimated coefficient of the dummy *D_private transfers received*.

As to demographic events, no significant effects are ever detected for changes in the number of household members. Changes of households are not significant for entries, but they seem to matter for exits, with a marginal effect between 17% and 19% depending on specifications; the marginal effect is quite high, but affects only a negligible fraction of the sample (0.51% for exits and 0.59% for entries).

Turning the attention to individual characteristics, notice the significant and robust effects of the dummy *Unemployed_main*, in both sets of estimates. Individuals whose main activity in the past 12 months has been unemployed have a 9-10% lower chance of exiting deprivation, and a 3-4% higher probability of entering it. The effects of the dummy *Inactive_main* on the other hand, are not robustly significant in either deprivation exits or entries regressions.

The estimated coefficients for the interaction dummy *Unemployed_main*un_benefits*, are never significant in the regressions for material deprivation exits (table 8), while they are always positive and significant in the regressions for entries (table 9); contrary to the case of income poverty exits, and somehow counterintuitively, receiving unemployment benefits seems to reinforce (rather than reducing) the chances of slipping into material deprivation for mainly unemployed individuals. Similar effects are found for the interaction dummy *Inactive_main*inactive_benefits*, which increase the probability of entering material deprivation for mainly inactive individuals. While this result appears counterintuitive at first sight, it might be explained if one thinks of the nature of the benefits, which include education related allowances and sickness and disability benefits. In particular, the recipients of the latter kind of benefits (sick and/or disable people) belong to particularly vulnerable categories, for whose households the chances of slipping into material deprivation are structurally higher. This interpretation is in a sense confirmed by the estimated coefficients of the dummy *(Bad) Health*, whose marginal effect is robustly positive and significant (with marginal effect around +4%) in the regressions for entries (table 9), and robustly negative and significant (with marginal effect around 8-9%) in the regressions for exits (table 8).

The estimated effects of education and marital status are in line with the results we found for income poverty transitions. A secondary or tertiary education level increases the chances of climbing out of material deprivation by 8% and 12%, respectively, and reduce the changes of slipping into deprivation by 4% and 7%. For married individuals the probability of exit is around 5% higher, and the probability of entry is around 1% lower. The results are robust across specifications. Gender on the other hand has no significant effect in any specification of either set of regressions.

The estimates confirm the presence of robust non-linear effects of the age class, in both sets of regressions. The turning point of the effects is the same for both exits and entries, but the sign of the

effects is reversed in the two cases. In the regressions for deprivation exits (table 8) an increase of the income class has negative marginal effects for classes 1 and 2 and positive (and increasing) effects for older classes, whereas in the entries regressions the effects are positive for the first two classes and negative for the older ones. For example, the 2nd income class has a 2.7% lower probability of exit compared to the 1st, while the probability of exit for the 6th class is 3.9% higher compared to the 5th. In the case of entries the corresponding differences in probabilities are +0.4% and -0.8%, respectively.

Turning the attention to household characteristics, and starting with the variables capturing household size and composition, the number of children is robustly negatively related with the probability of exit (table 8), with an estimated marginal effect around 2.8%, and it is positively related with entry probabilities of table 9, although in this case the effect is not significant in the specifications of column 3 (which includes the income poverty dummy) and column 5 (which includes dummies for different household income components, and for household's house conditions).

The estimates confirm the perverse effect of previous periods of deprivation for both exits and entry probabilities, with robustly significant estimates across specifications. Deprived individuals who in the starting period had been in this state for more than one period have a 11-12% lower probability of climbing out of it, while non-deprived individuals which however had experienced material deprivation for more than one period in the past, have a 6% higher probability of re-entering into it.

Housing deprivation is one of the most extreme examples of poverty and social exclusion in society today. Two determinant dimensions are urbanization (*D_urbanization*) and living in owner-occupied dwellings (dummy *House owned*) with a control on housing deprivation (dummy *Damaged house*). Focusing on the specifications of columns 5 in tables 8 and 9, our estimates confirm the importance of urbanization in lowering the probability of exiting material deprivation with robust marginal effects around -3.5%, but it does not seem to be relevant for the probability of entering deprivation. On the other hand, ownership and house deprivations, are both significant with the expected (opposite) signs. Individuals who own the house where their households live have a 9.8% higher probability of exiting material deprivation with respect to people who don't and a 4.7% lower probability of slipping into material deprivation. The intensity of housing deprivation[53] acts in the opposite direction, increasing the probability of entering deprivation by 6% and reducing the probability of exiting deprivation by 2%. The results are expected: a damaged house may be a signal of a general lack of resources (and a proxy for the state of poverty) needed to repair it and not affordable. The estimated coefficient for the interaction between the two dummies is not significant in the regression for entries, but it is positive and significant in the regression for exits (table 9), suggesting that in this case the positive effect of ownership prevails on the negative effects of house damages.

Turning the attention to the macroeconomic controls and focusing on table 8, notice how the state of the macroeconomic environment, as measured by the growth rate of total hours worked, has a robust positive effect on the probability of exiting material deprivation: a 1% increase in the growth rate of total hours worked in the macro-region increases the chances of exiting deprivation by 2.6%. As to the (growth rate of) average per capital social spending by Municipalities, it does not seem to matter at all: the coefficient in never different from zero in any specification. In table 4 instead, per capita social spending by Municipality seems to have a role in preventing entries into material deprivation:

[53] Leaking roof, damp walls/floor/foundations, rot in windows frames or floor.

the estimated marginal effect for its growth rate is negative and significant, around -3%, in all specification but the one of column 8[54]. On the other hand, and somehow counterintuitively the estimated marginal effect for the growth rate of total hours worked is mildly positive (+0,4%) and significant, although only at a 10% significance level, in all specifications but the one in column 5.[55] Finally, the estimated effects of the macro-regional dummies confirm that the North-South divide is relevant also for material deprivation transitions: individuals living in the Northern and Central regions have a higher probability of exiting deprivation (+4% and 6% respectively) and a lower probability of falling into it (-6% and -4% respectively) with respect to residents of the South. For residents of the Islands the situation is even worse than for residents in the South: -6% in the probability of exit and +1% in the probability of entry.

4. Conclusions

In this paper we analyze the micro and macro determinants of exits from/entries into poverty and material deprivation in Italy over the period 2004-2015, using a novel perspective.

We define year to year transitions out of and into poverty/material deprivation as dichotomous variables capturing the change of status, and estimate probit regression models on pooled Italian data from 9 longitudinal components of IT-SILC[56] covering the period 2004-2015. This allows us to analyze the probability of exiting/entering from/into the states of poverty and material deprivation over a relatively long time span (11 years) encompassing periods characterized by different economic cycles.[57] Although IT-SILC data have a short time observation window for each individual, by pooling the available panels we observe over a long time period thousands of status changes by individuals, which allows us to efficiently estimate the effects of the various determinants of transitions (in particular of trigger events) and their relative importance. The structure of our analysis allows to assess the impact of some important macroeconomic determinants of poverty and deprivation transitions together with those of more standard micro determinants,[58] thereby filling some gaps in the literature. In particular, while the analysis of the impact of welfare on individual poverty and deprivation transitions has seldom been attempted with longitudinal data, we analyze the impact of both social benefits received at the individual level and average per capita spending in social services by Municipalities at the macro-regional level. We also control for the impact of macroeconomic performance at the macro-regional level.

A set of novel results emerges.

The effects of the crisis are clearly reflected in the behavior of income poverty exits rates (which decline steadily from 2012, and by 2015 they are 8 percentage points lower with respect to the pre-crises period) and deprivation entry rates (which increase sharply in 2011 and in 2015 are still quite higher than in the pre-crisis period). Social policies can be important in counteracting these effects: we find that at the macro level changes in average per capita social expenditure by municipalities both speed poverty exits and prevent material deprivation entries while at the micro level, specific

[54] Which includes the poverty rate (in place of total disposable household income) in the regressors.
[55] Where it is not statistically different from zero.
[56] Which we integrate with macro data at the macro-regional level, from ISTAT source.
[57] To our knowledge, no other empirical analysis considering both poverty and deprivation transitions in Italy is available for such long time span.
[58] Including trigger events, controls for individual and household characteristics, and controls for NUTS-1 macro regions.

social benefits received by individuals help reduce the odds of poverty entry for the unemployed and inactive.

As to the interactions between the different aspects of social exclusion, we find that changes in income have important effects in speeding deprivation exits and preventing deprivation entries, but, needless to say, material deprivation and income poverty do not necessarily proceed hand in hand. Income poverty does not necessarily imply material deprivation and the other way around. However, when poverty and deprivation coexist the chances of exiting both the poverty and deprivation status are greatly limited. Similarly, deprivation enhances the chances of slipping into poverty for non-poor individuals, and poverty enhances the chances of slipping into deprivation for non-deprived individuals.

The analysis of events (which to our knowledge has never been performed before on Italian case), shows the crucial importance of labor market events for poverty transitions: not only finding or losing a job, but more generally changes in an individual's work intensity strongly affect the chances of entering and exiting income poverty. Demographic events related to changes in the household size or to the formation of a new household are important for poverty entries, but are not relevant for deprivation transitions.

Other results are more standard, and are generally in line with the findings of previous literature, but still give important insights for the design of social policies aimed at speeding exits and avoid entries into poverty and deprivation.

A perverse effect of previous poverty experiences (and previous deprivation experiences) on the chances of poverty and deprivation exits and entries is found. This suggests the existence of poverty traps (deprivation traps), which highlights the importance of designing policies for preventing poverty and deprivation entries and speeding exits.

As to individual characteristics, being mainly unemployed or inactive strongly decreases the probability of poverty and deprivation exit and increase the probability of entry. As previously mentioned, however unemployment benefits and benefits received by some categories of inactive (health and disability benefits and education related allowances) help to counteract these negative effects. The beneficial effects of education are also confirmed: possessing a secondary or (first level) tertiary education level strongly increases the individual chances of exit and decreases the chances of entry.

Among household characteristics, as expected, households with a higher number of children have a higher chance of slipping into both poverty and material deprivation and a lower chance of climbing out of them. The effects of the number of adults are the opposite in the case of poverty transitions (as expected, if one thinks that the number of adults is often linked to the number or income earners in the household).

Finally, a strong effect of macro-regional dummies is found, which confirms that the Italian North-South divide is relevant also for income poverty and material deprivation transitions: all other things equal, the chances of climbing out of poverty and deprivation are much higher (and the chances of slipping into it much lower) for individuals living in the Northern and Central regions, with respect to those living in the South.

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Tables

Table 1. Individual material needs

ECONOMIC STRAIN
I) CAPACITY TO PAY RENTS, UTILITY BILLS, MORTGAGE, HIRE PURCHASE INSTALMENTS OR OTHER LOAN PAYMENTS. II) TAKING ONE WEEK'S ANNUAL HOLIDAY AWAY FROM HOME III) AFFORDING A MEAL WITH MEAT, CHICKEN, FISH (OR VEGETARIAN EQUIVALENT) EVERY SECOND DAY IV) FACING UNEXPECTED FINANCIAL EXPENSES V) TO KEEP THE HOUSE ADEQUATELY WARM
ENFORCED LACK OF DURABLES
VI) TO BUY A TELEPHONE (INCLUDING A MOBILE TELEPHONE) VII) TO BUY A COLOR TELEVISION VIII) TO BUY A WASHING MACHINE IX) TO BUY A CAR

Table 2. Poor and Deprived individuals in our sample

	Non-deprived	Deprived	Total
Non-poor	317 118	33 808	350 925
Poor	48 636	25 661	74 297
Total	365 754	59 469	425 223

Source: own elaborations on data from IT-SILC.

Table 3. Average annual poverty/deprivation rates 2004-2015, and prevalence of poverty/deprivation rates

	Poverty rate (%)	Deprivation rate (%)		Poor at least once* (%)	Deprived at least once* (%)
Italy	**17.5**	**14.0**		**22.7**	**20.0**
North West	*10.6*	*8.6*		*14.5*	*12.4*
North East	*9.4*	*7.9*		*13.0*	*11.9*
Center	*13.6*	*11.0*		*18.2*	*16.2*
South	*30.8*	*23.3*		*38.9*	*33.3*
Islands	*35.1*	*30.3*		*42.5*	*41.0*

*Percentage of population which has experienced poverty (material deprivation) in at least one year during the observation period.

Source: own elaborations on data from IT-SILC.

Table 4 – Poverty and Deprivation transitions, pooled samples 2005-2015

	POVERTY EXITS			POVERTY ENTRIES		
	Sample (n. obs)	n. of exits	%	Sample (n. obs)	n. of entries	%
Italy	**49 411**	**14 190**	**28.72**	**231 411**	**13 250**	**5.73**
North West	*6 626*	*2 398*	*36.19*	*57 056*	*2 249*	*3.94*
North East	*6 074*	*2 114*	*34.80*	*59 167*	*2 000*	*3.38*
Centre	*8 972*	*2 986*	*33.28*	*57 198*	*2 813*	*4.92*
South	*19 357*	*4 911*	*25.37*	*42 844*	*4 545*	*10.61*
Islands	*8 382*	*1 781*	*21.25*	*15 146*	*1 643*	*10.85*
	DEPRIVATION EXITS			**DEPRIVATION ENTRIES**		
	Sample (n. obs)	n. of exits	%	Sample (n. obs)	n. of entries	%
Italy	**37 571**	**16 442**	**43.76**	**243 251**	**17 752**	**7.30**
North West	*5 049*	*2 401*	*47.55*	*58 633*	*2 816*	*4.80*
North East	*4 793*	*2 539*	*52.87*	*60 448*	*2 613*	*4.32*
Centre	*6 744*	*3 439*	*50.99*	*59 426*	*3 746*	*6.30*
South	*14 050*	*5 751*	*40.92*	*48 151*	*6 018*	*12.50*
Islands	*6 935*	*2 317*	*33.41*	*16 593*	*2 559*	*15.42*

Source: own elaborations on data from IT-SILC.

Table 5. Poverty and Deprivation transitions, annual rates 2005-2015 (% of the samples)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Entries	***Poverty***	7.0	6.6	5.8	5.4	5.6	5.9	7.1	5.8	5.3	4.8	4.7
	Deprivation	5.5	4.8	5.5	5.7	5.3	5.3	13.1	11.2	9.0	8.2	7.0
Exits	***Poverty***	31.8	28.7	28.8	28.8	33.0	30.4	31.5	27.8	26.8	25.8	23.9
	Deprivation	48.8	47.9	43.9	47.9	46.6	38.6	49.8	41.9	45.4	43.3	35.5

Source: own elaborations on data from IT-SILC.

Table 6. Poverty Exits - Estimated models

	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
Poverty Exit	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ind WI change	0.0871***	0.0901***	0.0930***	0.1165***		0.2028***	0.2109***	0.2201***	0.3811***	
Find job main					0.1108***			0.1152		0.2828***
New household	0.0694	0.0737	0.0477	0.0470	0.0674	0.1055	0.1150	-0.0209	0.1565	0.1003
Change of household size	-0.0102	-0.0097	-0.0118	-0.0043	-0.0091	-0.0205	-0.0191	-0.1245***	-0.0231	-0.0158
$Deprivation_{(t-1)}$			-0.0630***					-0.3530***		
Unemployed main	-0.1649***	-0.1943***	-0.1800***	-0.1594***	-0.1933***	-0.3084***	-0.3677***	-0.1908***	-0.5035***	-0.3564***
Inactive main	-0.0975***	-0.1003***	-0.0972***	-0.0823***	-0.0973***	-0.1846***	-0.1921***	0.2648***	-0.2696***	-0.1796***
Unemployed_main*unemployment_benefits		0.1328***	0.1339***	0.1207***	0.1235***		0.2570***	0.0622	0.3869***	0.2291***
Inactive_main*inactive_benefits		0.0261	0.0333	0.0333	0.0270		0.0567	0.1698***	0.1226*	0.0563
Fisrt stage tertiary education	0.1058***	0.1072***	0.0937***	0.1088***	0.1067***	0.1877***	0.1928***	0.1009***	0.3628***	0.1889***
Secondary education	0.0605***	0.0619***	0.0566***	0.0636***	0.0624***	0.1104***	0.1145***	0.0497***	0.2162***	0.1131***
Married	0.0278***	0.0271***	0.0212**	0.0188***	0.0279***	0.0591***	0.0589***	0.0187**	0.0541**	0.0596***
Female	0.0138***	0.0164***	0.0155***	0.0098***	0.0168***	0.0140**	0.0190**	0.0814***	0.0377***	0.0199***
Age class	0.0290**	0.0258**	0.0309***	0.0499***	0.0237**	0.0800***	0.0733***	-0.0178***	0.1662***	0.0659***
$Age\ class^2$	-0.0069***	-0.0064***	-0.0072***	-0.0106***	-0.0060***	-0.0174***	-0.0164***	0.0210***	-0.0338***	-0.0150***
D_urbanization	0.0020	0.0037	0.0072**	0.0086**	0.0039	0.0095	0.0132*	0.0166**	0.0230**	0.0136*
(Bad) Health	0.0038	0.0015	0.0089***	-0.0027	0.0015	0.0065	0.0014	-0.0644***	-0.0064	0.0020
Number of children	-0.0242***	-0.0241***	-0.0233***	-0.0268***	-0.0241***	-0.0663***	-0.0663***	0.0307**	-0.0804***	-0.0654***
Number of adults	0.0223***	0.0227***	0.0207***	0.0139**	0.0226***	0.0289**	0.0301**	-1.6137***	0.0486***	0.0295**
Previous poverty	-0.0921***	-0.0917***	-0.0998***		-0.0913***	-1.6186***	-1.6169***			-1.6232***
$Income\ class_{(t-1)}$				0.0961***					0.3159***	
Mhours growth	0.0111	0.0112	0.0112	0.0109	0.0111	0.0290	0.0295	0.0305	0.0348	0.0292
Mgrowth of social spending per capita	0.1517**	0.1527**	0.1466**	0.1659**	0.1501**	0.3620**	0.3631**	0.3592**	0.5514***	0.3434**
Centre	0.0641***	0.0641***	0.0530***	0.0595***	0.0637***	0.1182***	0.1187***	-0.0287	0.1757***	0.1154***
Islands	-0.0427***	-0.0425***	-0.0350***	-0.0385***	-0.0418***	-0.0780***	-0.0780***	-0.0686***	-0.1219***	-0.0758***
NE	0.0819***	0.0814***	0.0706***	0.0765***	0.0820***	0.1529***	0.1527***	0.1355***	0.2239***	0.1507***
NW	0.1012***	0.1016***	0.0923***	0.0983***	0.1014***	0.1992***	0.2009***	0.1884***	0.2981***	0.1957***

Time effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	49 391	49 391	48 124	48 124	49 391	48 124	48 124	48 124	48 124	48 124

Source: own elaborations on data from IT-SILC.

Legend: *** p<0.01, ** p<0.05, * p<0.10.

Note: as for probit estimations (columns 1-5), we report the estimated marginal effects; in columns 6-10 we show the estimated coefficients for the instrumental variables approach, where the endogenous variable is *Previous poverty*.

Table 7. Poverty Entries - Estimated models

	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
Poverty Entry	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ind WI change	-0.0207***	-0.0214***	-0.0237***	-0.0347***		-0.2102***	-0.2160***	-0.2249***	-0.3519***	
Loose job main					0.0954***					0.8843***
New household	0.0341***	0.0341***	0.0299***	0.0387***	0.0327***	0.2755***	0.2759***	0.2809***	0.3888***	0.2605***
Change of household size	-0.0179***	-0.0179***	-0.0179***	-0.0182***	-0.0178***	-0.1646***	-0.1641***	-0.1665***	-0.1832***	-0.1636***
$Deprivation_{(t-1)}$			0.0396***					0.3650***		
Unemployed main	0.0839***	0.0880***	0.0810***	0.0602***		0.7495***	0.7839***	0.7502***	0.5944***	
Inactive main	0.0413***	0.0429***	0.0409***	0.0297***		0.3663***	0.3825***	0.3794***	0.2953***	
Unemployed_main*unemployment_benefits		-0.0135***	-0.0132***	-0.0074**			-0.1127***	-0.1217***	-0.0692*	
Inactive_main*inactive_benefits		-0.0204***	-0.0236***	-0.0166***			-0.1946***	-0.2172***	-0.1689***	
Unemployed_main*old					0.0822***					0.7285***
Inactive_main*old					0.0415***					0.3700***
Unemployed_main*unemployment_benefits*old					-0.0108***					-0.0782***
Inactive_main*inactive_benefits*old					-0.0202***					-0.1953***
Fisrt stage tertiary education	-0.0633***	-0.0636***	-0.0561***	-0.0313***	-0.0641***	-0.5698***	-0.5730***	-0.5189***	-0.3086***	-0.5773***
Secondary education	-0.0316***	-0.0319***	-0.0275***	-0.0162***	-0.0319***	-0.2810***	-0.2837***	-0.2528***	-0.1586***	-0.2839***
Married	-0.0097*	-0.0100*	-0.0082	-0.0124***	-0.0103*	-0.0924*	-0.0956**	-0.0785	-0.1231***	-0.0980**
Female	-0.0065***	-0.0071***	-0.0074***	-0.0078***	-0.0074***	-0.0614***	-0.0668***	-0.0686***	-0.0794***	-0.0691***
Age class	0.0106***	0.0121***	0.0105***	0.0182***	0.0112***	0.0980***	0.1126***	0.0990***	0.1812***	0.1038***
$Age\ class^2$	-0.0023***	-0.0025***	-0.0023***	-0.0033***	-0.0024***	-0.0211***	-0.0233***	-0.0211***	-0.0328***	-0.0217***
D_urbanization	-0.0016	-0.0018	-0.0022***	0.0012	-0.0015	-0.0115	-0.0129	-0.0197**	0.0107	-0.0108
(Bad) Health	-0.0010	0.0006	-0.0030	-0.0028	0.0004	-0.0124	0.0031	-0.0274	-0.0292	0.0015
Number of children	0.0209***	0.0207***	0.0202***	0.0133***	0.0206***	0.1920***	0.1899***	0.1861***	0.1337***	0.1890***
Number of adults	-0.0119***	-0.0119***	-0.0113***	-0.0096***	-0.0117***	-0.1070***	-0.1071***	-0.1057***	-0.0964***	-0.1055***
Previous poverty	0.0580***	0.0579***	0.1068***		0.0573***	2.2035***	2.2002***	2.1329***		2.2054***
$Income\ class_{(t-1)}$				-0.0399***					-0.4033***	
Mhours growth	-0.0006	-0.0006	-0.0006	-0.0008	-0.0006	-0.0048	-0.0047	-0.0058	-0.0060	-0.0049
Mgrowth of social spending per capita	-0.0129	-0.0125	-0.0147	-0.0179**	-0.0122	-0.1612*	-0.1581*	-0.1403*	-0.1694**	-0.1503
Centre	-0.0379***	-0.0380***	-0.0323***	-0.0223***	-0.0382***	-0.3284***	-0.3289***	-0.2990***	-0.2156***	-0.3314***

Islands	0.0005	0.0006	-0.0005	0.0009***	0.0008*	0.0104***	0.0116***	-0.0052	0.0110***	0.0133***
NE	-0.0566***	-0.0565***	-0.0500***	-0.0368***	-0.0567***	-0.5035***	-0.5031***	-0.4641***	-0.3569***	-0.5055***
NW	-0.0511***	-0.0512***	-0.0448***	-0.0304***	-0.0515***	-0.4503***	-0.4508***	-0.4149***	-0.2951***	-0.4543***
Time effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	231 241	231 241	224 929	224 929	231 241	224 929	224 929	224 929	224 929	224 929

Source: own elaborations on data from IT-SILC.

Legend: *** p<0.01, ** p<0.05, * p<0.10.

Note: as for probit estimations (columns 1-5), we report the estimated marginal effects; in columns 6-10 we show the estimated coefficients for the instrumental variables approach, where the endogenous variable is *Previous poverty*.

Table 8. Deprivation Exits - Estimated models

	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
Deprivation Exit	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ind WI change	0.0145	0.0146	0.0373**		0.0180	0.0583	0.0583	0.1079***		0.0504
Find job main				-0.0038					-0.0096	
New household	0.1899***	0.1895***	0.1659***	0.1916***	0.1736***	0.4951***	0.4952***	0.4544***	0.5034***	0.5062***
Change of household size	-0.0030	-0.0030	0.0019	-0.0030	0.0045	0.0041	0.0041	0.0056	0.0042	0.0129
Ln(Income)	0.0340***	0.0342***		0.0342***	0.0245***	0.0934***	0.0938***		0.0941***	0.0714***
$Poverty_{(t-1)}$			-0.0908***					-0.2490***		
Unemployed main	-0.0991***	-0.0993***	-0.1026***	-0.1028***	-0.0935***	-0.2443***	-0.2488***	-0.2696***	-0.2672***	-0.2766***
Inactive main	-0.0218*	-0.0184	-0.0204*	-0.0210	-0.0225**	-0.0565*	-0.0495	-0.0531	-0.0600*	-0.0666**
Unemployed_main*unemployment_benefits		0.0004	0.0193	-0.0018	0.0090		0.0080	0.0539	-0.0007	0.0259
Inactive_main*inactive_benefits		-0.0290	-0.0207	-0.0290	-0.0288*		-0.0651	-0.0527	-0.0669	-0.0854**
Fisrt stage tertiary education	0.1280***	0.1277***	0.1232***	0.1277***	0.0942***	0.3450***	0.3456***	0.3323***	0.3491***	0.2772***
Secondary education	0.0884***	0.0881***	0.0833***	0.0878***	0.0608***	0.2328***	0.2330***	0.2247***	0.2343***	0.1788***
Female	0.0050	0.0038	0.0060	0.0046	0.0071	0.0157	0.0131	0.0169	0.0158	0.0205
Married	0.0544***	0.0537***	0.0498***	0.0534***	0.0381***	0.1399***	0.1389***	0.1340***	0.1396***	0.1121***
(Bad) Health	-0.0952***	-0.0927***	-0.0868***	-0.0926***	-0.0596***	-0.2442***	-0.2397***	-0.2334***	-0.2420***	-0.1753***
Number of children	-0.0284***	-0.0288***	-0.0186***	-0.0289***	-0.0151***	-0.0724***	-0.0738***	-0.0487***	-0.0753***	-0.0450***
Number of adults	-0.0096*	-0.0095	0.0022	-0.0094	-0.0103	-0.0248	-0.0244	0.0047	-0.0234	-0.0295
Previous deprivation	-0.1130***	-0.1129***	-0.1217***	-0.1127***	-0.0963***	-0.5619***	-0.5342***	-0.5420***	-0.4411***	-0.2050***
Age class	-0.0469***	-0.0444***	-0.0482***	-0.0451***	-0.0284***	-0.1224***	-0.1172***	-0.1318***	-0.1204***	-0.0828***
$Age\ class^2$	0.0084***	0.0080***	0.0087***	0.0081***	0.0046***	0.0224***	0.0216***	0.0237***	0.0218***	0.0135***
D_urbanization	-0.0350***	-0.0350***	-0.0366***	-0.0351***	-0.0198*	-0.0977***	-0.0977**	-0.1005***	-0.0982**	-0.0576*
House owned					0.0792***					0.2309***
Damaged house					-0.2035***					-0.5933***
Damaged own house					0.0762***					0.2223***
D_assets					0.1607***					0.4683***
$D\_social\ benefits\ famchild_{(t-1)}$					-0.0054					-0.0156
$D\_social\ benefits\ housing_{(t-1)}$					-0.0803***					-0.2344***
$D\_social\ benefits\ exclusion_{(t-1)}$					-0.0604**					-0.1760**

D_transfers from other households$_{(t-1)}$					-0.0394**					-0.1149**
Mhours growth	0.0260***	0.0261***	0.0292***	0.0261***	0.0226***	0.0732***	0.0734***	0.0803***	0.0736***	0.0658***
Mgrowth of social spending per capita	0.0680	0.0689	0.0782	0.0720	0.0468	0.1836	0.1865	0.2131	0.1991	0.1371
Centre	0.0646***	0.0645***	0.0513***	0.0641***	0.0478***	0.1587***	0.1587***	0.1404***	0.1580***	0.1394***
Islands	-0.0628***	-0.0629***	-0.0608***	-0.0628***	-0.0769***	-0.1682***	-0.1686***	-0.1668***	-0.1687***	-0.2242***
NE	0.0454***	0.0453***	0.0348***	0.0446***	0.0469***	0.1212***	0.1211***	0.0947***	0.1194***	0.1370***
NW	0.0407***	0.0405***	0.0310***	0.0400***	0.0380***	0.1094***	0.1092***	0.0847***	0.1081***	0.1108***
Time effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	37 415	37 415	36 596	37 415	30 160	36 458	36 458	36 596	36 458	30 160

Source: own elaborations on data from IT-SILC.

Legend: *** p<0.01, ** p<0.05, * p<0.10.

Note: as for probit estimations (columns 1-5), we report the estimated marginal effects; in columns 6-10 we show the estimated coefficients for the instrumental variables approach, where the endogenous variable is *Previous deprivation*.

Table 9. Deprivation Entries - Estimated models

	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
Deprivation Entry	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ind WI change	-0.0019	-0.0009	-0.0087*		-0.0051	-0.0130	-0.0044	-0.0661*		-0.0398
Loose job main				0.0201***					0.1548***	
New household	0.0125	0.0123	0.0205**	0.0117	-0.0021	0.0568	0.0556	0.1549**	0.0508	-0.0158
Change of household size	-0.0016	-0.0017	-0.0038	-0.0018	-0.0019	-0.0079	-0.0084	-0.0284	-0.0090	-0.0145
Ln(Income)	-0.0282***	-0.0285***		-0.0285***	-0.0202***	-0.2073***	-0.2100***		-0.2095***	-0.1557***
$Poverty_{(t-1)}$			0.0541***					0.4091***		
Unemployed main	0.0423***	0.0356***	0.0445***	0.0325***	0.0313***	0.3121***	0.2557***	0.3357***	0.2319***	0.2399***
Inactive main	0.0054	0.0042	0.0073**	0.0028	0.0037	0.0389	0.0298	0.0548**	0.0189	0.0286
Unemployed_main*unemployment_benefits		0.0229***	0.0160***	0.0182***	0.0211***		0.1925***	0.1209***	0.1562***	0.1628***
Inactive_main*inactive_benefits		0.0119***	0.0077*	0.0120***	0.0122**		0.0903***	0.0583*	0.0913***	0.0926*
Fisrt stage tertiary education	-0.0790***	-0.0786***	-0.0809***	-0.0788***	-0.0619***	-0.5895***	-0.5864***	-0.6117***	-0.5882***	-0.4769***
Secondary education	-0.0405***	-0.0403***	-0.0407***	-0.0404***	-0.0307***	-0.2998***	-0.2980***	-0.3073***	-0.2990***	-0.2362***
Female	0.0013	0.0017	0.0012	0.0021	0.0011	0.0110	0.0141	0.0087	0.0173	0.0081
Married	-0.0185***	-0.0184***	-0.0187***	-0.0185***	-0.0150***	-0.1370***	-0.1363***	-0.1412***	-0.1369***	-0.1156***
(Bad) Health	0.0469***	0.0461***	0.0463***	0.0461***	0.0360***	0.3539***	0.3480***	0.3500***	0.3481***	0.2765***
Number of children	0.0094***	0.0096***	0.0037	0.0096***	0.0033	0.0679***	0.0694***	0.0276	0.0696***	0.0252
Number of adults	0.0060***	0.0061***	-0.0041***	0.0062***	0.0058***	0.0395***	0.0407***	-0.0310***	0.0413***	0.0445***
Previous deprivation	0.0676***	0.0676***	0.1122***	0.0672***	0.0834***	0.9677***	0.9437***	0.8961***	0.9697***	0.8378***
Age class	0.0089***	0.0079***	0.0093***	0.0069***	0.0055*	0.0649***	0.0571***	0.0704***	0.0496***	0.0421*
$Age\ class^2$	-0.0017***	-0.0016***	-0.0019***	-0.0015***	-0.0008**	-0.0129***	-0.0117***	-0.0142***	-0.0107***	-0.0059**
D_urbanization	0.0012	0.0014	0.0015	0.0014	-0.0021	0.0088	0.0105	0.0115	0.0111	-0.0162
House owned					-0.0473***					-0.3651***
Damaged house					0.0606***					0.4671***
Damaged own house					-0.0084					-0.0650
D_assets					-0.0723***					-0.5572***
$D\_social\ benefits\ famchild_{(t-1)}$					0.0101***					0.0779***
$D\_social\ benefits\ housing_{(t-1)}$					0.0456***					0.3520***
$D\_social\ benefits\ exclusion_{(t-1)}$					0.0296*					0.2278*

D_transfers from other households$_{(t-1)}$					0.0267***					0.2061***
Mhours growth	0.0041*	0.0041*	0.0037*	0.0041*	0.0035	0.0272*	0.0271*	0.0281*	0.0273*	0.0273
Mgrowth of social spending per capita	-0.0310**	-0.0314**	-0.0196	-0.0311**	-0.0349***	-0.2146*	-0.2177*	-0.1485	-0.2149*	-0.2692***
Centre	-0.0462***	-0.0461***	-0.0436***	-0.0463***	-0.0376***	-0.3336***	-0.3330***	-0.3297***	-0.3347***	-0.2900***
Islands	0.0127***	0.0126***	0.0117***	0.0128***	0.0153***	0.0892***	0.0890***	0.0884***	0.0900***	0.1178***
NE	-0.0654***	-0.0654***	-0.0635***	-0.0656***	-0.0630***	-0.4818***	-0.4820***	-0.4803***	-0.4836***	-0.4858***
NW	-0.0609***	-0.0608***	-0.0589***	-0.0611***	-0.0498***	-0.4467***	-0.4462***	-0.4450***	-0.4486***	-0.3838***
Time effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	242 668	242 668	236 461	242 668	180 080	236 063	236 063	236 461	236 063	180 080

Source: own elaborations on data from IT-SILC.

Legend: *** p<0.01, ** p<0.05, * p<0.10.

Note: as for probit estimations (columns 1-5), we report the estimated marginal effects; in columns 6-10 we show the estimated coefficients for the instrumental variables approach, where the endogenous variable is *Previous deprivation*.

Appendix. Descriptive statistics of variables included in our models

Table A1. ARP Exits - Descriptive statistics for the sample (*Poverty Leavers+Constantly poor)*

Variable	Observations	Mean	Standard deviation	Min	Max
Poverty exit	49 391	0.2873	0.4525	0	1
Ind WI change	49 391	0.0236	0.2791	-1	1
Find job main	49 391	0.0605	0.2384	0	1
New household	49 391	0.0042	0.0644	0	1
Change of household size	49 391	-0.0178	0.4000	-6	6
$Deprivation_{(t-1)}$	48 124	0.3342	0.4717	0	1
Unemployed main	49 391	0.1559	0.3628	0	1
Inactive main	49 391	0.3937	0.4886	0	1
Unemployed_main*unemployment_benefits	49 391	0.0312	0.1739	0	1
Inactive_main*inactive_benefits	49 391	0.0281	0.1652	0	1
Fisrt stage tertiary education	49 391	0.0524	0.2227	0	1
Secondary education	49 391	0.2812	0.4496	0	1
Married	49 391	0.5246	0.4994	0	1
Female	49 391	0.5708	0.4950	0	1
Age class	49 391	3.8430	1.7438	1	6
$Age\ class^2$	49 391	17.8093	13.0799	1	36
D_urbanization	49 391	0.3238	0.4679	0	1
(Bad) Health	49 391	0.1477	0.3548	0	1
Number of children	49 391	0.5435	0.8790	0	8
Number of adults	49 391	2.4375	1.1740	1	9
Previous poverty	49 391	0.4523	0.4977	0	1
$Income\ class_{(t-1)}$	48 124	2.3114	0.8046	1	3
Mhours growth	49 391	-0.6998	1.8550	-4.6101	2.7768
Mgrowth of social spending per capita	49 391	0.0000	0.0296	-0.6931	2.2579
Centre	49 391	0.1817	0.3856	0	1
Islands	49 391	0.1696	0.3753	0	1
NE	49 391	0.1230	0.3284	0	1
NW	49 391	0.1341	0.3408	0	1
South	49 391	0.3917	0.4881	0	1

Source: own elaborations on data from IT-SILC.

Table A2. Poverty Entries - Descriptive statistics for the sample (*Poverty Entrants + Never Poor)*

Variable	Observations	Mean	Standard deviation	Min	Max
Poverty entry	231 241	0.0573	0.2324	0	1
Ind WI change	231 241	-0.0070	0.2423	-1	1
Loose job main	231 241	0.0272	0.1626	0	1
New household	231 241	0.0061	0.0780	0	1
Change of household size	231 241	-0.0345	0.3993	-8	8
$Deprivation_{(t-1)}$	224 929	0.0912	0.2879	0	1
Unemployed main	231 241	0.0489	0.2156	0	1
Inactive main	231 241	0.2315	0.4218	0	1
Unemployed_main*unemployment_benefits	231 241	0.0160	0.1253	0	1
Inactive_main*inactive_benefits	231 241	0.0173	0.1306	0	1
Unemployed_main*old	231 241	0.0365	0.1876	0	1
Inactive_main*old	231 241	0.2166	0.4119	0	1
Unemployed_main*unempl_benefits*old	231 241	0.0092	0.0954	0	1
Inactive_main*inactive_benefits*old	231 241	0.0163	0.1266	0	1
Fisrt stage tertiary education	231 241	0.1427	0.3498	0	1
Secondary education	231 241	0.3932	0.4885	0	1
Married	231 241	0.6015	0.4896	0	1
Female	231 241	0.5139	0.4998	0	1
Age class	231 241	3.9616	1.6329	1	6
$Age\ class^2$	231 241	18.3604	12.4740	1	36
D_urbanization	231 241	0.3604	0.4801	0	1
(Bad) Health	231 241	0.1011	0.3014	0	1
Number of children	231 241	0.4054	0.7462	0	8
Number of adults	231 241	2.5117	1.0361	1	9
Previous poverty	231 241	0.0351	0.1841	0	1
$Income\ class_{(t-1)}$	224 929	6.0457	1.0665	1	7
Mhours growth	231 241	-0.4781	1.7749	-4.6101	2.7768
Mgrowth of social spending per capita	231 241	0.0005	0.0362	-0.7030	2.3673
Centre	231 241	0.2471	0.4313	0	1
Islands	231 241	0.0655	0.2473	0	1
NE	231 241	0.2557	0.4362	0	1
NW	231 241	0.2465	0.4310	0	1
South	231 241	0.1852	0.3885	0	1

Source: own elaborations on data from IT-SILC.

Table A3. Deprivation Exits - Descriptive statistics for the sample (*Deprivation Leavers+Constantly deprived)*

Variable	Observations	Mean	Standard deviation	Min	Max
Deprivation exit	37 415	0.4382	0.4962	0	1
Ind WI change	37 415	0.0053	0.2818	-1	1
Find job main	37 415	0.0516	0.2213	0	1
New household	37 415	0.0050	0.0707	0	1
Change of household size	37 415	-0.0350	0.4408	-6	5
Ln(Income)	37 415	9.6834	1.3337	0	11.8711
$Poverty_{(t-1)}$	36 596	0.4394	0.4963	0	1
Unemployed main	37 415	0.1640	0.3703	0	1
Inactive main	37 415	0.3333	0.4714	0	1
Unemployed_main*unemployment_benefits	37 415	0.0435	0.2039	0	1
Inactive_main*inactive_benefits	37 415	0.0343	0.1820	0	1
Fisrt stage tertiary education	37 415	0.0494	0.2167	0	1
Secondary education	37 415	0.2741	0.4461	0	1
Female	37 415	0.5505	0.4974	0	1
Married	37 415	0.5021	0.5000	0	1
(Bad) Health	37 415	0.1901	0.3924	0	1
Number of children	37 415	0.4775	0.8408	0	8
Number of adults	37 415	2.5200	1.1666	1	9
Previous deprivation	37 415	0.3484	0.4765	0	1
Age class	37 415	3.8316	1.7046	1	6
$Age\ class^2$	37 415	17.5867	12.7898	1	36
House owned	37 415	0.7016	0.4576	0	1
Damaged house	37 415	0.3796	0.4853	0	1
Damaged own house	37 415	0.2587	0.4379	0	1
D_urbanization	37 415	0.3616	0.4805	0	1
D_assets	30 160	0.2410	0.4277	0	1
$D\_social\ benefits\ famchild_{(t-1)}$	30 160	0.3873	0.4871	0	1
$D\_social\ benefits\ housing_{(t-1)}$	30 160	0.0528	0.2237	0	1
$D\_social\ benefits\ exclusion_{(t-1)}$	30 160	0.0440	0.2050	0	1
$D\_transfers\ from\ other\ households_{(t-1)}$	30 160	0.0750	0.2634	0	1
Mhours growth	37 415	-0.8342	1.8164	-4.6101	2.7768
Mgrowth of social spending per capita	37 415	0.0002	0.0305	-0.7030	2.1800
Centre	37 415	0.1797	0.3839	0	1
Islands	37 415	0.1841	0.3875	0	1
NE	37 415	0.1274	0.3335	0	1
NW	37 415	0.1345	0.3412	0	1
South	37 415	0.3743	0.4839	0	1

Source: own elaborations on data from IT-SILC.

Table A4. Deprivation entries - Descriptive statistics for the sample (*Deprivation Entrants + Never Deprived)*

Variable	Observations	Mean	Standard deviation	Min	Max
Deprivation entry	242 668	0.0730	0.2601	0	1
Ind WI change	242 668	-0.0025	0.2438	-1	1
Loose job main	242 668	0.0255	0.1578	0	1
New household	242 668	0.0059	0.0763	0	1
Change of household size	242 668	-0.0308	0.3922	-8	8
Ln(Income)	242 668	10.3163	0.8223	0	14.5964
$Poverty_{(t-1)}$	236 461	0.1355	0.3423	0	1
Unemployed main	242 668	0.0525	0.2229	0	1
Inactive main	242 668	0.2483	0.4320	0	1
Unemployed_main*unemployment_benefits	242 668	0.0148	0.1209	0	1
Inactive_main*inactive_benefits	242 668	0.0169	0.1290	0	1
Fisrt stage tertiary education	242 668	0.1388	0.3458	0	1
Secondary education	242 668	0.3888	0.4875	0	1
Female	242 668	0.5199	0.4996	0	1
Married	242 668	0.6015	0.4896	0	1
(Bad) Health	242 668	0.0968	0.2957	0	1
Number of children	242 668	0.4224	0.7619	0	8
Number of adults	242 668	2.4968	1.0447	1	9
Previous deprivation	242 668	0.0330	0.1788	0	1
Age class	242 668	3.9580	1.6453	1	6
$Age\ class^2$	242 668	18.3732	12.5529	1	36
House owned	242 668	0.8067	0.3949	0	1
Damaged house	242 668	0.1866	0.3896	0	1
Damaged own house	242 668	0.1472	0.3543	0	1
D_urbanization	242 668	0.3528	0.4779	0	1
D_assets	180 080	0.6165	0.4862	0	1
$D\_social\ benefits\ famchild_{(t-1)}$	180 080	0.2942	0.4557	0	1
$D\_social\ benefits\ housing_{(t-1)}$	180 080	0.0173	0.1305	0	1
$D\_social\ benefits\ exclusion_{(t-1)}$	180 080	0.0080	0.0889	0	1
$D\_transfers\ from\ other\ households_{(t-1)}$	180 080	0.0329	0.1785	0	1
Mhours growth	242 668	-0.4689	1.7824	-4.6101	2.7768
Mgrowth of social spending per capita	242 668	0.0005	0.0359	-0.6988	2.3673
Centre	242 668	0.2443	0.4297	0	1
Islands	242 668	0.0682	0.2521	0	1
NE	242 668	0.2486	0.4322	0	1
NW	242 668	0.2409	0.4277	0	1
South	242 668	0.1979	0.3985	0	1

Source: own elaborations on data from IT-SILC.