



Dipartimento di scienze economiche,
aziendali, matematiche e statistiche
“Bruno de Finetti”

Research Paper Series, N. 2, 2019

Poverty and material deprivation dynamics in Italy

GRAZIELLA BONANNO

*University of Campania “Luigi Vanvitelli”, Department of Economics, Corso Gran
Priorato di Malta, Capua (Caserta) 83043; email: graziella.bonanno@unicampania.it*

LAURA CHIES

*University of Trieste, Department of Economics, Business, Mathematics and Statistics
“B. de Finetti”, via Università 1, Trieste (Trieste) 34100; email: laura.chies@deams.units.it*

ELENA PODRECCA

*University of Trieste, Department of Economics, Business, Mathematics and Statistics
“B. de Finetti”, via Università 1, Trieste (Trieste) 34100; email:
elena.podrecca@deams.units.it*



UNIVERSITÀ
DEGLI STUDI DI TRIESTE

Research Paper Series

Dipartimento di Scienze Economiche, Aziendali, Matematiche e Statistiche “Bruno de Finetti”

Piazzale Europa 1

34127, Trieste

Tel.: +390405587927

Fax: +390405587033

<http://www.deams.units.it>

EUT Edizioni Università di Trieste

Via E. Weiss, 21 - 34128 Trieste

Tel. +390405586183

Fax +390405586185

<http://eut.units.it>

eut@units.it

ISBN: 978-88-5511-104 -1



Research Paper Series, N. 2, 2019

Poverty and material deprivation dynamics in Italy

GRAZIELLA BONANNO

University of Campania “Luigi Vanvitelli”, Department of Economics, Corso Gran Priorato di Malta, Capua (Caserta) 83043; email: graziella.bonanno@unicampania.it

LAURA CHIES

University of Trieste, Department of Economics, Business, Mathematics and Statistics “B. de Finetti”, via Università 1, Trieste (Trieste) 34100; email: laura.chies@deams.units.it

ELENA PODRECCA

University of Trieste, Department of Economics, Business, Mathematics and Statistics “B. de Finetti”, via Università 1, Trieste (Trieste) 34100; email: elena.podrecca@deams.units.it

ABSTRACT¹

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 complex interdependencies between different covariates influencing poverty and deprivation in a dynamic context over eleven years characterized by different economic cycles. 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 exits and reduce the probability of poverty entry for unemployed and inactive individuals. Also, the strong regional inequality characterizing the Italian North-South divide manifests itself not only in terms of aggregate incidence of (relative) income poverty and (absolute) material deprivation, but also in terms of the individual chances of transitions.

KEYWORDS: Longitudinal data, Material deprivation, Poverty transitions, Welfare.

¹ **Corresponding author:** Elena Podrecca, University of Trieste, Department of Economics, Business, Mathematics and Statistics “B. de Finetti”, via Università 1, Trieste (Trieste) 34100, email: elena.podrecca@deams.units.it; tel: +39 0405587925; fax: +39 040.5587005

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 risks 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 (Duiella and Turrini 2014; Bosco and Poggi 2019), 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 of measures thought to prevent people from falling into poverty and accelerating the exit from deprivation. The latter type of concept is related to current variations 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 spell approach by Bane and Ellwood (1986) (e.g. Stevens 1994 and 1999; Duncan et al. 1993; Jenkins 2000; Cappellari and Jenkins 2004; Andriopoulou and Tsakloglou 2011; to name but a few) and some papers consider the multidimensional aspects for social exclusion (Alkire and Foster 2011; Apablaza and Yalonetzky 2013; Suppa 2018). A small number of 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 models 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.

The focus on poverty duration and on the characteristics of the persistently poor has 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; 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 the EU Survey on Income and Living Conditions for Italy (IT-SILC), integrated with macro data at the territorial level from ISTAT sources, we concentrate on the individual 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 average per capital expenditure for social services by Municipalities at the macro level.

Our approach is different from the ones prevailing in the literature, which employ hazard rate or duration models. To our knowledge the only paper using an approach similar to ours, but applied on a two-year time period, is Polin and Raitano (2014). We define year to year transitions out of and into poverty or 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. This allows us to analyze the probability of exiting from and entering into poverty and material deprivation over a period 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 observation window for each individual covers at most four years in IT-SILC longitudinal data, and 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 for 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 (endogeneity problems, as well as problems related to the period of time over which trigger factors should be kept switched on).

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 sets forth our regression models and the estimation strategy. The results for poverty and deprivation exits and entries probabilities are in section 4. Section 5 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, as well as non-monetary indicators of lifestyle deprivation. The survey covers all household members, but only members aged 16 or more are interviewed. The reference population is all current members of private households residing in the five national NUTS-1 regions (North-East, North-West, Center, South and Islands) in the period of data collection. In particular, we use the longitudinal components of IT-SILC, which follow a rotating panel design in which each individual is followed for four years, to track changes over time, while in a given year the cross-sectional sample is composed of individuals belonging to four different panels (at the first, second, third and fourth interview). At the moment of this analysis, 9 longitudinal components are available: from 2004-2007 to 2012-2015; we take one complete 4-years panel from each component, and, in order to maximize observations on yearly transitions, also two incomplete panels (with 3 and 2 yearly interviews respectively) from the 2012-2015 component. We pool the available panels obtaining a database covering the period 2004-2015, which allows us to analyze year to year poverty and deprivation transitions over a relatively long time span encompassing periods characterized by different economic cycles.

Individual and household data from IT-SILC are also complemented with data on aggregate structural factors at the macro-regional level from ISTAT source.

We will focus on two key poverty and lifestyle deprivation indicators defined by Eurostat: the “at risk of poverty” (ARP) indicator and the material deprivation indicator. Using these indicators is common practice in the literature focusing on Europe, which will allow us to compare our findings with those of other studies (i.e. Jenkins 2000 for a review; Duiella and Turrini 2014; Giarda and Moroni 2018; Devicienti and Poggi 2011; Coppola and Di Laurea 2016). The ARP indicator is a monetary measure of relative income poverty, which classifies as “poor” 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. 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 households’ 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 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 corroborate the key findings of the income-centered poverty analysis. We will therefore integrate the analysis on the monetary indicator of relative income poverty with the analysis of the EU non-monetary indicator of absolute material deprivation, which is defined as the enforced lack of a combination of items reflecting material living conditions. Individuals are classified as “deprived” if their households cannot afford at least three out of the following nine items reflecting economic strain and enforced lack of durables (Guio, 2009): i) to pay rents, utility bills, mortgage, hire purchase instalments or other loan payments; ii) one week’s annual holiday away from home; iii) a meal with meat, chicken, fish (or vegetarian equivalent) every second day; iv) to face unexpected financial expenses; v) to keep the house adequately warm vi) to buy a telephone (including a mobile telephone); vii) to buy a color TV; viii) to buy a washing machine; ix) to buy a car. In line with Whelan et al. (2008) we use unweighted items.

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.

A total of 425 223 observations are available in the pooled dataset, corresponding to a total of 144 401 individuals: 67 251 individuals with 4 interviews, 26 597 with 3 interviews, 25 875 with 2 interviews and 24 678 individuals with 1 interview (this last group will be dropped from our analysis of transitions). In order to better understand changes in poverty and deprivation several different states have to be distinguished, depending on both the poverty and deprivation status of an individual. Table 1 reports the classification of all observations in our pooled database according to the above “poverty” and “material deprivation” states and transitions paths.

TABLE 1. Poor and Deprived individuals (complete 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. The arrows indicate the estimated transitions.

A glance to the table reveals that income poverty and material deprivation do not necessarily go hand in hand. 74 297 observations are classified as income poor and 59 469 as materially deprived, but only 25 661 observations are classified as both poor and deprived: material deprivation afflicts only 34.5% of the poor and income poverty afflicts only 43.2% of the deprived.² The national average annual poverty and deprivation rates during the period 2004-2015 have been 17.4% and 14.0% respectively, but these aggregate figures hide wide geographical differences which characterize the well-known North-South divide, as one can see in the first two columns of Table 2, which also report disaggregated data for the five NUTS-1 macro regions. The relative poverty rate ranges from 9.4% in the North East to 30.8% and 35.1% in the South and in the Islands respectively, while the absolute measure of deprivation ranges from 7.9% in the North East to 23.3% and 30.3% in the South and Island respectively.

TABLE 2. Average annual poverty/deprivation rates 2004-2015, and poverty/deprivation prevalence (complete sample)

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

*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.

The last two columns of table 2 report the “poverty prevalence rates” and “deprivation prevalence rates”, calculated as the percentage of the population which has experienced income poverty or material deprivation at least once during the observation period. Notice that the rates of poverty prevalence are 4-8 percentage points higher than the average annual poverty rates and material deprivation prevalence rates are 6-11 points above the deprivation rates, consistent with the North-South divide. These differences are a rough indication that the composition of the group of poor (materially deprived) individual changes over time, i.e. that mobility exists, and that for a substantial proportion of the ever poor (ever materially deprived) poverty (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 as depicted by the rows in table 1. Exploiting the panel structure of our dataset, we will focus only on individual poverty and material deprivation transitions. We define year to year transitions as dichotomous variables assuming value one if an individual changes her state from poverty/deprivation (non-poverty/non-deprivation) in the previous period (t-1) to non-poverty or non-deprivation (poverty/deprivation) in the current

² This figures are broadly in line with the findings of Devicienti and Poggi (2011) over the period 1994-2001, even if their definition of social exclusion is quite different from the standard one we adopt.

period (t), and zero otherwise. For the analysis of poverty and deprivation exits the sample will be composed by the group of “leavers” (Mood and Jonsson, 2016), changing their status from poor/deprived in t-1 to non-poor/non-deprived in t, plus the group of “constantly poor or constantly deprived” (i.e. poor/deprived both in t-1 and t). Similarly, for the analysis of entries the sample will be composed by the group of “entrants” (changing status from non-poor/non-deprived in t-1 to poor/deprived in t) plus the group of “never poor/never deprived” (non-poor/non-deprived both in t-1 and t).

Table 3 displays the characteristics of the pooled samples for poverty and deprivation transitions and the transition rates for the whole period 2004-2015.

TABLE 3. Poverty and Deprivation transitions, pooled samples 2005-2015

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

Source: own elaborations on data from IT-SILC.

Notice how average national exits rates are much higher for material deprivation than for income poverty (43.5% and 28.7% respectively), while the difference is not so marked for entry rates (5.7% and 7.3% respectively). Notice also how the North-South divide is confirmed in terms of poverty and deprivation exit and entry rates, which are respectively much lower/higher in the Southern regions.

Annual aggregate entry and exit rates over 2005-2015 are displayed in Table 4.

TABLE 4. Poverty and deprivation transitions, annual rates 2005-2015

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

Source: own elaborations on data from IT-SILC.

The effects of the crisis are clearly reflected in the behaviour of poverty exit rates and deprivation entry rates: ARP exit rates display a continuous decline starting in the second phase of the crisis (since 2012) and by 2015 they are 8 percentage points lower with respect to the pre-crisis period; deprivation entry rates sharply increase in 2011 and despite the decreasing trend afterwards they remain quite higher than in the pre-crisis years. No clear pattern emerges, instead, for deprivation exits, while poverty entries slightly increase shortly after the 2008 shock

and then decline, not surprisingly, given that both median income and the poverty threshold decline in periods of declining economic activity.

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

3. The models and estimation strategy

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

$$\Pr(Y_{it}=1 | \mathbf{X}) = \Phi(\mathbf{X}' \boldsymbol{\beta}) \quad (1)$$

Where Y is the outcome variable (alternatively *Poverty exit*_{it}, *Poverty entry*_{it}, *Deprivation exit*_{it} or *Deprivation entry*_{it}), \mathbf{X} includes different sets of explanatory variables (specific to each of the 4 sets of regressions), $\boldsymbol{\beta}$ 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.³

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 \mathbf{X} which we use in the 4 sets of regressions can be grouped in four categories: i) economic and demographic events (E_{it}), ii) individual and household 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).

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 variables at levels (the "characteristics") are constructed so as to refer to the twelve months preceding the interview, while the "events" as well as the entries and exits, reflect the changes 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 models for income poverty and deprivation transitions.

Economic and demographic events

Event variables for both poverty and deprivation transitions include first of all economic events affecting the change in individual labor income (hence in household labor income). As a proxy for 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 defined as the number of months spent in full or part time job as an

³ The subscripts of \mathbf{X} will be described later in this Section because they are different on the basis of the observations' dimension (individual, household, or macro-regional).

employee or self-employed, divided by 12. The variable is constructed based on IT-SILC data, from the individuals' statements on their main activity in each of the preceding twelve months. It can vary between 0 and 1, hence its 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 from not-employed to employed or from employed to not-employed respectively. The main activity over a year is "employed" if the individual declares employment to be her main activity for most of the previous twelve months.⁴

Demographic events include controls capturing changes in household size and composition: a discrete variable representing the change in the number of household members (*Change of household size*), and a dummy (*New household*) which takes value 1 if the individual belongs to different households in $t-1$ and t , which may happen in case of separation or divorce, or when grown up children leave the original household to form a new one.

Finally, an event variable specific to regressions for material deprivation transitions is the (log of) total disposable household income, which captures the effect of changes in any kind of household income on the chances of changing the material deprivation status.

Individual and household characteristics

The set of characteristics common to poverty and deprivation transitions regressions includes first of all a set of dummy variables capturing the individual's main activity in the previous twelve months (*Employed main* - the omitted dummy-, *Unemployed main*, *Inactive main*).⁵ Moreover, to investigate the effects of unemployment benefits and of social benefits received by some categories of inactive (in particular illness and disability benefits and scholarships), we introduce two interaction terms between the above activity dummies and the two specific dummies indicating whether the unemployed or inactive individual receives income from unemployment benefits or social benefits respectively. We also introduce standard individual controls capturing the effects of education, gender, age class, marital status and health status, two discrete controls reflecting the household's size and composition, and a dummy capturing the degree of urbanization, which is equal to 1 if the household lives in a densely populated area. Past periods of poverty (deprivation) experienced by the individual may play an important role for her chances of transitions. We try to capture this "hysteresis" effect by introducing in the poverty (deprivation) regressions the dummy variable *Previous poverty* (*Previous deprivation*), which is equal to 1 if in the initial period $t-1$ the individual had experienced more than one year of poverty (deprivation); in one specification this dummy is replaced by the initial income class.

Finally, to check whether being at the same time in a state of poverty and material deprivation is particularly problematic for the chances of poverty and deprivation transitions, we include a control for the lagged state of deprivation or poverty in some specifications.

As to characteristics specific to deprivation transitions, in one specification we introduce a set of dummies indicating the presence of different kinds of social benefits received by the households (family and children related allowances, housing allowances, other social exclusion

⁴More 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.

⁵The category inactive includes students/trainees, disabled and other inactive persons. We do not consider a dummy variable for retired, because such variable is strongly correlated with age, and its effects are going to be captured by the effects of the age variables included in the model.

benefits) of private transfers received from other households, and of household income from assets; we use lags for both the “social benefits” dummies and the “transfers” dummies, to avoid problems of reverse causality. In the same specification we also control for two dimensions relevant to housing deprivation, which is one of the most extreme examples of social exclusion in today society, with a series of specific dummies capturing house ownership and house conditions and their interaction.⁶

Controls for the macroeconomic context and other controls

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: i) the growth rate of total hours worked in the macro-region, as a proxy for the local macroeconomic conditions and ii) the growth rate of per capita expenditure on social services by Municipalities. These variables are aggregated at the macro-regional (NUTS-1) level, which is the only level of disaggregation available in IT-SILC longitudinal data and are obviously the same for all individuals living in the same macro-region. Both variables are constructed based on data from ISTAT source. In particular, data on “social spending” by Municipalities are collected annually from 2003 gathering information on social services and related expenditures managed by municipalities as part of the Integrated Network of local Social Services.⁷

We include as additional controls regional dummies at the NUTS-1 level, to control for invariant factors within the macro-regions, as well as time dummies.⁸

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 could arise mainly due to the variables capturing previous poverty or material deprivation experiences, as the poor/deprived individuals’ history can be due to the difficulty of climbing out from the status of poverty/deprivation, and, conversely, individuals which are less likely to enter income poverty/material deprivation have not experienced poverty/deprivation in the past. We identify the employment status declared at the moment of the initial period interview in $t-1$ as a good exogenous instrument for poverty/deprivation history.⁹ This information is provided by the individuals, and it explains the previous experience of poverty/deprivation, which is instead determined for exceeding the income poverty or material deprivation threshold.

Finally, we correct standard errors to address heteroskedasticity and we cluster them at the NUTS-1 regional level in order to remove potential bias affecting the estimates.

⁶ We use available variables that may represent the multidimensionality of the social and material deprivation concept (as in Caranci et al. 2010). Better variables, representative of the household’s wellbeing, are available only in a module of year 2013.

⁷ ISTAT “Survey on social actions and services of single and associated municipalities”. The data highlight a large North-South per capita social benefit gap: From a minimum of 22 euros per capita in the Region Calabria to 517 euros for the Autonomous Province of Bozen.

⁸ Tables with the descriptive statistics of all variables included in our regressions, not reported, are available from the authors upon request.

⁹ Notice that these variables are different from the main activity dummies which we use as regressors in the transitions equations, which refer to the twelve months preceding the interview (rather than to the moment of the interview).

We also check whether the estimates are sensitive to measurement error, by drawing a 10% (and a 20%) band around the poverty line, so as to disregard small movements in and out of income poverty.

4. Results

The results of the pooled probit estimates for poverty exits and entries are reported in tables 5 and 6, those for material deprivation exits and entries in tables 7 and 8. Estimated marginal effects are displayed in columns 1-5 of each table, and the IV approach is used in columns 6-10. Our base specifications are in column 2 of each table.

ARP EXITS AND ENTRIES

Starting with labor market events, captured by the change of the individual work intensity (*Ind WI change*), we find highly significant effects of the expected sign on both the probability of ARP exit and entry. Focusing on exits (see table 5 in Appendix), a unit increase (decrease) of an individual's change of work intensity increases (decreases) her probability of exiting poverty by around 9%. The result is robust across the different specifications of models 3 and 4, and the importance of changes in the individual employment status is confirmed in model 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 entry probability (see table 6 in Appendix), it is negatively related to changes in the individual work intensity, with a marginal effect around -2% which is robust across specifications. The lower magnitude of the estimated marginal effects compared to the exit case is partly due to the much larger sample size. Model 5 confirms the strong positive effect of changes of an individual's main activity from mainly 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 5), but have robust significant marginal effects on the chances of entry (table 6). In particular, forming a new household increases the probability of poverty entry by 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 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%. These perverse effects of unemployment on both entries and exits are counteracted by unemployment benefits, as one can see from the coefficient of the interaction variable *Unemployed_main*un_benefits*, which is positive for exits (table 5) and negative for entries (table 6). The counteracting effect of benefits is particularly strong for exits: a mainly-unemployed individual who receives unemployment benefits has a 12-13% higher likelihood to exit the risk of poverty with respect to an unemployed who does not receive them. When considering that only 20% of the mainly-unemployed in our 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. This fact is connected to the typical characteristic of the Italian labor market affected by a large amount of long-term unemployed.

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 5) and around 4% for entries (table 6). Public benefits enjoyed by households' inactive members, specifically illness and disability benefits and education related allowances, do not have significant effects for ARP exits, but they are quite important for entries, where the marginal effect of the interaction variable is significantly negative in all specifications, halving the probability of slipping into poverty (from 4% to 2%) compared to inactive people not receiving them. This is an important issue for a revision of the Italian social policy, given that only 7.3% of the mainly inactive in the exit sample receives these categories of benefits.¹⁰

The estimates also confirm the relevance of education for ARP mobility: 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%. This is another confirmation of the importance of strengthening public expenditure on education, because a lack in youth education has a strong long-run effect on the incidence of poverty in adulthood (Hidalgo-Hidalgo and Iturbe-Ormaetxe, 2018).

The marginal effects of marital status and gender are highly significant for the probabilities of ARP exit, which increase by 2-2.7% for married individuals and of 1-1,6% for females; they are much lower (less than 1%) and not robustly significant for the chances of entry. The health status never has significant effects.

Non-linear effects are estimated for the age class, with positive marginal effects for the "young" classes (class 1 and 2), and negative marginal effects which become stronger and stronger for the "old" classes (classes 3, 4 and 5). As expected, the sign of the effect is the same for both exits and entries: intuitively, for a poor in retirement age the prospects of climbing out of poverty are lower, just like the prospects of slipping into poverty for a retired non-poor.

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 to the number of adult components, which are potential income earners; the signs are reversed for entries.

An important effect is estimated for the dummy *Previous poverty*, which decreases the chances of exiting poverty and increases the chances of entering it. The probability of ARP exit for individuals who in the starting period have experienced poverty for two or more years (either consecutive or not) is around 9-10% 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 model 5 where the lagged income class is included in place of the dummy for past periods of poverty. 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 an estimated marginal effect close to 5.8% in most specifications, which increases to 10% in the specification of model 3 which includes the lagged deprivation state. Similarly, the lower the lagged income class, which in model 4 replaces the dummy for past periods of poverty, the higher the probability of slipping into poverty.

Focusing on model 3 of both tables 5 and 6, notice how a state of material deprivation in the starting period lowers the probability of ARP exit (-6.3%) and increases the probability of

¹⁰ 5.7% receives illness or disability benefits and 1.7% receives education-related allowances, whereas no specific benefits are related to poverty.

entry (+4%). 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 substantially lower; similarly, slipping into poverty is more likely for deprived individuals.

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, although not significant in preventing ARP entries, has a strong positive effect on the probability of exits (+15%). Unfortunately, despite the relevance of public expenditure on social services to the reduction of the poverty permanence risk, such expenditure has been declining since 2010, during the economic crisis, in all macro-regions but the North East (Istat, 2019). In fact, welfare problems are evident in the South and in the Islands, where the total expenditure in social services is 10% of the total national expenditure while the resident population is 23% of the total. In so doing Italy breaches Article 30 of the European Social Charter, which states "the right to protection against poverty and social exclusion", due to the lack of an adequate and coordinated overall approach.

The estimated effects for the macro-regional dummies confirm the relevance of territorial differences against the Southern regions, whose residents have a lower probability of exiting poverty, and a higher probability of entering it.

All the above results are confirmed when we check for sensitivity to measurement error, by excluding all poverty transitions deriving from changes of household income smaller than 10% (or 20%).¹¹

MATERIAL DEPRIVATION EXITS AND ENTRIES

Let's now turn the attention to the results for material deprivation exits and entries, displayed in tables 7 and 8 in the Appendix.

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 except in the specifications including lagged poverty (model 3 in tables 7 and 8). As to changes in the employment status (model 4 in tables 7 and 8), the dummy *Find job main* is never significant for deprivation exits, whereas the marginal effect of *Loose job main* on deprivation entries is positive and highly significant.

As expected, changes in (the log of) total disposable household income, given by the sum of all household members personal and household income components, have highly significant and robust effects for both material deprivation exits (+3%) and entries (-2%). In the specifications of model 3, notice how poverty in the starting period has harmful effects for both exits (-9%) and entries (+5%). Similarly, model 5 shows how the presence in total household disposable income of earnings from rented property or land or from invested financial capital, which characterizes higher income classes, substantially increases the probability of exiting material deprivation (+16%) and reduces the probability of slipping into it (-7%). In the same model 5 the presence of social benefits like housing allowances and of other benefits for social exclusion or private transfers received have the opposite effects (-8% and +6% respectively on the probability of entry and exit), signaling that individuals (households) receiving these social benefits are in a situation of particular vulnerability. Notice that lagged values of these dummies are used, in order to avoid reverse causality as much as possible.

¹¹ The results of sensitivity analysis, not reported, are available from the authors upon request.

Demographic events are not significant, except for changes of household that seem to be relevant to the probability of exiting deprivation, but are experienced by a negligible fraction of the sample.

As to individual characteristics, like in the poverty transitions case, being unemployed for most of the previous 12 months has a strong negative effect on the chances of exiting deprivation (-9-10%) and a positive effect on the chances of entering it (3-4%). Contrary to the case of income poverty, receiving unemployment benefits seems to reinforce rather than reduce the chances of slipping into material deprivation for mainly unemployed individuals. Similar effects are found for the interaction dummy for inactivity. While these results may appear counterintuitive at first sight, they can be explained if one thinks that: i) the (positive) income effects of these benefits are already captured by the log income variable included in the deprivation regressions and ii) the recipients of these benefits belong to particularly vulnerable categories (unemployed, disable or sick), for whom the chances of slipping into material deprivation are structurally higher. This interpretation is in a sense confirmed by the estimated coefficients of the bad health dummy, whose marginal effect is always significant, negative for exits and positive for entries.

The estimated effects of education and marital status are in line with the results we found for income poverty transitions and 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 the case of deprivation entries, the effects are in line with those found in the poverty regressions, which are positive for the first two classes and increasingly negative for the older classes, while the effects are reversed in the case of deprivation exits, with lower probabilities for the young classes and increasingly higher probabilities for the older ones.

As to the variables capturing household size and composition, the number of children is robustly negatively related with the probability of exit (table 7) and it is positively related with entry probabilities (table 8), although in this case the effect is not significant in the specifications of models 3 and 5.

The estimates confirm the perverse effect of previous periods of deprivation, which lower the exit and increase the entry probabilities, with robust and significant estimates across specifications.

Two dimensions affecting the probability of exiting material deprivation in model 5 (table 7) are the degree of urbanization (lowering it by -3.5%) and living in owner-occupied dwellings (augmenting it by 9.8%); the last variable also lowers the probability of deprivation entries in table 8 (-4.7%), which is not influenced by urbanization. The presence of dwelling damages, as expected, acts in the opposite direction, increasing the probability of entering deprivation by 6% and lowering by 2% the exit probability. The estimated coefficient for the interaction between ownership and damaged house in model 5 is not significant for entries, but it is positive and significant in the regression for exits.

As to the macroeconomic controls, notice how the growth rate of total hours worked has a robust positive effect on the probability of exiting material deprivation (table 7), whereas the growth rate of average per capital social spending by Municipalities does not seem to matter at all, as the coefficient is never different from zero in any specification. In table 8 instead, per capita social spending by Municipalities seems to have a role in preventing entries into material deprivation: the estimated marginal effect for its growth rate is negative and significant (around -3%) in all specification but the one of model 3 which includes the poverty dummy; on the other hand, and somehow counterintuitively, the estimated marginal effect for the growth rate of total hours worked is positive and mildly significant, except in model 5.

Finally, the estimated effects of the macro-regional dummies confirm the North-South divide also for material deprivation transitions.

5. Conclusions

After providing evidence of strong regional inequalities in Italy both in terms of poverty and deprivation incidence and in terms of poverty and deprivation entry and exit rates, we have analyzed the micro and macro determinants of entry and exit rates over the period 2004-2015, focusing on the impact of welfare and using a novel perspective.

Transitions out of and into poverty/deprivation are defined as dichotomous variables capturing the change of status, and probit regression models are estimated on pooled data from 9 longitudinal components of IT-SILC. Despite the time observation window for each individual is small, by pooling the available panels we observe thousands of individual changes of status over a long period of time, which allows us to efficiently estimate the effects of the various determinants of transitions, including important macroeconomic determinants together with micro determinants, 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 at the individual level and expenditure on social services at the aggregate level.

A set of novel results emerges. The effects of the crisis are clearly reflected in declining income poverty exits rates and in increasing deprivation entry rates, which stabilize at a higher level. Social policies can be important in counteracting these effects: at the macro level we find that average per capita social expenditure by Municipalities speeds poverty exits and prevents material deprivation entries, while at the micro level specific social benefits received by individuals help reduce the odds of poverty entry and increase the chances of poverty exit 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 go 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 trigger events, which to our knowledge has never been performed before for Italy, 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. On the other hand, not all labor market changes are crucial for deprivation transitions, which are affected only by job losses. 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 also give important insights for the design of social and labor market policies aimed at preventing poverty/deprivation entries and speeding exits. The presence of a perverse effect of previous poverty or deprivation experiences on transitions is indicative of the possible existence of poverty or deprivation traps, and highlights the importance of such policies.

Being mainly unemployed or inactive strongly decreases the probability of poverty and deprivation exit and increases the probability of entry, but as previously mentioned unemployment benefits as well as benefits received by some categories of inactive, in particular health and disability benefits and education related allowances, help to counteract these effects. The beneficial effects of education as a factor emancipating individuals from poverty and deprivation are also confirmed, which indirectly supports the results of Hidalgo-Hidalgo and

Iturbe-Ormaetxe (2018) on the long run effects of public spending on education on the incidence of poverty, and highlights the importance of such spending.

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, whereas we observe the opposite effect for the adult components. The small average size of families in Italy may be another key social aspect to look into.

Finally, a strong effect of macro-regional dummies is found, which confirms the Italian North-South divide. Not only there is strong inequality between Northern and Southern regions in terms of relative income poverty and absolute material deprivation, but citizens living in the South also have much lower chances of climbing out of poverty and material deprivation, and much higher chances of slipping into them with respect to citizens of the North.

6. Appendix: Tables

TABLE 5. Poverty Exits - Estimated models

Poverty Exit	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trigger events										
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
Characteristics (individual)										
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
First 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 class2	-0.0069***	-0.0064***	-0.0072***	-0.0106***	-0.0060***	-0.0174***	-0.0164***	0.0210***	-0.0338***	-0.0150***
(Bad) Health	0.0038	0.0015	0.0089***	-0.0027	0.0015	0.0065	0.0014	-0.0644***	-0.0064	0.0020
Characteristics (household)										
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**
D_urbanization	0.0020	0.0037	0.0072**	0.0086**	0.0039	0.0095	0.0132*	0.0166**	0.0230**	0.0136*
Previous poverty	-0.0921***	-0.0917***	-0.0998***		-0.0913***	-1.6186***	-1.6169***			-1.6232***
Income class(t-1)				0.0961***					0.3159***	
Deprivation(t-1)			-0.0630***					-0.3530***		
Macroeconomic controls (NUTS-1)										
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**
Other controls										

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 6. Poverty Entries - Estimated models

Poverty Entry	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trigger events										
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***
Characteristics (individual)										
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***
First 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***
(Bad) Health	-0.0010	0.0006	-0.0030	-0.0028	0.0004	-0.0124	0.0031	-0.0274	-0.0292	0.0015
Characteristics (household)										
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***
D_urbanization	-0.0016	-0.0018	-0.0022***	0.0012	-0.0015	-0.0115	-0.0129	-0.0197**	0.0107	-0.0108
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***	
Deprivation _(t-1)			0.0396***					0.3650***		

Macroeconomic controls (NUTS-1)										
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
Other controls										
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 7. Deprivation Exits - Estimated models

Deprivation Exit	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trigger events										
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
Characteristics (individual)										
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**
First 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***
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***
(Bad) Health	-0.0952***	-0.0927***	-0.0868***	-0.0926***	-0.0596***	-0.2442***	-0.2397***	-0.2334***	-0.2420***	-0.1753***
Characteristics (household)										
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
D_urbanization	-0.0350***	-0.0350***	-0.0366***	-0.0351***	-0.0198*	-0.0977***	-0.0977**	-0.1005***	-0.0982**	-0.0576*
Previous deprivation	-0.1130***	-0.1129***	-0.1217***	-0.1127***	-0.0963***	-0.5619***	-0.5342***	-0.5420***	-0.4411***	-0.2050***
Poverty _(t-1)			-0.0908***					-0.2490***		
Ln(Income)	0.0340***	0.0342***		0.0342***	0.0245***	0.0934***	0.0938***		0.0941***	0.0714***
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**
House owned					0.0792***					0.2309***
Damaged house					-0.2035***					-0.5933***
Damaged own house					0.0762***					0.2223***
Macroeconomic controls										
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
Other controls										
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 8. Deprivation Entries - Estimated models

Deprivation Entry	PROBIT ESTIMATIONS					IV PROBIT ESTIMATIONS				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trigger events										
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
Characteristics (individual)										
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*
First 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***
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**
(Bad) Health	0.0469***	0.0461***	0.0463***	0.0461***	0.0360***	0.3539***	0.3480***	0.3500***	0.3481***	0.2765***
Characteristics (household)										
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***
D_urbanization	0.0012	0.0014	0.0015	0.0014	-0.0021	0.0088	0.0105	0.0115	0.0111	-0.0162
Previous deprivation	0.0676***	0.0676***	0.1122***	0.0672***	0.0834***	0.9677***	0.9437***	0.8961***	0.9697***	0.8378***
Poverty _(t-1)			0.0541***					0.4091***		
Ln(Income)	-0.0282***	-0.0285***		-0.0285***	-0.0202***	-0.2073***	-0.2100***		-0.2095***	-0.1557***
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***
House owned					-0.0473***					-0.3651***
Damaged house					0.0606***					0.4671***
Damaged own house					-0.0084					-0.0650
Macroeconomic controls										
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***
Other controls										
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*.

REFERENCES

- Alkire, S. and Foster, J.: Counting and multidimensional poverty measurement', *J. of Public Econ.*, 95, 476–87 (2011).
- Andriopoulou, E. and Tsakloglou, P.: The Determinants of poverty transitions in Europe and the role of duration dependence, IZA Discussion paper no. 5692 (2011).
- Apablaza M, Yalonetzky G (2013) Measuring the dynamics of multiple deprivations among children: the cases of Andhra Pradesh, Ethiopia, Peru and Vietnam. Working Paper 101. Young Lives
- Atkinson, A. B., Guio, A.-C., and Marlier, E. (eds) : Monitoring Social Inclusion in Europe. Luxembourg: Eurostat (2017).
- Ayllòn, S. and Fusco, A.: Are income poverty and perceptions of financial difficulties dynamically interrelated? *J. of Economic Psychology*, 61, 103–114 (2017).
- Baldini M., Ciani E.: Inequality and poverty during the recession in Italy, *Politica Economica*, 27 (3), 297-322 (2011).
- Bane, M. J., and Ellwood, D. T.: Slipping into and out of Poverty: The Dynamics of Spells, *J. of Human Resources*, 21, 1–23 (1986).
- Bosco, B., and Poggi, A.: Middle Class, Government Effectiveness and Poverty in the EU: A Dynamic Multilevel Analysis, *Rev. of Income and Wealth*, DOI 10.1111/roiw.12403 (2019).
- Brady, D., Fullerton, A. S. and Moren-Cross J.: Putting Poverty in Political Context: A Multi-Level Analysis of Adult Poverty Across 18 Affluent Countries, *Social Forces*, 88(1), Sept: 271-300 (2009).
- Breen, R., and Moiso, P.: Overestimated poverty mobility: Poverty dynamics corrected for measurement error, *J. of Econ. Inequal.*, 2, 171-191 (2004).
- Cappellari, L., and Jenkins, S. P.: Modelling low income transitions, *J. of Applied Econometrics*, 19(5), 593–610 (2004).
- Callens, M. and Croux, C.: Poverty Dynamics in Europe. A Multilevel Recurrent Discrete-Time Hazard Analysis, *Int. Sociology*, 24(3), 368–396, (2009).
- Caranci, N., Biggeri, A., Grisotto, L., Pacelli, B., Spadea, T. and Costa, G.: L'indice di deprivazione italiano a livello di sezione di censimento: definizione, descrizione e associazione con la mortalità, *Epidemiologia e Prevenzione*, 34, 167-176 (2010).

- Coppola, L. and Di Laurea, D.: Dynamics of persistent poverty in Italy at the beginning of the crisis, *Genus*, 72:3, 1-17 (2016).
- Deaton, A.: Price indexes, inequality, and the measurement of world poverty, *Am. Econ. Rev.*, 100(1), 5–34 (2010).
- Devicienti F. and Poggi A.: Poverty and social exclusion: two sides of the same coin or dynamically interrelated processes? *Applied Econ.*, 43(25), 3549-3571 (2011).
- Devicienti, F., Gualtieri, V., and Rossi, M.: The persistence of income poverty and lifestyle deprivation: Evidence from Italy, *Bulletin of Econ. Research*, 66(3), 246–278 (2014).
- Duncan, G. J., Gustafsson, B., Hauser, R., Schmauss, G., Messinger, H., Muffels, R., et al.: Poverty dynamics in eight countries, *J. of Pop. Econ.*, 6, 215–234 (1993).
- Duiella, M. and Turrini, A.: Poverty developments in the EU after the crisis: A look at main drivers, *ECFIN Economic Brief*, 31, May (2014).
- Giarda, E. and Moroni G.: The Degree of Poverty Persistence and the Role of Regional Disparities in Italy in Comparison with France, Spain and the UK, *Soc Ind Research*, 136, 163–202 (2018).
- Guio, A. C.: What can be learned from deprivation indicators in Europe, Eurostat Methodologies and Working Papers, Luxembourg: Publications Office of the European Union (2009).
- Guio, A.-C. and Marlier, E.: Amending the EU material deprivation indicator: impact on size and composition of deprived population, Chapter 10 in A. B. Atkinson, A.-C. Guio, and E. Marlier (eds): *Monitoring Social Inclusion in Europe*, Luxembourg: Eurostat, (2017).
- Hidalgo-Hidalgo, M., Iturbe-Ormaetxe, I.: Long-run effects of public expenditure on poverty. *J Econ Inequal*, 16,1–22 (2018).
- Iceland J.: Why Poverty Remains High: The Role of Income Growth, Economic Inequality, and Changes in Family Structure, 1949-1999, *Demography*, 40 (3), 499-519 (2003).
- Jenkins, S. P.: Modelling household income dynamics, *J of Population Econ.*, 13, 529–567 (2000).
- Moller, S., Huber, E., Stephens, J. D., Bradley, D. and Nielsen, F.: Determinants of Relative Poverty in Advanced Capitalist Democracies', *Am. Sociological Rev.*, 68(1), 22-51 (2003).
- Mood, C. and Jonsson, J. O.: The Social Consequences of Poverty: An Empirical Test on Longitudinal Data, *Social Indicators Research*, DOI 10.1007/s11205-015-0983-9 (2016).
- Nolan, B. and Whelan, C. T.: Using Non-Monetary Deprivation Indicators to Analyze Poverty and Social Exclusion: Lessons from Europe? *J of Policy Analysis and Management*, 29(2), 305–325 (2010).

Poggi, A.: Social exclusion mobility in Spain, 1994–2001, *Research on Econ. Inequal.*, 14, 31–62 (2007).

Polin, V. and Raitano, M.: Poverty Transitions and Trigger Events across EU Groups of Countries: Evidence from EU-SILC, *J of Social Policy*, 43(4), 745–772 (2014).

Reinstadler, A. and Ray, J.-C.: Macro Determinants of Individual Income Poverty in 93 Regions of Europe, Eurostat Methodologies and Working Papers, Luxembourg: Publications Office of the European Union (2010).

Stevens A.H.: The dynamics of poverty spells. Updating Bane and Ellwood, *Am. Economic Rev.*, 84(2), 34-37 (1994).

Stevens A.H.: Climbing out of poverty, falling back in: Measuring the persistence of poverty over multiple spells, *J. of Human Resources*, 34 (3), 557-588 (1999).

Suppa N.: Transitions in poverty and its deprivations. An analysis of multidimensional poverty dynamics, *Soc Choice Welf* 51, 235–258 (2018).

Whelan, C. T., Layte, R. and Maître, B.: Understanding the mismatch between income poverty and deprivation: a dynamic comparative analysis, *European Sociological Rev.*, 20, 287–302 (2004).

Whelan, C. T.; Nolan, B.; Maître, B.: Measuring material deprivation in the enlarged EU, ESRI Working Paper, No. 249, *The Economic and Social Research Institute (ESRI)*, Dublin, (2008).