Cross-country evidence on the individual dynamics of in-work poverty in the EU *

Maria Cristina D'Aguanno[1]
Anne-Catherine Guio[2]
Philippe Van Kerm[1,2]

[1] *Department of Social Sciences, University of Luxembourg*
[2] *Luxembourg Institute of Socio-Economic Research*

December 16, 2025

Abstract

The dynamics of in-work poverty is complex since it involves both a household-level dimension – the poverty status – and individual characteristics – the employment status. Because of in-work poverty's dual nature, similar indicator levels may conceal different underlying dynamics in terms of poverty and employment transitions. Our analysis addresses the dual nature of in-work poverty transitions by considering all working-age individuals and analysing jointly trajectories into and out of both employment and poverty. We estimate an econometric model that jointly describes the dynamics of the two components. Furthermore, we examine the classic in-work poverty measure alongside an indicator of in-work material deprivation. Our analysis confirms that in many countries employment status alone is not able to prevent poverty or material deprivation. Poverty exhibits strong persistence both directly and through reduced chances of employment entry. The trajectories into and out of in-work poverty and in-work material deprivation vary considerably between countries.

*We thank Cristiano Perugini and Fabrizio Pompei for their insightful comments during the "WeLar Workshop: Labour Market Institutions and Risks". We are also grateful to Alessio Fusco and two anonymous referees for feedback and suggestions. This research was funded by the Horizon 2020 WeLar project (Grant Agreement no. 101061388). EU-SILC data were provided by Eurostat (RPP 5/2023-LFS-EU-SILC-SES).

1 Introduction

In-work poverty (IWP) is a complex phenomenon because it involves two dimensions. The first dimension defines who is considered "in work" – an individual characteristic that establishes the population potentially at risk of in-work poverty, based on employment status. The second dimension evaluates the economic situation, assessing poverty status at the household level. Studies have shown that both demographic and occupational characteristics affect IWP (Barbieri & Cutuli, 2016; Barbieri et al., 2024; Halleröd et al., 2015; Horemans, 2018; Salverda, 2018). From a comparative perspective, institutional factors and different tax-benefit systems can also influence IWP levels (Hick & Marx, 2023; Lohmann, 2009; Peña-Casas et al., 2019). While many studies have analysed levels of IWP across countries, far less attention has been paid to its dynamics and most of such research restrict analysis to a specific segment of the working-age population (Guio et al., 2021; Gutiérrez et al., 2011; Halleröd et al., 2015).

Against this background, this paper sheds new light on how the dynamics of IWP vary across European countries. Because of IWP's dual nature, similar levels may conceal different underlying dynamics in terms of poverty and employment transitions. Our analysis therefore builds on the existing literature on IWP dynamics but adopts a comprehensive perspective to address the dual nature of IWP transitions, considering all working-age individuals and analysing both trajectories into and out of employment and poverty. Examining jointly the poverty and employment dynamics – and not focusing only on the determinants of poverty among workers – is useful since factors that determine employment conditions – especially those affecting labour market entries and exits – influence the IWP profile by changing the composition of the population at risk of in-work poverty.

Technically, we estimate an econometric model that jointly describes the evolution of the two components of IWP, namely employment and poverty, in a way similar to the model developed in Biewen (2009). Each process is described with its own set of parameters and is estimated for the entire population. The cross-dynamics are modelled using a standard triangular Markovian process in which past employment and poverty both influence current employment and poverty and where current employment also influences current poverty. We also allow correlated unobserved heterogeneity factors to affect both processes. Models of this sort are useful to distinguish state-dependence – how much the experience of employment or poverty genuinely influences the risk of subsequent poverty or employment – from unobserved heterogeneity – associated with persistently different employment and poverty risks (Ayllón & Fusco, 2017; Biewen, 2009; Fusco & Van Kerm, 2023).

Following Guio et al. (2021), the paper applies this framework to both IWP and in-work material deprivation (IWMD). These relative (IWP) and absolute (IWMD)

poverty concepts complement each other well when examining countries which differ substantially in average living standards. The material deprivation indicator may also facilitate interpretation of transitions, as the threshold is fixed over time and across countries, in contrast to the relative approach in which it varies both over time and across countries.

Our results indicate that the nature of IWP indeed varies widely across European countries and depend on the perspective adopted. Employment does not shield individuals from poverty to the same extent across countries. Poverty exhibits strong persistence in all countries analysed. Regardless of the general level of poverty and material deprivation, some countries provide better protection for workers along specific trajectories. Low overall IWP rates can mask high risks for people in particular employment-poverty paths.

The paper is structured as follows. Section 2 first reviews the literature. Section 3 describes the data and defines key variables. Section 4 extensively describes patterns of IWP and IWMD across poverty-employment trajectories in the fourteen EU countries analysed. Section 5 then describes the econometric strategy and Section 6 presents results from the multivariate analysis. Section 7 concludes.

2 Literature Review

A large literature has examined the drivers and correlates of in-work poverty. The dual nature of IWP suggests that both demographic and employment characteristics play a role in defining the poverty profile. Among demographic factors, the presence of children (Gutiérrez et al., 2011) and household labour market participation (i.e., the household work intensity and the support of additional earners) are seen as strong predictors (Barbieri et al., 2024; Jara Tamayo & Tumino, 2021; Marx & Nolan, 2014; Ponthieux, 2010). The reduced risk of IWP in multiple-earner households implies that being female – a characteristic often associated with lower wages or part-time employment – does not necessarily increase the risk of IWP (Ponthieux, 2010). In such cases, female earnings may provide supplementary income that shields the household from poverty. Conversely, single-earner households, particularly single-parent households, tend to face a higher risk of IWP.

Among other factors, having a low wage is positively correlated with IWP. However, the overlap between the two phenomena is not as sharp as might be expected (Barbieri et al., 2018; Hick & Lanau, 2018; Maître et al., 2018; Salverda, 2018). With regard to additional employment characteristics, low skills and low educational level increase the IWP risk, even for permanent full-time workers (Peña-Casas et al., 2019). In addition, temporary and part-time workers are at higher risk of IWP than workers with permanent and full-time contracts (European Foundation for the Improvement of Living and Working Conditions., 2017; Horemans, 2018).

From a comparative perspective, the difference in IWP levels between countries are partly driven by institutional factors. Both labour market institutions and the tax-benefit system seem to play a role in defining a country's level of IWP, through many possible channels (Gerlitz, 2018; Lohmann, 2009; Peña-Casas et al., 2019). Because earnings are the main component of household income, cross-country differences in wage setting policies (Dube, 2019; Fields & Kanbur, 2007; Hartzén, 2022; Lucifora, 2005), union density (Salverda & Checchi, 2015), level of minimum wage, in-work support and incentives (Dube, 2019; Fields & Kanbur, 2007; Peña-Casas et al., 2019) may help explain cross-country differences in IWP. Furthermore, the tax-benefit system can act on IWP through two main channels: decommodification and defamiliarisation (Lohmann, 2009). In other words, the welfare system can reduce the individual's dependence on both the labour market and the household. In the first case, generous transfers, including guaranteed minimum income, can alleviate IWP because they increase the level of the wage that individuals could be willing to accept to work. Concerning defamiliarisation, a good childcare system, can reduce an individual's dependence on the household by allowing caregivers, often women, to participate in the labour market. As this increases the number of earners in the household, this can lead to an exit from IWP. In general, generous family policies improve the work-life balance, which makes it easier for parents to avoid IWP. Countries with higher spending on active labour market policies also tend to have lower IWP rates (Seikel & Spannagel, 2018). By contrast, policies that enforce strict conditionality of social benefits and promote re-commodification of labour (requiring individuals to engage in the labour market under less favourable conditions) tend to increase the risk of IWP (Hick & Marx, 2023; Seikel & Spannagel, 2018).

While the profile of IWP has been extensively studied, there is less evidence on the drivers of transitions into and out of IWP. The literature on poverty dynamics and much of the subsequent analyses have focused on poverty persistence and transitions, without specifically concentrating on workers and the special case of IWP. These analyses highlight how different transitions contribute differently to poverty levels (Biewen, 2009; Cappellari & Jenkins, 2004). From a comparative point of view, some analyses showed that government action plays a decisive role in shaping these differences, and linked the dynamics of poverty with tax-benefit systems and welfare regimes (Polin & Raitano, 2014; Valletta, 2006; Vandecasteele, 2010). Transitions into and out of poverty are often associated with specific events in the individual's life, generally attributable to demographic changes related to household composition, and to changes involving the economic dimension (such as changes in employment status or in social transfers) (Bane & Ellwood, 1986). Among these, changes related to employment characteristics, particularly related to wages, appear to be those that are most associated with entries and exits from poverty (Bane & Ellwood, 1986; Jenkins, 2011; Polin & Raitano, 2014).

Analysing IWP dynamics is not straightforward because IWP transitions involve changes in both poverty and employment statuses: changes in poverty status affect the outcome of interest, while changes in employment affect the composition of the risk set. This results in multiple potential trajectories that may affect IWP in ambiguous ways. A small number of studies have used longitudinal data to study IWP transitions. Gebel and Gundert (2023), although not directly examining the phenomenon of IWP, investigates the extent to which transitioning from unemployment to employment reduces the risk of poverty. Using four-year German panel data, they find that for unemployed individuals, starting a job substantially reduces the risk of poverty, with effects that persist for several years. Moreover, they showed that taking up a fixed-term job can be as beneficial as starting a permanent position in reducing poverty risk. However, this was less true for single-parent households, where a fixed-term job reduced poverty risk to a lesser extent than it did for couples or single individuals, although this gap was not observed in the case of permanent employment. They therefore show the importance of integrating labour-market position with household composition. Halleröd et al. (2015) focused mainly on labour market transitions, but with a specific focus on IWP. Specifically, they analysed the incidence of IWP across labour market trajectories in 22 European countries. The authors observed that IWP primarily affects individuals who are starting to work and are establishing themselves in the labour market, those in precarious jobs, and the self-employed. An analysis conducted by Gutiérrez et al. (2011) looked at IWP trajectories, by focusing on a specific subset of transitions. In particular, they examine the determinants of IWP entries in four countries (Spain, France, Poland, and the United Kingdom) between 2005 and 2007. Their findings showed that – similarly to poverty more broadly – household labour market attachment is more closely associated with IWP entries than demographic characteristics alone. However, as we stated before, because of the dual nature of IWP individual trajectories can follow several paths. To address this aspect, Hick and Lanau (2018) provided some insights into IWP transitions in the UK between 2010 and 2014, considering both employment and poverty transitions, with a particular focus on the events that trigger IWP transitions. They showed that poor workers are more likely to exit poverty than remain in it. However, poor workers also have a higher likelihood of exiting the labour market than non-poor workers. Furthermore, Hick and Lanau (2018), by focusing solely on workers, analysed the determinants of transitions into and out of poverty, finding that the number of workers in the household and job qualification are the most relevant predictors for these two transitions. Finally, Guio et al. (2021) extended earlier analyses by employing both income poverty and material deprivation to measure IWP. More specifically, the authors analysed the profile associated with the transitions into or out of IWP and IW deprivation. Using data for a broad set of European countries over 2015–2016, they showed that the trigger events linked with the in-work poverty/deprivation trajectories may differ and highlighted the importance

of complementing the income measure with the deprivation measure when assessing the dynamics of IWP.

The literature on IWP transitions has so far generally restricted attention either to a small set of countries (e.g., Gebel & Gundert, 2023; Hick & Lanau, 2018) or to a part of the population involved in a subset of possible employment-poverty trajectories (e.g., Guio et al., 2021; Gutiérrez et al., 2011; Halleröd et al., 2015). The present paper complements this literature by analysing IWP and IWMD dynamics for a range of countries using an approach that allows the analysis of poverty risk for a broader set of employment-poverty trajectories. Crucially, we do not restrict the analysis to the specific population of individuals in the risk set – that is, those employed – but we include all individuals, regardless of their poverty or employment status and document the dynamics of both poverty and employment. This approach enables us to model the poverty profile by endogenizing employment and controlling for unobserved heterogeneity.

3 Data and definitions

We use seventeen waves of the longitudinal dataset of the European Union Statistics on Income and Living Conditions (EU-SILC), from 2007 to 2023.[1] EU-SILC is a household and individual data collection that provides comparable data on income, poverty, social exclusion and living conditions in European countries, along with detailed individual- and household-level demographic, socio-economic and labour market information. EU-SILC provides two types of microdata: (i) cross-sectional data over a given time or a certain period, with variables on income, poverty, social exclusion, and other living conditions; (ii) longitudinal data on individual-level changes over time, observed periodically over a 4-year period.

Due to limitations related to data availability, sample design and sample size, especially for "register countries",[2] the analysis was conducted on a subset European countries. Some countries, such as Germany have few waves of data available in the period under analysis. Moreover, data from some countries did not provide sufficient variability for the model to be estimated and were therefore excluded from analysis (see Section 5). Considering all these limitations, we analyse fourteen of twenty-seven European countries: Austria, Bulgaria, Cyprus, Czechia, Denmark, Greece, France, Croatia, Italy, Latvia, Malta, Poland, Romania, and Slovenia. This set of countries however provide a wide representation of different welfare and labour market systems. We consider individuals of working age, so for each wave we have selected respondents aged between 25 and 65.

[1] We use the first release of EU-SILC 2024 (September) (RPP 5/2023-LFS-EU-SILC-SES).

[2] Register countries use a sampling design based on a single respondent per household and collect incomes from all household members using administrative record linkage.

We adopt two different definitions of poverty. The first indicator is the at-risk of poverty (AROP), which identifies an individual as poor if his/her household equivalised disposable income is below 60% of the national median equivalised income. After the 2004 and 2007 EU enlargements, it appeared that this indicator was failing to reflect the large differences in living standards across the EU, especially between Eastern and Western Member States, with the former having much lower living standards often not reflected by a relative income poverty indicator. There seemed to be a need to complement the latter with a material deprivation (MD) indicator based on the limited information on nine items available from EU-SILC at that time (Guio, 2009).[3] This indicator was revised in 2017 and now includes a larger set of items. We use the first adopted MD indicator, as the data to compute the new indicator are not available for the whole period of interest. Furthermore, the 9-item indicator is proxied by 6 items, as three items (telephone, TV, washing machine) were not collected from 2017 due to full saturation in most Member States.

Concerning the employment status, consistently with the official EU definition of IWP, each individual is assigned a main activity based on the prevalent activity declared in the activity calendar for the period for which the information is reported. Possible statuses are employees, self-employed, retired, unemployed and inactive. We exclude those who declared to be retired for most of the reference period as these are unlikely to be returning to employment. Due to the potential under-reporting of income among the self-employed, we also exclude this group from the analysis.

Only individuals with four consecutive years of reported information are selected for analysis. For countries with longer panel designs, only observations related to the latest four years are selected. Our final dataset consists of 284,053 individuals observed from 2007 to 2023 for the AROP indicator and 226,519 individuals observed from 2011 to 2023 for the MD indicator (see sample size and sample characteristics in Tables 1 and 2 in Section 4).[4]

[3]These items nine are: 1) people cannot face unexpected expenses; 2) they cannot afford one week of annual holiday away from home; 3) they cannot avoid arrears (on mortgage or rent, utility bills or hire purchase instalments); 4) they cannot afford a meal of meat, chicken, fish or a vegetarian equivalent every second day; 5) they cannot keep their home adequately warm; 6) they do not have access to a car/van for private use; 7) they cannot afford a washing machine (enforced lack); 8) they cannot afford a colour TV (enforced lack); and 9) they cannot afford a telephone (enforced lack).

[4]The different observation periods for the two indicators reflect data availability in the sample. Equivalised disposable income is available since 2004. Thus, individuals are observed over four consecutive years from 2007. For the material deprivation indicator, data are available since 2008; therefore, information on individuals observed over 4 years is available since 2011.

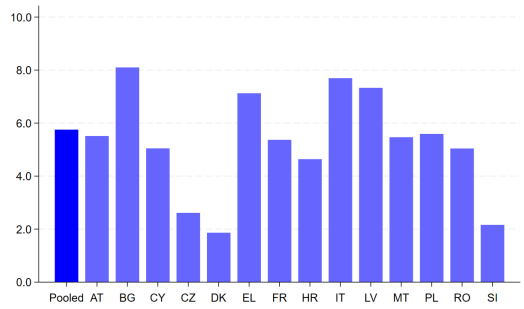
4 IWP, IWMD and employment-poverty trajectories

4.1 IWP and IWMD across fourteen EU countries

Figure 1 illustrates the variation of IWP and IWMD rates across the fourteen countries analysed. The ranking of countries and the dispersion of estimates differ markedly between the two indicators. Our estimates of the percentage of individuals in employment at risk of income poverty vary from under 2% in Denmark and Slovenia to 8% in Bulgaria. By contrast the percentage of individuals in employment at risk of material deprivation varies between about 3% in Austria and Denmark to more than 20% in Greece and Romania and up to 35% in Bulgaria.[5] In the least affluent countries (Bulgaria, Greece, Romania), the prevalence of IWMD is three to four times that of IWP, due to low living standards and low income inequality at the bottom of the income distribution. By contrast, in Austria and France, IWP is higher than IWMD: a non-negligible share of workers can fall below the income poverty threshold while still meeting most essential needs. Note that these averaged estimates hide substantial within-period variations, particularly for the deprivation indicator, which appears to be more responsive to macroeconomic conditions. The IWMD estimates respond to both the impact of the Great Recession and the rising living standards in much of Central and Eastern Europe.

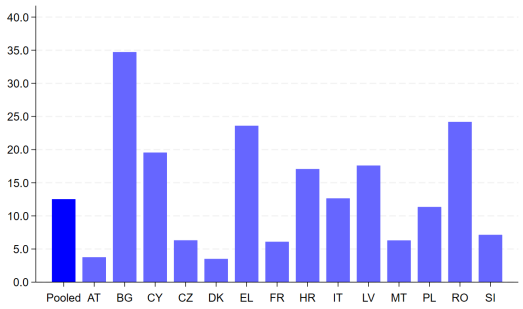
Figure 1: IWP rate (Panel A) and IWMD rate (Panel B)

Panel A



Note: Pooled years 2007–2023

Panel B



Note: Pooled years 2011–2023

These patterns are not specific to our focus on individuals in employment. Tables 1 and 2 present at risk of poverty and at risk of material deprivation for our full samples of individuals of working age (excluding the retirees and the self-employed) and these also vary widely across countries. Employment rates in these samples tend to exhibit slightly smaller variation across countries – mostly ranging between 65 and 86% – with an outlying 57% in Greece. Poverty and material deprivation rates are – unsurprisingly – somewhat larger in the overall working age population than among individuals in

[5]These estimates are across pooled years 2007–2023 for IWP and 2011–2023 for IWMD.

employment.

Tables 1 and 2 further document the composition of our samples in terms of the covariates that will be used in the regression analysis, namely the sex, age group and education level of the sample individuals and the composition of their household.

Table 1: Sample characteristics for the at-risk of poverty sample (pooled years 2007–2023)

	Pooled	AT	BG	CY	CZ	DK	EL	FR	HR	IT	LV	MT	PL	RO	SI
Freq.	284,053	16,774	14,516	15,605	28,297	9,853	25,643	17,200	13,077	39,681	15,021	10,542	33,728	19,128	24,988
Arop	13.5	10.4	16.3	9.8	6.1	5.1	20.2	10.7	15.6	17.5	15.1	14.4	13.1	12.9	6.7
Employment	73.7	81.5	77.9	75.5	83.4	83.3	57.4	81.3	72.1	65.3	79.0	67.0	72.4	80.6	86.6
Female	54.0	51.3	51.5	54.4	52.4	51.7	56.2	53.7	52.9	56.2	55.3	56.0	53.8	51.4	49.8
Aged 25-34	19.0	20.7	19.0	20.3	19.8	19.8	22.1	16.3	20.2	16.9	20.6	18.3	20.9	21.7	18.9
Aged 35-44	30.8	30.0	29.5	29.1	31.3	27.3	33.0	31.0	30.5	30.6	27.7	30.6	29.5	33.9	33.6
Aged 45-54	30.1	32.8	29.5	27.8	28.8	28.4	27.7	31.1	28.7	31.8	29.5	25.3	28.1	28.8	31.5
Aged 55-65	20.1	16.5	22.0	22.8	20.1	24.5	17.2	21.7	20.6	20.7	22.2	25.8	21.5	15.6	15.9
Low educ. level	21.2	9.9	19.7	21.8	6.8	17.7	23.8	16.9	14.2	39.7	9.6	57.2	9.3	12.7	11.2
Mid. educ. level	52.5	55.4	55.1	40.7	72.3	43.0	43.7	44.1	62.5	42.6	56.0	22.5	64.1	65.3	53.4
High educ. level	26.4	34.7	25.2	37.5	21.0	39.3	32.6	39.0	23.3	17.7	34.4	20.3	26.6	22.0	35.4
Single person	11.1	15.6	5.6	8.5	9.1	30.7	6.8	16.2	5.3	11.5	12.0	8.2	7.1	6.4	7.2
Single parent with ch.	2.2	2.7	1.0	1.6	2.4	5.9	0.8	4.5	0.9	1.9	2.9	2.7	1.3	0.8	1.6
2+ adults, no chil.	44.9	40.2	50.1	45.0	48.4	31.0	50.9	34.1	50.3	46.0	44.1	44.2	45.4	56.7	44.8
2+ adults with chil.	41.8	41.5	43.2	44.8	40.0	32.4	41.4	45.3	43.5	40.6	41.0	44.9	46.2	36.1	46.4

Table 2: Sample characteristics for Material Deprivation sample (pooled years 2011–2023)

	Pooled	AT	BG	CY	CZ	DK	EL	FR	HR	IT	LV	MT	PL	RO	SI
Freq.	225,306	12,790	12,936	12,994	17,636	6,685	23,710	14,130	12,900	25,852	12,377	9,383	26,948	16,814	20,151
MD	18.2	6.9	41.8	24.5	9.3	6.7	34.9	10.0	24.4	18.9	23.0	10.7	17.1	28.9	10.1
Employment	74.2	81.8	77.5	75.2	83.4	82.6	56.5	81.7	72.6	65.3	78.6	68.6	72.5	81.6	86.8
Female	53.9	51.1	51.3	54.2	52.6	51.4	56.0	53.7	53.0	56.2	55.4	55.6	54.2	51.5	50.0
Aged 25-34	18.3	20.6	17.6	20.1	18.1	18.8	21.6	15.8	20.2	15.9	19.7	18.5	20.2	21.4	18.6
Aged 35-44	30.3	28.5	29.1	29.3	31.6	26.3	33.1	30.7	30.4	29.2	27.4	30.9	29.6	33.7	33.5
Aged 45-54	30.1	33.2	29.9	27.5	29.1	28.7	27.9	31.1	28.8	32.3	29.3	25.0	27.4	29.0	31.1
Aged 55-65	21.2	17.7	23.4	23.1	21.2	26.2	17.4	22.4	20.6	22.7	23.6	25.7	22.8	15.8	16.8
Low educ. level	19.3	9.8	18.9	20.5	6.2	16.6	22.2	15.9	14.0	37.7	9.6	56.3	8.9	11.6	10.1
Mid. educ. level	52.5	52.9	54.8	40.7	70.6	42.9	44.3	43.9	62.6	43.3	54.0	22.6	63.2	65.3	52.5
High educ. level	28.2	37.2	26.3	38.8	23.2	40.4	33.5	40.2	23.5	19.0	36.4	21.2	27.9	23.1	37.4
Single person	11.3	16.0	6.1	8.9	9.8	30.7	7.0	16.1	5.0	12.2	12.1	8.5	7.3	6.5	7.6
Single parent with ch.	2.1	2.4	1.1	1.6	2.4	5.6	0.9	4.4	0.9	1.9	2.9	2.7	1.3	0.8	1.7
2+ adults, no chil.	45.1	40.8	51.2	45.2	47.7	32.0	50.9	33.9	50.7	46.3	45.0	44.7	45.8	57.1	44.1
2+ adults with chil.	41.5	40.9	41.6	44.3	40.1	31.6	41.3	45.6	43.5	39.7	40.0	44.2	45.6	35.7	46.6

4.2 Poverty-employment trajectories

Our objective is to document the underlying dynamics of IWP and IWMD using a Markovian approach – that is, we aim to examine year-on-year transitions between the two states that determine the in-work poverty status, namely employment and poverty.

Table 3 lists the eight profiles (or trajectories) that such a Markovian approach implies. All individuals in trajectories involving employment at time t directly contribute to levels of IWP (or IWMD) at time t (i.e., trajectories 5, 6, 7 and 8) since they are part of the risk set at time t. The IWP or IWMD at time t is a weighted average of the poverty risks of individuals in these four trajectories: the working poor at time $t-1$ who remain in employment (trajectory 8), the working non-poor who remain in employment (trajectory 6), the non-working poor who become employed (trajectory 7) and the non-working non-poor who become employed (trajectory 5). However, the other transitions are also of interest since they determine transitions into and out of the risk set and serve as benchmarks to assess how much employment protects workers from poverty. For example, to the extent that entering employment reduces the risk of poverty, we expect individuals in trajectories 5 and 7 to have lower levels of poverty at time t than individuals in trajectories 1 and 3. By a symmetric argument, while we expect individuals in trajectory 6 to have the lowest risk of poverty at time t, the poverty risk at time t of individuals in trajectory 2 provides indication of how much poverty increases with the exit from employment – and thereby how much the welfare state or other insurance mechanisms buffer employment shocks. To some extent, this also influences levels of IWP, as a lower (higher) level of protection may make individuals more averse (more likely) to exit employment.

Table 3: Combinations of past employment status, past poverty status and current employment status

Trajectory	**Lagged Employment** (W_{t-1})	**Lagged Poverty** (P_{t-1})	**Current Employment** (W_t)	**Interpretation**
1	0	0	0	Non-employed non-poor who continues to remain non-employed
2	1	0	0	Employed non-poor who stops working
3	0	1	0	Non-employed poor who continues to be non-employed
4	1	1	0	Employed poor who stops working
5	0	0	1	Non-employed non-poor who starts working
6	1	0	1	Employed non-poor who continues working
7	0	1	1	Non-employed poor who starts working
8	1	1	1	Employed poor who continues working

4.3 In-work poverty trajectories

Table 4 shows frequencies and poverty status for all possible transitions related to present and past employment status and past AROP status as outlined in Table 3. The first two columns report the absolute and relative frequencies of all trajectories. The next column reports the AROP associated with each individual trajectory. Finally, the last column of Table 4 shows the decomposition of IWP rate by trajectory. Since IWP is calculated only for those who are currently employed, these figures are reported only for trajectories 5–8.[6]

If only trajectories 5–8 directly contribute to IWP levels, the prevalence of trajectories 2 and 4 has impacts on changes in IWP since these are individuals who exit the risk set.

The non-poor who continue to work (trajectory 6) is a low risk profile (2.3%), yet they have important leverage on the aggregate IWP because it involves a large share of individuals (67%) and therefore contributes substantially to the IWP indicator (2% out of 5.7%). Trajectory 7 includes people who were poor and not working and start working. Around 40% of these individuals remain in poverty, illustrating that

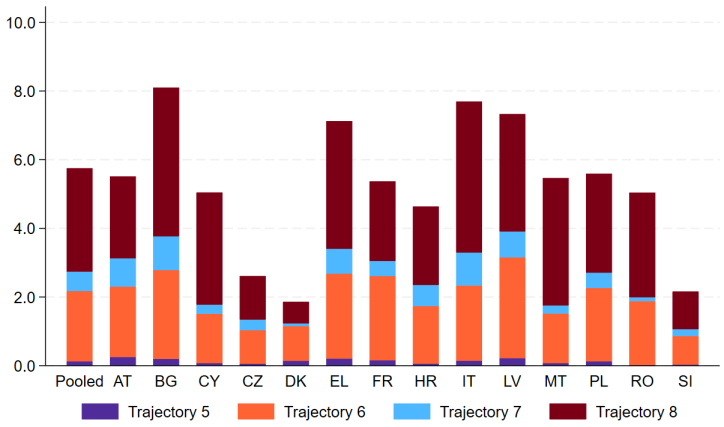
[6]Figures in the last column related to trajectories 5-8 correspond to the decomposition of the in-work poverty rate by each trajectory. These figures are calculated by multiplying the AROP rate by the relative frequencies conditioned on the current employment status

Table 4: Employment and poverty trajectories - Definition: At-risk of poverty

Trajectory	W_t	$AROP_{t-1}$	W_{t-1}	Freq.	Perc.	AROP rate	Contribution to IWP
Non-working individuals							
1	0	0	0	40,508	14.7	11.8	-
2	0	0	1	7,300	2.6	19.6	-
3	0	1	0	22,602	8.5	79.0	-
4	0	1	1	1,058	0.4	75.5	-
Working individuals							
5	1	0	0	6,076	2.2	4.3	0.1
6	1	0	1	193,868	66.7	2.3	2.0
7	1	1	0	2,705	1.0	42.3	0.6
8	1	1	1	9,936	3.8	58.0	3.0
Total				284,053	100.0	13.5	5.7

Note: Pooled years 2007 – 2023

Figure 2: Decomposition of IWP rate by trajectory



Note: Pooled years 2007–2023

employment does not ensure an escape from poverty. This should however be compared to the 79% poverty for those with a similar poverty profile but did not move into employment (Trajectory 3). Trajectory 7 is a key transition even if it involves a minor part of the population (1%). Trajectory 8 is another relevant one, focusing on those potentially trapped in IWP because they are in IWP at $t-1$ and continue to work at t. It involves less then 4% individuals, but with a high risk of poverty, hence representing a substantial contribution to IWP (3% out of 5.7%).

Country-level estimates of these profiles are shown in the Appendix. Figure A1 shows the frequency of the eight trajectories presented in Table 4 at country level. Differences across countries in the prevalence of different trajectories emerge. In some countries, including Greece, Italy and Malta, transitions of interest (5 to 8) involve a lower proportion of the population than the country average. In these countries, in contrast, there is a high share of non-poor and non-employed individuals persisting in non-employment (trajectory 1) and non-employed poor individuals persisting in non-employment (trajectory 3). Table A2 in the Appendix investigates the socio-demographic profile associated with each trajectory and shows that there is a higher share of women in trajectories where individuals remain outside the labour market (trajectories 1 and 3). Trajectory 1 is also predominantly associated with an older average age, with people living in household without children and not single. This profile is particularly pronounced in Italy, Malta or Romania. People living in household with children are proportionally more numerous among those in trajectory 4 (IWP at the previous period who stop working).

Regarding the contribution to IWP of the four trajectories of interest at the country level, Figure 2 shows that the trajectory involving the persistence of IWP (trajectory 8) and the trajectory involving non-working poor who start working (trajectory 6) are the most prevalent in all countries. At the country level, their relative importance differs substantially, which clearly indicates that the dynamic nature of IWP differs across countries.[7] In some countries (e.g., Bulgaria, Cyprus, Greece, Italy, Malta, Poland and Romania), the contribution of trajectory 8 is predominant, although in others, trajectory 6 contributes either equally or even a bit more than trajectory 8. It is also worth noting that the contribution of trajectory 7 (IWP who start working and remain poor) is non negligible in Austria, Bulgaria, Croatia, Greece, Italy or Latvia. In terms of socio-demographic composition of the population, this trajectory (see Table A2) appears to involve relatively young individuals, people living in households with children and people with particularly low income. A similar profile is observed for trajectory 8, with the difference that men are more prevalent (especially in Greece, Malta, Poland and Romania, and less so in Czechia, Denmark and France).

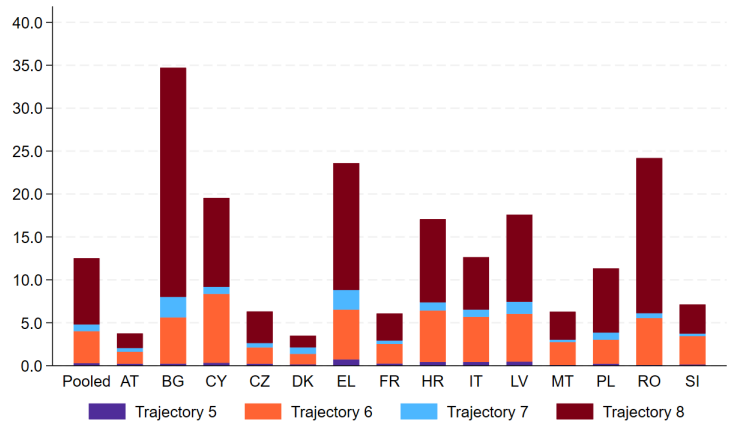
[7]Each change of status relative to IWP involves two dimensions, poverty and employment. The matrix of transitions shown in Table A1 in the Appendix confirms that countries show quite different patterns. For example, some of these countries, such as Bulgaria, Greece and Latvia, also have higher levels of mobility than the country average, in terms of both poverty status and employment status.

For the sake of completeness, Tables A3 and A4 in the Appendix report the evolution of trajectory frequencies presented in Table 4 and Figure A1. In the full sample we observe an increase in the trajectory involving those who were poor and remain out of employment (trajectory 3), alongside a decrease in the share of individuals who were poor in the previous period but remain in employment (trajectory 6). However, single countries follow slightly different dynamics. Tables A5 and A6 in the Appendix provides a temporal evolution of the information provided in Figure 2. This illustrates different country-specific trends, reflecting the varying time contributions of the trajectories. The above descriptive analysis clearly highlights cross-country differences in transition patterns in the two dimensions (poverty and employment) and in the demographic profiles that characterise trajectories.

4.4 In-work deprivation trajectories

This sub-section provides a similar information when considering the MD indicator. Similarly to Table 4, Table 5 shows the frequency of individual trajectories for employment and MD.[8] We observe a higher share of individuals experiencing IWMD who remain employed in the subsequent period (trajectory 8). By contrast, a smaller share follow trajectory 6. Table 5 clearly indicates that the IWMD differs markedly from IWP: it affects a larger share of the population and is more persistent, with IWMD comprising a larger proportion of workers who remain deprived from one year to the next (63%), relative to IWP (50%).

Figure 3: Decomposition of IWMD rate by trajectories



Note: Pooled years 2011 – 2023

Figure A2 in the Appendix shows the frequencies of the trajectories by country. Compared to the previous case (Figure A1 in the Appendix), the MD indicator shows

[8]Figures in the last column related to trajectories 5-8 correspond to the decomposition of the in-work material deprivation rate by trajectories. In other words, these figures are calculated by multiplying the AROP rate by the relative frequencies conditioned on the current employment status

Table 5: Employment and poverty trajectories - Definition: Material deprivation

Trajectory	W_t	MD_{t-1}	W_{t-1}	Freq.	Perc.	MD rate	Composition of IWMD
Non-working individuals							
1	0	0	0	31,018	14.5	12.6	-
2	0	0	1	4,694	2.1	13.2	-
3	0	1	0	19,392	8.4	73.8	-
4	0	1	1	1,915	0.8	73.0	-
Working individuals							
5	1	0	0	4,760	2.3	9.6	0.3
6	1	0	1	139,641	61.8	4.5	3.7
7	1	1	0	2,220	1.0	59.0	0.8
8	1	1	1	21,666	9.1	62.7	7.7
Total				225,306	100.0	18.2	12.5

Note: Pooled years 2011 – 2023

greater variability in the frequencies of the trajectory.[9] Greece, Italy, and Malta remain among the countries with a lower share of individuals involved in trajectories of interest compared to the country average. In some countries, including Romania and Bulgaria, and to a lesser extent Cyprus, Greece, Croatia, Latvia and Poland, we observe a higher share of working poor who continue to work (trajectory 8). Moreover, in some cases (Bulgaria, Greece and Latvia), considering MD as a definition of poverty appears to give greater relevance to the non-working poor transitioning towards employment (trajectory 7). Regarding the socio-demographic composition of individual trajectories, Table A8 in the Appendix shows patterns similar to those observed for IWP (Table A2 in the Appendix). Trajectories differ in their gender composition and, in most cases, mirror the demographic and economic differences observed for IWP.

As for transition related to IWP, Tables A9 and A10 in the Appendix show that cross-country heterogeneity in frequencies may, to some extent, be driven by different temporal dynamics that unfolded within individual countries.

Figure 3 shows the contribution of individual trajectories to the IWMD rate at the country level. The IWMD is primarily driven by persistent working poverty (trajectory 8), especially in Bulgaria, Greece and Romania. Only in a few cases is trajectory

[9]The different frequency of the trajectories compared to the IWP case stems from the different dynamics of the transitions that characterise AROP and MD. Table A7 in the Appendix presents the transition matrix for MD. As expected, in the most deprived countries, the proportion of individuals who do not have episodes of deprivation for two consecutive years is much lower than for AROP (Table 5 in the Appendix). In contrast, the share of people trapped in deprivation during both years is higher. Notably, the proportion of individuals escaping deprivation from one year to the next is also greater in most countries than in the case of AROP. This trend may reflect the general improvement in living standards across most countries, especially during the post-financial crisis period.

6 equally relevant, e.g. in Austria, Denmark, France, Italy, Malta and Slovenia. The contribution of the non-working poor moving into employment (trajectory 7) is not negligible in Bulgaria, Greece and Latvia. For a better understanding of the phenomena, we report the time decomposition and the evolution of the measures shown in Figure 3. As can be seen from Tables A11 and A12, there has been a general decline in the IWMD indicator, mainly in Central and Eastern Europe.

5 Econometric model for joint employment and poverty dynamics

The descriptive statistics confirm that even if individuals in employment have much lower poverty and material deprivation rates than those out of employment, employment alone does not prevent poverty altogether: poverty and material deprivation rates remain potentially large for individuals in employment. This is not just a transitory effect: poverty rates can remain relatively high even for individuals who have been in employment in consecutive years. Similarly, around half of poor individuals who transition into employment remain in poverty (or material deprivation). In fact, the income poverty and material deprivation exhibit high persistence and the poverty status at $t-1$ is a stronger predictor of poverty at t than the employment status.

Our econometric strategy to study the dynamics of AROP (MD) is therefore to model jointly the two separate components of IWP – employment and poverty – with a specification that distinguishes the role of past employment and poverty statuses (to capture state dependence and the impact of employment transitions) from the contribution of fixed (or at least slow-moving) individual unobserved heterogeneity factors that may lead to status persistence. We model the dynamic process of these two variables using a Markovian triangular system of two equations. Poverty is predicted by past poverty and employment and by current employment. Current employment is predicted by past poverty and employment. Unobserved heterogeneity is introduced by allowing for a random effects term correlated across the two equations. Unobserved individual heterogeneity is captured using a Mundlak approach – including individual averages of the covariates among the explanatory variables, and initial condition of the two endogenous variables (see, e.g., Biewen, 2009; Wooldridge, 2000). Thus, we estimate for both poverty definition AROP and MD the parameters of the following equations:

$$P_{it} = \beta^P P_{i,t-1} + \delta^P W_{it} + \omega^P W_{i,t-1} + \theta^P X_{it} + \tau^P W_{i0} + \varphi^P P_{i0} + \kappa^P \bar{X}_i + \varsigma^P Z_i + a_i + \varepsilon_i \quad (1)$$

$$W_{it} = \beta^W P_{i,t-1} + \omega^W W_{i,t-1} + \theta^W X_{it} + \tau^W W_{i0} + \varphi^W P_{i0} + \kappa^W \bar{X}_i + \varsigma^W Z_i + \gamma^W a_i + \epsilon_i \quad (2)$$

with

$$a_i \sim \mathcal{N}(0, \sigma^2)$$

and

$$\varepsilon_i \sim \text{Logistic}(0, \pi^2/3) \qquad \epsilon_i \sim \text{Logistic}(0, \pi^2/3).$$

$P_{i,t}$ is the current poverty status (AROP/MD), $P_{i,t-1}$ represents the past poverty status, while W_{it} and $W_{i,t-1}$ are dummy variables for, respectively, the current and past employment statuses. Following the definition of the IWP indicator, W_{it} and $W_{i,t-1}$ take value 1 if the individual declared him or herself to be in employment for most of the period reported in the calendar activity. We also control for time-invariant covariates (Z_i), such as sex and the highest level of education attained, and time-varying covariates (X_{it}). Consistent with Mundlak's specification, we also include the initial condition in the 4-year window for both employment status (W_{i0}) and poverty status (P_{i0}) and the averaging of time variant variables in the model ($\bar{X}_i$). The only time varying variable included in the model is the household composition.[10] Since the dataset includes all individuals of active age – whether employed or not – employment characteristics (such as occupation or sector) are not included in the model, as such information is not available for non-working individuals. To assess how countries rank compared to the country average, we also estimate a pooled cross-country model, to which, in addition to the variables described above, we add country fixed effects.[11]

This econometric specification is similar to that implemented by Ayllón and Fusco (2017), which aims to explain the correlation between objective and subjective poverty through a system of two equations. The β^P parameter measures the direct persistence of poverty while β^W captures the effect of poverty on subsequent employment. The δ^P and ω^P parameters capture the effects of (lagged) employment on poverty, while ω^W captures persistence of employment. The remaining parameters capture the impact of covariates on poverty and employment levels (θ^P and θ^W) or reflect the time-invariant unobserved heterogeneity.

The model specification makes it possible to estimate the probability of trajectories that involve the past poverty status, as well as both the current and past employment conditions as outlined in Table 3. Using parameter estimates of the model, we estimate the probability of falling into poverty when individuals follow specific trajectories, by computing the predicted probability of being poor at given values of $W_{i,t-1}$, $P_{i,t-1}$, and W_{it}, and averaging the prediction over the other control variables (predictive margins).[12] For each country, the entire sample is used to estimate the predicted

[10] We consider four household types: i) single person; ii) single parent with children; iii) at least two adults without children; iv) at least two with children. In principle, age should also be considered as time-varying, but since we are considering age classes (25-34, 35-44, 45-54, 55-65) these hardly vary in a 4-year panel we consider age class as time invariant, together with education and sex.

[11] All regressions were estimated using Stata 18's *gsem* (generalized structural equations model) command (StataCorp, 2023).

[12] Given the presence of random effects, we compute the predicted probabilities and the average

probabilities of the trajectories reported in Table 3. To characterise the poverty risk for individuals undergoing specific transitions, we calculate the *Adjusted trajectory poverty-risk*. This measure is defined as the ratio between the predicted poverty risk associated with a specific trajectory, conditional on employment and poverty history, and the overall predicted poverty risk in the country:

$$\frac{\Pr(P_t \mid \widehat{W_t, P_{t-1}, W_{t-1}})}{\widehat{\Pr}(P_t)}$$

where $\Pr(P_t \mid \widehat{W_t, P_{t-1}, W_{t-1}})$ is the predicted probability of being poor in trajectory-specific conditions and $\widehat{\Pr}(P_t)$ is the average predicted poverty probability in the country. This share shows whether the poverty risk calculated for people undergoing specific trajectories is in line with the national poverty level. When this ratio exceeds (or falls below) one, the poverty risk for specific trajectories is higher (or lower) than the overall poverty level.

6 Estimation results

6.1 Regression Estimates

The detailed results related to the model that predict AROP (Tables A13–A14) and MD (Tables A15–A16) are presented in the Appendix. Estimates related to poverty status are presented in columns (1) and estimates related to the employment condition in columns (2). Models that predict the employment conditions in Tables A13–A14 and Tables A15–A16 refer always to the same outcome and include, the same covariates, except for the covariates that describe the poverty status.

Employment equation Having experienced poverty in the previous period is associated with a lower probability of being employed in the current period in most countries, except Denmark, Greece, Croatia and Romania (for AROP) and Austria, Greece and Romania (for MD). Apart from these cases, some form of past poverty seems to act as a barrier to employment. The intensity of this negative association varies between 1% in Poland and 3% in Austria for the AROP and between 2% in France and 5% in Denmark for MD. A more relevant role is played by previous employment status, although the positive association is not systematically found in all countries. In the case of AROP, having been employed in the last period is associated with a higher probability of being employed in the current period only in Austria, Czechia, France and Croatia. In the pooled model, those who were employed in the previous period are about 21% more likely to be employed in the current period as well.

marginal effects by simulating nine different estimates, each corresponding to a value of α_i taken from deciles 1 - 9. We then average the nine resulting estimates.

For the MD, a wider set of countries show this positive correlation between the past and the current employment status. In almost all of the countries analysed, being a woman leads to a lower probability of being employed. In the full sample, women have around 2% lower probability of employment than men. The biggest gap is in Italy, where being a woman implies a 4% reduction in the probability of being employed. In general, there do not seem to be major differences between those aged 25-34 and the next age groups, although some differences emerge across countries. In the pooled model, individuals in the 35-44 age group are more likely to be employed than those aged 25-34. In contrast, in the 55-65 age group, in most cases we observe a lower probability of employment. This could be attributed to the fact that a higher incidence of inactivity characterises the older cohorts, as traditionally the household's livelihood was entrusted to a single income earner. This negative correlation is observed in most countries. Looking instead at younger people, there is not always an advantage over the 25-34 age group. Education plays a key role: in almost all countries, a higher level of education is associated with a higher probability of employment. Family composition is also often correlated with employment. In some countries, for example, being a lone parent reduces the probability of employment compared to one-person households. The same is true for those having children and living with other adults.

At-risk of poverty equation Shifting attention to the determinants of the AROP indicator, it is interesting to note that current employment status alone does not necessarily protect individuals from poverty. In countries such as Cyprus, Croatia, Greece, Latvia, Italy, Poland and Slovenia, employment is negatively correlated with poverty status. Our estimates point to a strong poverty trap: prior poverty consistently increases current poverty risk across all countries. Since AROP is based on equivalent household incomes, some demographic variables, such as age, lose explanatory relevance. Being a woman, for example, is often associated with a lower probability of falling into poverty, as women's income tends to be a second economic contributor in the household, thus acting as a form of protection against monetary poverty. As for the employment profile, education proves to be an important protective factor: higher levels of education are associated with a lower risk of poverty. Regarding household composition, the effect varies across countries. In general, the greater the number of adults in the household, the lower the risk of poverty.

Material deprivation equation In the case of material deprivation, employment status is again not necessarily a protecting factor. In some countries – such as Cyprus, Czechia, Romania and Slovenia – a positive link is found between current employment status and material deprivation. This counter-intuitive result has to be interpreted in combination with the fact that, in the same countries, there is a negative relationship between past employment status and current material deprivation. In other words,

a past employment history seems to offer some protection from deprivation. Other things equal, being currently employed is associated with a higher probability of experiencing material deprivation. Comparing Tables A15 and A16 in the Appendix with Tables A19 and A20, which reports the same model estimated without the Mundlak approach, helps us to understand that this outcome is a consequence of the econometric strategy adopted. In fact, the estimated model allows us to distinguish genuine state dependence from unobserved individual heterogeneity. Consequently, the estimated coefficients are adjusted for unobserved individual factors that could influence both employment status and poverty simultaneously. In contexts characterised by high levels of poverty and poorly inclusive labour markets, families and individuals may adopt alternative coping strategies, relying on resources other than labour income, such as social transfers or the income of other household members. These factors in case of MD, where poverty is not strictly defined in monetary terms, might be unobserved.

As far as demographic variables are concerned, being female is again often negatively associated with material deprivation. The motivation is similar to that identified for the AROP: the items considered in the indicator are surveyed at household level, and women generally belong to households where there is already a first source of income. Once again, older people – particularly those belonging to the 55-65 age cohort – show lower levels of material deprivation than younger people in the 25-34 age group. Education also proves to be a protective factor with respect to the risk of deprivation. Finally, household composition plays a relevant role: the presence of other adults in the household reduces the risk of poverty compared to one-person households.

6.2 Trajectory poverty risk predictions

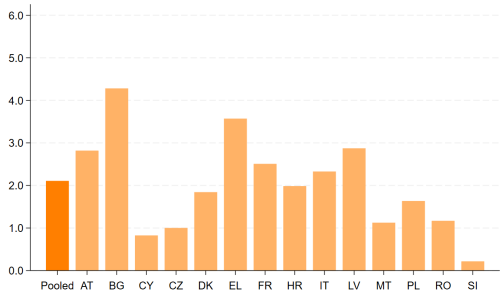
Figure 4 shows the AROP for those involved in three trajectories of key interest. Countries that report a high AROP rate (Table 1) generally also report a high risk of poverty in the trajectories under analysis. This is the case for Bulgaria, Greece, Italy and Latvia. Figure 4 shows first the predicted poverty risk values for those who were working and non-poor in the previous period and are still working in the current period (trajectory 6). The risk of poverty for those in this category varies greatly between countries. Looking at the estimate from the pooled model, individuals in this category have a 2% probability of falling into poverty in the current period, but in some countries this risk is significantly higher, including Bulgaria, Greece or Latvia. By contrast, the risk is lower in Slovenia, Cyprus, Czechia and Malta.

Furthermore, looking at the risk of poverty in trajectory 7 (those who were not working and poor in the previous period and who start working in the current period), the figure shows that, overall, more than 40% of those finding a job do not escape from poverty. The risk is very low in Denmark and particularly large in Austria, Bulgaria and Malta. Finally, the results related to trajectory 8 pertain to individuals who were

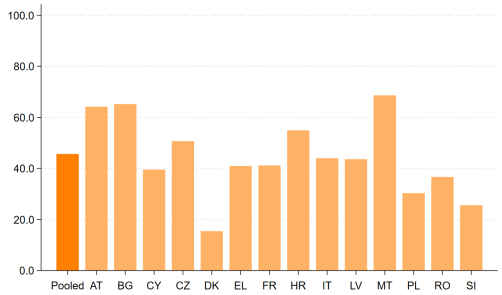
working poor in the previous period and have maintained their jobs in the current period while remaining poor (those trapped into IWP). Most countries have a similar risk, except Czechia, Denmark and Slovenia which have a lower risk than the risk detected in the full sample.

Figure 4: Predicted AROP by trajectories (average predicted poverty risks)

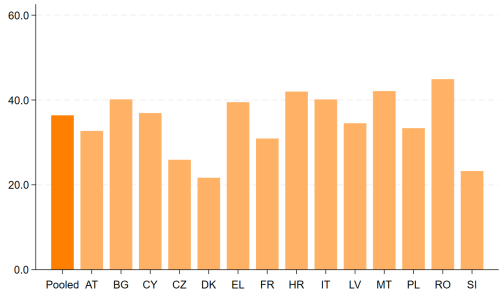
trajectory 6: $\Pr(P_t = 1 \mid W_t = 1;\ P_{t-1} = 0;\ W_{t-1} = 1)$



trajectory 7: $\Pr(P_t = 1 \mid W_t = 1;\ P_{t-1} = 1;\ W_{t-1} = 0)$



trajectory 8: $\Pr(P_t = 1 \mid W_t = 1;\ P_{t-1} = 1;\ W_{t-1} = 1)$



Note: Pooled years 2007 – 2023

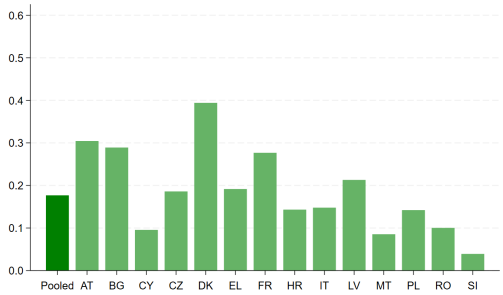
Figure 5 shows the trajectory risk related to the AROP adjusted to the poverty levels of the country. On average, the poverty risk for those who were working and non-poor in the previous period and are still working in the current period (trajectory 6) is 0.2 times the AROP in the overall active age population. In individual countries, the adjusted poverty risk associated with trajectory 6 seems particularly high in Denmark. Apart from Austria and Bulgaria, where the high risk of poverty for those belonging to trajectory 6 in Figure 4 is confirmed when using the adjusted risk in Figure 5, slightly higher values than the average are also observed in France. Concerning people in trajectory 7, the associated poverty level is four times the AROP observed in the overall active-age population. This adjusted risk is even higher in Czechia (where it attains the double), followed by Austria, France, Slovenia and Malta, where a more modest difference with the full sample is observed. Looking at the persistence of IWP, the adjusted risk reveals that when compared with country poverty levels, people in trajectory 8 are particularly at risk in Cyprus, Czechia, Denmark, Romania and

Slovenia.

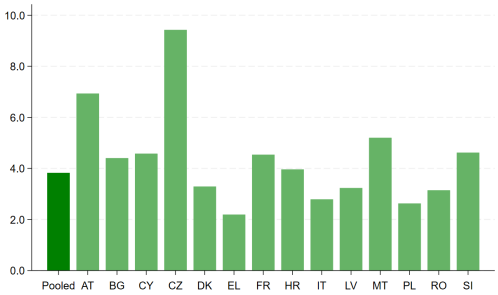
Overall, the analysis shows that even in countries with a low IWP rate, people in some trajectories may be particularly at risk, compared to the rest of the population, and should be supported by dedicated policies.

Figure 5: Adjusted AROP by trajectories

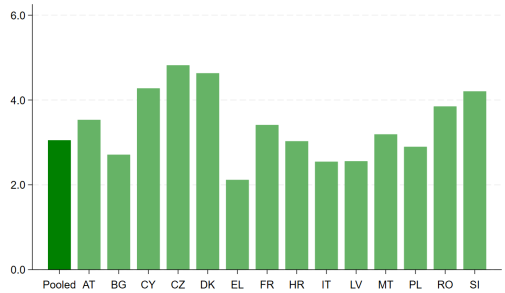
trajectory 6: $\Pr(P_t = 1 \mid W_t = 1;\ P_{t-1} = 0;\ W_{t-1} = 1)$



trajectory 7: $\Pr(P_t = 1 \mid W_t = 1;\ P_{t-1} = 1;\ W_{t-1} = 0)$



trajectory 8: $\Pr(P_t = 1 \mid W_t = 1;\ P_{t-1} = 1;\ W_{t-1} = 1)$



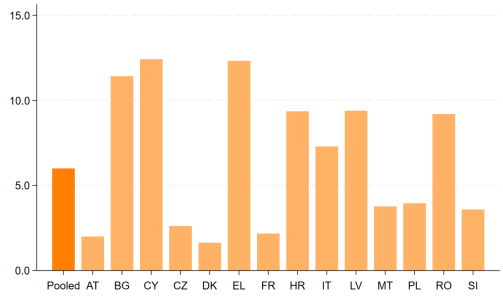
Note: Pooled years 2007–2023

Similarly to Figure 4, Figure 6 represents the poverty risks associated with individual trajectories using material deprivation as the definition of poverty. Again, some of the countries with high levels of material deprivation report particularly high risks in individual trajectories. Specifically, this is the case for Bulgaria, Cyprus, Croatia, Latvia, Romania and Greece. Indeed, the risk of poverty associated with trajectory 6 appears to mirror the level of material deprivation observed in the countries. Those who were not working and poor in the previous period and who start working in the current period (trajectory 7) experience a particularly high risk of poverty in Cyprus and Czechia and Romania. In contrast, the persistence of IWMD (trajectory 8) is higher than the sample average in Bulgaria, Greece, Croatia and Romania.

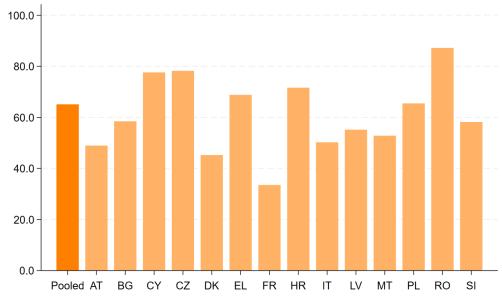
Once again, in order to gain a clearer perspective on the relevance of trajectory risks related to material deprivation within the national context, we adjusted the risk of individual trajectories with the general level of material deprivation. Regarding trajectory 6, Slovenia and Denmark exhibit notably higher levels of the indicator than

Figure 6: Predicted MD by trajectories

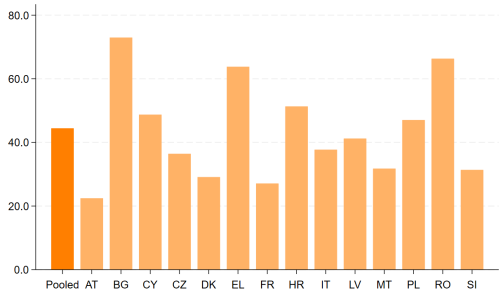
trajectory 6: $\Pr(M_t = 1 \mid W_t = 1;\ M_{t-1} = 0;\ W_{t-1} = 1)$



trajectory 7: $\Pr(M_t = 1 \mid W_t = 1;\ M_{t-1} = 1;\ W_{t-1} = 0)$



trajectory 8: $\Pr(P_t = 1 \mid W_t = 1;\ P_{t-1} = 1;\ W_{t-1} = 1)$

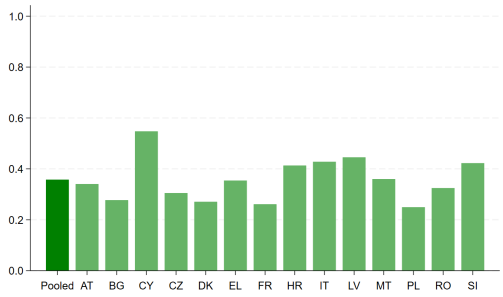


Note: Pooled years 2011–2023

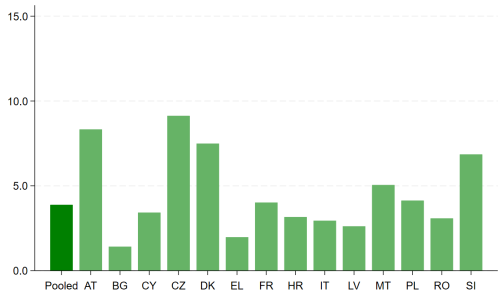
the country average. Along with the aforementioned Czechia, these two countries and Austria also demonstrate a higher adjusted level of material deprivation, particularly among those who are non-employed and start working (Transition 7). The same is true for Transition 8, where the adjusted risk of material deprivation is higher than the average in Austria, Slovenia, and Denmark.

Figure 7: Adjusted MD by trajectories

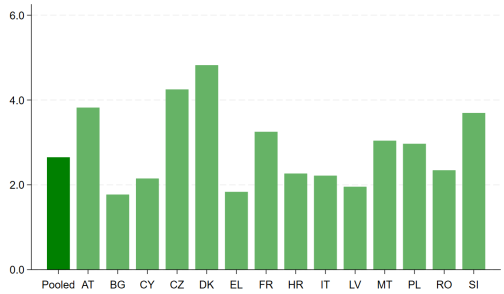
trajectory 6: $\Pr(M_t = 1 \mid W_t = 1;\ M_{t-1} = 0;\ W_{t-1} = 1)$



trajectory 7: $\Pr(M_t = 1 \mid W_t = 1;\ M_{t-1} = 1;\ W_{t-1} = 0)$



trajectory 8: $\Pr(M_t = 1 \mid W_t = 1;\ M_{t-1} = 1;\ W_{t-1} = 1)$



Note: Pooled years 2011 – 2023

7 Discussion and conclusions

The dual nature of the IWP indicator complicates the comprehension of IWP, especially in a dynamic and cross-national analysis. Because of IWP's dual nature, similar indicator levels may conceal different underlying dynamics. This paper maps the individual and household-level characteristics associated with IWP and the probabilities of transitions into and out of IWP. It builds on the literature on IWP dynamics but adopts a model to address the dual nature of IWP transitions, considering all working-age individuals and identifying trajectories that involve past and current employment status and past poverty conditions. Furthermore, we examine the classic IWP measure alongside an indicator of in-work material deprivation (IWMD). Our model aims to look at the impact of transitions into and out of employment and to capture the

persistence of poverty after controlling away as much as possible for unobserved heterogeneity, by including a random effect and implementing a Mundlak specification.

IWP and IWMD are prevalent in many of the countries under analysis. Current employment status does not always protect against poverty. Furthermore poverty reveals highly persistent independently of one's employment status. Poverty both reduces the likelihood of subsequent employment – even controlling for unobserved heterogeneity – and increases the likelihood of subsequent poverty independently of employment. Having experienced a period of poverty in the past represents a barrier to current employment, and is associated with current income poverty status.

We analyse the poverty risks of some of the most relevant trajectories that shape IWP. These are the trajectories that involve those who were working and non-poor in the previous period and are still working in the current period, those who were working poor and are still working in the current period and those who were not working and poor in the previous period and started working in the current period. In the pooled sample, the first trajectory involves more than half of the individuals, but it is associated with a low poverty risk. The second channel involves a low share of individuals, but it is associated with a high poverty risk. The third channel includes a small share of individuals but is of strong policy interest, showing that in one in two cases, re-entering the workforce does not equate to escaping poverty.

The risk of poverty after each transition is very heterogeneous across the countries under analysis. The evidence confirms that the nature of IWP varies widely between European countries and a careful analysis of its origins is necessary. Examining the risk of workers in particular trajectories relative to that of the overall active-age population provides valuable insights. It reveals that the general level of poverty plays a key role in shaping the specific risk faced by workers in different trajectories. This is particularly evident in the case of IWMD, where the diversity in risk between countries becomes much less pronounced when compared to the overall material deprivation context. This underscores the fact that policies which address poverty in general and aim at improving the level of living standards of the population play also a key role in the fight against IWP and IWMD. This calls for policy bundles that combine adequate income support with effective access to affordable public services in the case of deprivation, as not only on current income but also longer-term command over resources (e.g., permanent income, assets or debts) and cost burdens (e.g., housing, energy, transport, care, health) may explain national differences in deprivation (Guio et al., 2022). However, some countries perform notably better/worst than others at protecting workers in specific trajectories, even when accounting for the broader poverty/deprivation context. Our analysis shows that even in countries with a low in-work poverty/ deprivation rate, people in some trajectories may be particularly at risk and should be supported by dedicated policies. This underscores the importance of considering the institutional and policy context that shape wages and job quality,

and support employment transitions.

An essential determinant of IWP is the adequacy of wages of the worker or of other earners in the household. In this light, the EU's 2022 Directive on Adequate Minimum Wages should represent a major step towards reducing IWP across Member States, by setting a stronger floor for pay, and also by pushing governments to define transparent criteria for defining wage adequacy, strengthen enforcement, and expand collective bargaining coverage. However, Ratti (2023) underscores that impact hinges on implementation: differences in national wage-setting systems, uneven bargaining coverage between countries, gaps in labour inspection, and large regional cost-of-living variations can blunt the impact. As minimum wages alone may not be sufficient to translate into durable exits from IWP, the Directive should be paired with complementary national policies, such as the provision of in-work benefits, provided they are well tapered to avoid very high marginal effective tax rates and are actually taken up.

Strong social dialogue and collective bargaining are key to better-quality jobs and protecting workers' rights Peña-Casas et al. (2025). It helps to coordinate wage bargaining, build inclusive labour markets, promote training, and enhance job quality in all its dimensions. Good quality jobs are indeed essential for reducing IWP. As highlighted by Peña-Casas et al. (2025), there are strong connections between policies addressing job quality and IWP, either via direct actions (such as adjusting minimum and living wages, supporting employment entry and re-entry, implementing progressive taxation, and providing work-related benefits and social assistance) or indirect strategies, including flexible working arrangements, work-life balance initiatives, and accessible, affordable childcare and dependent care services. As historical poverty condition appears as the key factor influencing IWP, in comparison to past unemployment, this shows the importance of strategies taking into account the particular disadvantages of certain categories of vulnerable people trapped in poverty. Policies should prioritise groups disproportionately affected by persistent poverty, such as single parents, migrants, persons with disabilities, ethnic minorities, and both young and older workers. These individuals often face multiple, intersecting barriers that prevent them from escaping poverty through employment. Tailored, integrated support can help them overcome structural disadvantages. At the same time, anti-discrimination laws is also necessary to guarantee equal opportunities regardless of gender, age, or background. Finally, long-term inclusion depends on providing real prospects for professional advancement through affordable and accessible training, up- and re-skilling initiatives, and the recognition of informal or foreign qualifications.

Data Statement: data used for the analysis are available upon request from Eurostat, subject to their access policy for microdata.

During the preparation of this manuscript the authors used ChatGPT and M365 Copilot in order to improve readability and language. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

References

Ayllón, S., & Fusco, A. (2017). Are income poverty and perceptions of financial difficulties dynamically interrelated? *Journal of Economic Psychology*, *61*, 103–114. https://doi.org/10.1016/j.joep.2017.03.008

Bane, M. J., & Ellwood, D. T. (1986). Slipping into and out of Poverty: The Dynamics of Spells. *The Journal of Human Resources*, *21*(1), 1. https://doi.org/10.2307/145955

Barbieri, P., & Cutuli, G. (2016). Employment Protection Legislation, Labour Market Dualism, and Inequality in Europe. *European Sociological Review*, *32*(4), 501–516. https://doi.org/10.1093/esr/jcv058

Barbieri, P., Cutuli, G., & Scherer, S. (2018, January). In-work poverty in Southern Europe: The case of Italy. In H. Lohmann & I. Marx (Eds.), *Handbook on In-Work Poverty*. Edward Elgar Publishing. https://doi.org/10.4337/9781784715632.00026

Barbieri, P., Cutuli, G., & Scherer, S. (2024). In-work poverty in Western Europe. A longitudinal perspective. *European Societies*, *26*(4), 1232–1264. https://doi.org/10.1080/14616696.2024.2307013

Biewen, M. (2009). Measuring state dependence in individual poverty histories when there is feedback to employment status and household composition. *Journal of Applied Econometrics*, *24*(7), 1095–1116. https://doi.org/10.1002/jae.1081

Cappellari, L., & Jenkins, S. P. (2004). Modelling low income transitions. *Journal of Applied Econometrics*, *19*(5), 593–610. https://doi.org/10.1002/jae.778

Directive (EU) 2022/2041 of the European Parliament and of the Council of 19 October 2022 on adequate minimum wages in the European Union (Directive). (2022, October). European Parliament & Council of the European Union.

Dube, A. (2019). Minimum Wages and the Distribution of Family Incomes. *American Economic Journal: Applied Economics*, *11*(4), 268–304. https://doi.org/10.1257/app.20170085

European Foundation for the Improvement of Living and Working Conditions. (2017). *In-work poverty in the EU.* Publications Office. Retrieved May 6, 2025, from https://data.europa.eu/doi/10.2806/125135

Fields, G. S., & Kanbur, R. (2007). Minimum wages and poverty with income-sharing. *The Journal of Economic Inequality*, *5*(2), 135–147. https://doi.org/10.1007/s10888-006-9037-5

Fusco, A., & Van Kerm, P. (2023, March). Measuring poverty persistence. In J. Silber (Ed.), *Research handbook on measuring poverty and deprivation*. Edward Elgar Publishing.

Gebel, M., & Gundert, S. (2023). Changes in Income Poverty Risks at the Transition from Unemployment to Employment: Comparing the Short-Term and Medium-

Term Effects of Fixed-Term and Permanent Jobs. *Social Indicators Research*, *167*(1-3), 507–533. https://doi.org/10.1007/s11205-023-03118-5

Gerlitz, J.-Y. (2018). Rising In-work Poverty in Times of Activation: Changes in the Distributive Performance of Institutions over Three Decades, Germany 1984–2013. *Social Indicators Research*, *140*(3), 1109–1129. https://doi.org/10.1007/s11205-017-1816-9

Guio, A.-C. (2009). *What can be learned from deprivation indicators in Europe*. European Commission. Publications Office. https://doi.org/10.2785/2029

Guio, A.-C., Marguerit, D., & Salagean, I. (2021). In-work poverty and deprivation dynamics in Europe. In *Improving the understanding of poverty and social exclusion in Europe* (2021 edition, pp. 251–274). Publications Office of the European Union.

Guio, A.-C., Marlier, E., Vandenbroucke, F., & Verbunt, P. (2022). Differences in Child Deprivation Across Europe: The Role of In-Cash and In-Kind Transfers. *Child Indicators Research*, *15*(6), 2363–2388. https://doi.org/10.1007/s12187-022-09948-y

Gutiérrez, R., Ibáñez, M., & Tejero, A. (2011). Mobility and Persistence of In-Work Poverty. In N. Fraser, R. Gutiérrez, & R. Peña-Casas (Eds.), *Working Poverty in Europe* (pp. 175–201). Palgrave Macmillan UK. https://doi.org/10.1057/9780230307599_9

Halleröd, B., Ekbrand, H., & Bengtsson, M. (2015). In-work poverty and labour market trajectories: Poverty risks among the working population in 22 European countries. *Journal of European Social Policy*, *25*(5), 473–488. https://doi.org/10.1177/0958928715608794

Hartzén, A.-C. (2022). *In-work poverty in Europe: Vulnerable and under-represented persons in a comparative perspective* (R. Blanpain, F. Hendrickx, & L. Ratti, Eds.). Wolters Kluwer.

Hick, R., & Lanau, A. (2018). Moving In and Out of In-work Poverty in the UK: An Analysis of Transitions, Trajectories and Trigger Events. *Journal of Social Policy*, *47*(4), 661–682. https://doi.org/10.1017/S0047279418000028

Hick, R., & Marx, I. (2023, October). Poor workers in advanced democracies: On the nature of in-work poverty and its relationship to labour market policies. In D. Clegg & N. Durazzi (Eds.), *Handbook of Labour Market Policy in Advanced Democracies* (pp. 495–507). Edward Elgar Publishing. https://doi.org/10.4337/9781800880887.00046

Horemans, J. (2018, January). Atypical employment and in-work poverty. In H. Lohmann & I. Marx (Eds.), *Handbook on In-Work Poverty*. Edward Elgar Publishing. https://doi.org/10.4337/9781784715632.00015

Jara Tamayo, H. X., & Tumino, A. (2021). Atypical Work and Unemployment Protection in Europe*. *JCMS: Journal of Common Market Studies*, *59*(3), 535–555. https://doi.org/10.1111/jcms.13099

Jenkins, S. (2011). *Changing Fortunes: Income Mobility and Poverty Dynamics in Britain*. Oxford University Press, Incorporated.

Lohmann, H. (2009). Welfare States, Labour Market Institutions and the Working Poor: A Comparative Analysis of 20 European Countries. *European Sociological Review*, *25*(4), 489–504. https://doi.org/10.1093/esr/jcn064

Lucifora, C. (2005). Low-wage employment in Europe: A review of the evidence. *Socio-Economic Review*, *3*(2), 259–292. https://doi.org/10.1093/SER/mwi011

Maître, B., Nolan, B., & Whelan, C. T. (2018, January). Low pay, in-work poverty and economic vulnerability. In H. Lohmann & I. Marx (Eds.), *Handbook on In-Work Poverty*. Edward Elgar Publishing. https://doi.org/10.4337/9781784715632.00014

Marx, I., & Nolan, B. (2014, January). In-Work Poverty. In B. Cantillon & F. Vandenbroucke (Eds.), *Reconciling Work and Poverty Reduction* (1st ed., pp. 131–156). Oxford University PressNew York. https://doi.org/10.1093/acprof:oso/9780199926589.003.0004

Peña-Casas, R., Ghailani, D., & Sabato, S. (2025). *Building Resilient and Inclusive Labour markets in Europe: Unpacking Policy Synergies and Challenges* (Deliverable No. 7.1). WeLar Project.

Peña-Casas, R., Spasova, S., & Vanhercke, B. (2019). *In-work poverty in Europe: A study of national policies.* (tech. rep.). European Social Policy Network (ESPN), European Commission. Brussels. Retrieved May 6, 2025, from https://data.europa.eu/doi/10.2767/31835

Polin, V., & Raitano, M. (2014). Poverty Transitions and Trigger Events across EU Groups of Countries: Evidence from EU-SILC. *Journal of Social Policy*, *43*(4), 745–772. https://doi.org/10.1017/S0047279414000270

Ponthieux, S. (2010). *In-work poverty in the EU* (tech. rep.). Eurostat Publications Office. LU. Retrieved May 6, 2025, from https://data.europa.eu/doi/10.2785/54568

Ratti, L. (2023). The Sword and the Shield: The Directive on Adequate Minimum Wages in the EU. *Industrial Law Journal*, *52*(2), 477–500. https://doi.org/10.1093/indlaw/dwad001

Salverda, W. (2018, January). Low earnings and their drivers in relation to in-work poverty. In H. Lohmann & I. Marx (Eds.), *Handbook on In-Work Poverty*. Edward Elgar Publishing. https://doi.org/10.4337/9781784715632.00008

Salverda, W., & Checchi, D. (2015). Labor Market Institutions and the Dispersion of Wage Earnings. In *Handbook of Income Distribution* (pp. 1535–1727, Vol. 2). Elsevier. https://doi.org/10.1016/B978-0-444-59429-7.00019-4

Seikel, D., & Spannagel, D. (2018, January). Activation and in-work poverty. In H. Lohmann & I. Marx (Eds.), *Handbook on In-Work Poverty*. Edward Elgar Publishing. https://doi.org/10.4337/9781784715632.00021

StataCorp. (2023). *Stata Statistical Software: Release 18*.

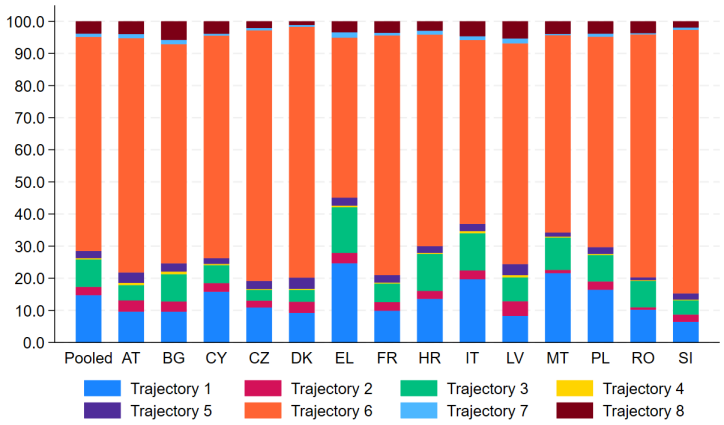
Valletta, R. G. (2006). The Ins and Outs of Poverty in Advanced Economies: Government Policy and Poverty Dynamics in Canada, Germany, Great Britain, and the United States. *Review of Income and Wealth*, *52*(2), 261–284. https://doi.org/10.1111/j.1475-4991.2006.00187.x

Vandecasteele, L. (2010). Poverty trajectories after risky life course events in different European welfare regimes. *European Societies*, *12*(2), 257–278. https://doi.org/10.1080/14616690903056005

Wooldridge, J. M. (2000). A framework for estimating dynamic, unobserved effects panel data models with possible feedback to future explanatory variables. *Economics Letters*, *68*(3), 245–250. https://doi.org/https://doi.org/10.1016/S0165-1765(00)00230-5

A Appendix

Figure A1: Employment and poverty trajectories



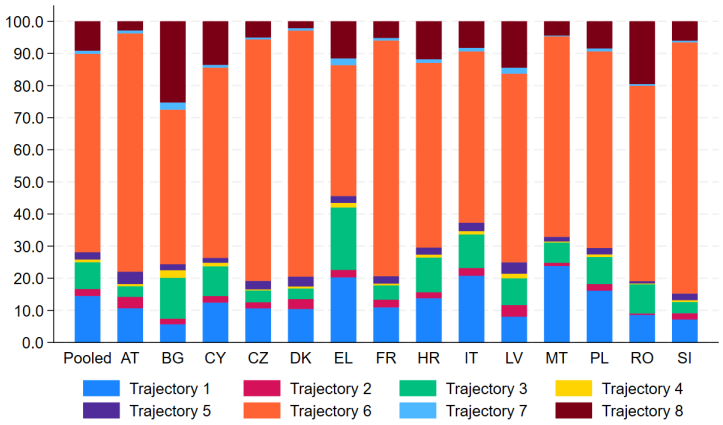
Note: Pooled years 2007–2023

Table A1: Transition matrices for at-risk of poverty

	Poverty condition				Employment condition			
	$P_{t-1}=0\,;$ $P_t=0$	$P_{t-1}=0\,;$ $P_t=1$	$P_{t-1}=1\,;$ $P_t=0$	$P_{t-1}=1\,;$ $P_t=1$	$W_{t-1}=0\,;$ $W_t=0$	$W_{t-1}=0\,;$ $W_t=1$	$W_{t-1}=1\,;$ $W_t=0$	$W_{t-1}=1\,;$ $W_t=1$
ctry								
AT	85.6	3.7	4.0	6.7	14.4	4.6	4.1	76.9
BG	79.0	4.6	4.7	11.6	18.1	3.9	4.0	74.0
CY	86.8	2.8	3.3	7.1	21.4	2.4	3.1	73.2
CZ	91.7	1.9	2.2	4.2	14.3	3.3	2.4	80.1
DK	92.1	2.2	2.8	2.9	12.9	4.0	3.8	79.2
EL	74.1	6.1	5.8	14.1	38.9	4.2	3.7	53.2
FR	85.7	3.8	3.6	6.9	15.7	3.1	3.0	78.3
HR	80.5	3.6	3.9	12.0	25.1	3.3	2.8	68.8
IT	77.6	4.3	4.9	13.2	31.2	3.5	3.4	61.8
LV	80.1	4.9	4.7	10.2	15.7	5.0	5.3	74.1
MT	82.1	3.2	3.5	11.2	31.7	1.7	1.3	65.3
PL	82.4	4.2	4.5	8.9	24.7	3.0	2.9	69.4
RO	84.7	2.8	2.5	10.0	18.6	1.3	0.8	79.3
SI	90.9	1.8	2.3	5.0	10.9	2.6	2.5	84.0
Total	82.4	3.9	4.1	9.7	23.2	3.2	3.0	70.5

Note: Pooled years 2007–2023

Figure A2: Employment and material deprivation trajectories



Note: Pooled years 2011–2023

Table A2: Socio-economic characteristics of trajectories - At-risk of poverty

Trajectory		Pooled	AT	BG	CY	CZ	DK	EL	FR	HR	IT	LV	MT	PL	RO	SI
All	Female	54.0	51.3	51.5	54.4	52.4	51.7	56.2	53.7	52.9	56.2	55.3	56.0	53.8	51.4	49.8
	Age	44.8	44.1	45.1	45.0	44.5	45.4	43.6	45.4	44.6	45.3	45.0	44.0	44.7	43.5	43.9
	Hh. with children	44.0	44.2	44.3	46.4	42.4	38.3	42.2	49.7	44.4	42.5	43.9	47.6	47.5	36.9	48.0
	One adult hh.	13.3	18.3	6.6	10.2	11.5	36.6	7.7	20.6	6.2	13.5	14.9	10.9	8.4	7.2	8.8
	Eq. disp. income	16.1	28.5	4.9	21.4	10.7	35.7	10.3	26.3	8.3	19.2	9.0	18.0	7.4	4.3	17.6
1	Female	76.9	80.3	63.7	77.9	74.6	63.2	76.4	67.9	73.0	83.7	65.1	89.8	67.4	88.0	60.9
	Age	46.8	43.9	44.8	49.2	42.8	46.8	45.5	48.9	45.7	47.1	44.3	50.9	48.5	44.6	45.0
	Hh. with children	37.1	52.0	46.8	32.4	51.8	30.9	30.7	32.5	39.0	34.9	49.3	35.5	39.5	38.6	29.3
	One adult hh.	6.5	10.2	4.2	5.5	7.2	50.7	3.8	16.9	1.8	4.0	5.6	6.8	4.6	0.8	1.6
	Eq. disp. income	13.3	22.1	3.9	18.7	8.8	25.3	9.0	22.0	6.6	17.3	7.1	14.7	5.8	3.1	12.8
2	Female	59.7	69.4	50.4	53.6	71.2	52.9	51.1	60.5	52.8	60.3	60.6	59.6	57.0	63.7	52.7
	Age	43.1	41.3	44.0	45.1	42.6	43.4	41.0	43.0	41.9	43.5	42.9	43.0	43.6	44.2	45.2
	Hh. with children	44.5	52.6	40.8	44.1	53.8	39.2	38.5	49.3	45.4	39.6	51.7	43.3	47.7	35.8	39.2
	One adult hh.	14.4	17.4	4.6	6.5	10.4	48.6	8.4	17.9	8.2	15.2	11.8	16.5	7.6	7.2	9.4
	Eq. disp. income	15.5	24.3	4.1	21.8	8.6	27.9	8.0	25.6	6.2	18.0	8.6	13.4	5.6	3.0	13.1
3	Female	69.0	63.4	53.5	71.3	61.3	45.4	68.8	65.9	55.2	76.1	51.8	82.8	58.2	78.9	54.9
	Age	45.6	43.8	45.1	48.6	45.8	39.0	44.5	46.5	47.3	45.5	47.3	47.5	47.9	43.5	47.1
	Hh. with children	45.1	45.3	53.7	39.1	46.4	26.9	43.5	49.0	35.9	46.8	31.8	46.7	38.8	50.6	32.9
	One adult hh.	18.3	36.8	10.0	15.1	30.6	64.4	8.2	40.7	12.5	13.0	26.5	24.5	20.2	8.1	26.9
	Eq. disp. income	6.0	12.3	1.6	8.7	4.3	16.9	4.0	11.4	2.7	7.1	2.4	7.4	2.9	1.3	6.1
4	Female	51.4	40.3	47.8	51.8	48.8	72.9	50.6	52.8	52.1	53.0	63.0	69.1	50.7	16.2	43.0
	Age	44.0	42.8	44.9	46.7	42.9	42.2	43.6	44.1	41.7	43.9	45.9	36.2	45.4	44.2	44.9
	Hh. with children	52.8	51.3	61.5	55.9	59.9	1.7	54.8	64.1	74.1	50.2	43.3	71.6	54.2	87.7	35.9
	One adult hh.	23.4	38.7	5.9	16.6	38.5	66.6	9.6	36.9	10.6	20.2	24.6	34.6	14.7	16.2	26.9
	Eq. disp. income	6.8	12.7	1.5	8.1	3.9	24.1	3.5	14.3	2.6	5.7	2.5	7.6	2.5	1.2	5.0
5	Female	65.2	72.4	57.5	52.2	85.2	62.0	60.1	59.1	58.0	63.1	65.5	81.8	67.2	64.6	62.3
	Age	40.3	39.5	42.3	41.7	38.7	42.2	39.0	40.9	39.9	40.1	40.8	38.1	41.0	40.5	39.0
	Hh. with children	48.3	61.8	43.1	41.1	69.9	36.8	38.4	49.9	42.9	39.5	57.9	68.1	55.4	41.2	41.4
	One adult hh.	9.6	9.8	5.0	5.0	4.9	37.1	5.1	19.7	2.8	7.0	6.6	2.5	3.9	3.4	5.1
	Eq. disp. income	17.6	26.3	5.2	19.9	10.5	33.5	12.1	24.3	9.1	21.3	9.8	17.2	7.2	4.6	16.2
6	Female	47.2	45.3	49.9	48.1	47.0	49.9	44.7	50.6	49.0	44.0	53.1	40.7	50.2	44.3	48.6
	Age	44.5	44.6	45.5	44.0	44.9	45.9	43.0	45.1	44.3	45.1	45.1	41.3	43.6	43.3	43.8
	Hh. with children	44.1	40.7	41.3	50.1	39.2	39.8	46.2	50.8	46.0	43.0	43.0	49.6	49.4	34.2	50.4
	One adult hh.	13.8	17.6	6.4	10.6	10.8	32.7	9.4	19.2	6.0	16.2	14.3	9.6	7.9	8.1	8.1
	Eq. disp. income	18.6	31.8	5.8	23.9	11.5	38.7	13.4	28.8	9.9	23.4	10.5	21.7	8.7	4.9	19.0
7	Female	53.0	60.2	48.0	56.0	62.4	68.1	47.8	57.3	47.7	48.6	56.2	73.9	55.4	55.5	53.1
	Age	41.8	40.3	43.1	43.7	41.0	33.5	41.5	41.5	40.9	42.4	42.7	39.4	42.7	39.8	42.1
	Hh. with children	54.1	56.5	62.2	53.9	58.0	33.8	49.7	70.6	44.6	50.0	54.8	59.3	55.3	46.2	43.5
	One adult hh.	23.0	30.4	11.7	29.4	25.1	29.3	12.8	41.0	11.9	25.3	24.4	16.7	12.4	10.3	23.5
	Eq. disp. income	9.3	14.7	2.2	10.7	6.1	22.4	7.6	14.5	5.3	10.8	4.4	10.5	4.1	3.1	9.6
8	Female	40.0	43.5	46.1	46.3	60.2	53.7	31.2	50.2	38.0	36.3	62.1	26.5	38.3	27.9	37.4
	Age	44.2	43.3	43.9	43.3	44.9	44.9	42.8	44.8	44.3	44.5	46.6	42.1	43.6	43.9	42.8
	Hh. with children	59.8	59.4	57.3	50.5	53.6	40.4	62.9	70.5	63.5	57.8	46.4	76.8	61.9	53.5	61.2
	One adult hh.	17.3	29.0	9.9	16.4	32.2	60.4	7.3	24.4	5.5	19.5	24.4	19.2	9.2	3.6	15.2
	Eq. disp. income	8.2	15.7	2.4	8.9	5.7	19.9	5.5	14.0	4.3	9.7	4.3	9.2	3.8	2.0	9.0

Note: Equivalent disposable income is expressed in thousands of euros. Pooled years 2007 – 2023

Table A3: Trajectory trends (frequencies) - At-risk of poverty

	Pooled				AT				BG				CY				CZ				DK				EL			
	2007	2023	Diff.	Avrg.	2007	2023	Diff.	Avrg.	2009	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2007	2023	Diff.	Avrg.	2009	2023	Diff.	Avrg.
Tr. 1	12.1	11.7	-0.5	14.7	13.0	10.0	-3.1	9.6	9.6	7.6	-2.0	9.6	15.4	11.9	-3.5	15.8	7.3	9.5	2.2	10.9	12.1	2.5	-9.5	9.2	21.2	22.5	1.3	24.7
Tr. 2	3.8	2.1	-1.7	2.6	3.4	4.0	0.6	3.5	1.4	2.8	1.4	3.2	1.9	2.1	0.2	2.7	1.9	1.7	-0.2	2.2	7.7	2.7	-5.0	3.5	2.5	2.1	-0.4	3.2
Tr. 3	3.4	8.0	4.6	8.5	2.9	3.6	0.6	4.8	7.6	8.0	0.4	8.5	4.8	5.3	0.5	5.6	4.1	3.9	-0.3	3.4	5.0	2.8	-2.2	3.7	10.9	11.9	1.1	14.2
Tr. 4	0.4	0.4	0.0	0.4	0.7	0.1	-0.6	0.7	1.0	0.6	-0.4	0.8	0.5	0.0	-0.5	0.4	0.0	0.3	0.2	0.2	0.4	0.0	-0.4	0.3	0.4	0.3	-0.1	0.5
Tr. 5	2.9	2.3	-0.6	2.2	2.1	3.1	1.0	3.3	2.8	3.6	0.7	2.6	1.0	2.6	1.6	1.8	3.1	2.3	-0.8	2.6	6.4	4.4	-2.0	3.5	2.4	2.8	0.3	2.5
Tr. 6	74.2	70.3	-4.0	66.7	72.8	74.0	1.2	72.9	70.8	68.1	-2.7	68.2	71.3	72.9	1.6	69.3	80.3	79.6	-0.7	78.0	67.9	85.3	17.4	78.1	55.7	56.1	0.4	49.8
Tr. 7	0.4	1.2	0.8	1.0	0.6	1.3	0.7	1.3	2.0	1.8	-0.2	1.3	0.6	0.3	-0.3	0.6	0.9	0.7	-0.2	0.7	0.0	1.7	1.7	0.6	2.0	1.9	-0.2	1.7
Tr. 8	2.7	4.1	1.4	3.8	4.5	4.0	-0.5	4.0	4.8	7.5	2.7	5.8	4.5	4.9	0.4	3.9	2.5	2.2	-0.3	2.1	0.4	0.5	0.1	1.1	4.8	2.5	-2.4	3.4

Note: Differences in frequencies over time are expressed in percentage points

Table A4: Trajectory trends (frequencies) - At-risk of poverty

	FR				HR				IT				LV				MT				PL				RO				SI			
	2007	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2009	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2010	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.
Tr. 1	11.5	8.1	-3.4	9.9	16.7	9.5	-7.2	13.6	20.2	16.8	-3.4	19.7	5.9	7.9	2.0	8.3	34.6	13.9	-20.8	21.6	13.4	11.5	-1.9	16.4	9.3	7.7	-1.5	10.2	8.7	5.6	-3.1	6.4
Tr. 2	2.8	2.4	-0.4	2.7	2.6	2.0	-0.6	2.5	2.3	2.0	-0.2	2.8	2.3	3.8	1.5	4.6	0.4	0.9	0.5	1.0	1.5	1.8	0.3	2.6	1.3	0.8	-0.5	0.8	1.1	1.1	0.0	2.3
Tr. 3	3.2	6.0	2.8	5.8	13.8	7.9	-5.9	11.5	11.6	12.3	0.7	11.6	3.5	4.4	0.9	7.4	9.1	9.9	0.8	10.1	8.5	6.3	-2.2	8.2	8.2	7.2	-1.0	8.4	5.1	3.4	-1.7	4.5
Tr. 4	0.1	0.4	0.3	0.3	0.4	0.2	-0.2	0.3	0.5	0.6	0.1	0.7	1.2	0.4	-0.8	0.7	0.0	0.0	0.0	0.2	0.3	0.1	-0.2	0.3	0.0	0.0	0.0	0.0	0.6	0.0	-0.6	0.2
Tr. 5	2.4	2.4	0.0	2.3	2.2	1.9	-0.3	2.1	1.9	2.4	0.4	2.3	1.2	2.6	1.5	3.5	0.2	0.8	0.6	1.3	3.2	1.7	-1.6	2.1	1.1	1.2	0.2	0.9	2.1	1.5	-0.6	1.9
Tr. 6	77.5	76.2	-1.3	74.6	60.7	74.5	13.8	65.9	58.0	58.6	0.6	57.2	75.1	74.5	-0.6	68.7	52.6	69.9	17.2	61.4	66.5	74.3	7.8	65.5	75.3	79.1	3.8	75.7	78.8	85.4	6.6	82.0
Tr. 7	0.4	0.9	0.5	0.8	0.7	0.7	0.0	1.2	1.6	1.8	0.2	1.2	1.7	1.2	-0.5	1.5	0.0	0.2	0.2	0.4	2.3	0.7	-1.6	0.9	0.2	0.5	0.3	0.4	1.2	0.7	-0.5	0.7
Tr. 8	2.1	3.7	1.5	3.6	3.0	3.3	0.4	2.9	4.0	5.6	1.6	4.6	9.1	5.1	-4.0	5.3	3.1	4.5	1.5	3.9	4.3	3.6	-0.7	3.8	4.7	3.5	-1.2	3.7	2.4	2.3	-0.2	1.9

Note: Differences in frequencies over time are expressed in percentage points

Table A5: In-work poverty trends - poverty rate and composition

	Pooled				AT				BG				CY				CZ				DK				EL			
	2007	2023	Diff.	Avrg.	2007	2023	Diff.	Avrg.	2009	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2007	2023	Diff.	Avrg.	2009	2023	Diff.	Avrg.
IWP rate																												
	3.8	5.6	1.8	5.7	5.5	6.3	0.8	5.5	6.9	12.2	5.3	8.1	4.3	6.5	2.2	5.0	2.2	2.1	-0.2	2.6	1.3	3.4	2.1	1.9	9.4	5.4	-4.0	7.1
IWP composition																												
Tr 5	0.1	0.1	0.0	0.1	0.3	0.2	-0.1	0.3	0.1	0.5	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.4	0.0	-0.4	0.2
Tr 6	2.4	2.0	-0.4	2.0	3.0	2.2	-0.8	2.1	2.2	3.9	1.7	2.6	1.2	2.1	0.9	1.4	1.0	1.4	0.5	1.0	0.9	3.0	2.1	1.0	3.3	2.4	-0.9	2.5
Tr 7	0.1	0.5	0.4	0.6	0.1	1.3	1.2	0.8	1.4	1.6	0.2	1.0	0.1	0.0	-0.1	0.3	0.1	0.0	-0.1	0.3	0.0	0.1	0.1	0.1	0.7	0.2	-0.5	0.7
Tr 8	1.1	2.9	1.8	3.0	2.1	2.6	0.5	2.4	3.2	6.1	3.0	4.3	2.8	4.2	1.4	3.3	1.2	0.6	-0.6	1.3	0.4	0.3	-0.1	0.6	5.0	2.8	-2.2	3.7

Note: Consistently with IWP definition, figures refers to the subsample of working individuals. Differences in frequencies over time are expressed in percentage points.

Table A6: In-work poverty trends - poverty rate and composition

	FR				HR				IT				LV				MT				PL				RO				SI			
	2007	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2009	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.	2010	2023	Diff.	Avrg.	2008	2023	Diff.	Avrg.
IWP rate																																
	3.2	4.7	1.5	5.4	4.5	5.2	0.7	4.6	6.5	7.9	1.4	7.7	13.3	7.1	-6.1	7.3	5.1	4.8	-0.3	5.5	6.7	4.2	-2.5	5.6	7.0	3.8	-3.2	5.0	3.8	2.3	-1.5	2.2
IWP composition																																
Tr 5	0.0	0.2	0.2	0.2	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.1	0.2	0.1	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Tr 6	2.5	2.1	-0.4	2.5	1.5	2.6	1.1	1.7	2.1	1.8	-0.3	2.2	6.2	4.0	-2.2	2.9	1.6	0.6	-1.0	1.4	2.7	1.6	-1.1	2.1	2.7	1.9	-0.9	1.9	1.7	0.9	-0.8	0.8
Tr 7	0.1	0.2	0.1	0.4	0.1	0.1	0.0	0.6	1.0	1.0	0.0	1.0	1.0	0.0	-1.0	0.8	0.7	0.2	-0.6	0.2	0.9	0.2	-0.7	0.4	0.1	0.1	0.0	0.1	0.4	0.4	0.0	0.2
Tr 8	0.6	2.3	1.7	2.3	2.9	2.3	-0.6	2.3	3.2	5.0	1.7	4.4	6.1	2.9	-3.1	3.4	3.5	4.0	0.6	3.7	2.9	2.3	-0.6	2.9	4.2	1.8	-2.3	3.0	1.7	0.8	-0.9	1.1

Note: Consistently with IWP definition, figures refers to the subsample of working individuals. Differences in frequencies over time are expressed in percentage points.

Table A7: Transition matrices. Employment status and material deprivation condition.

	Material deprivation condition				Employment condition			
	$P_{t-1}=0\,;$ $P_t=0$	$P_{t-1}=0\,;$ $P_t=1$	$P_{t-1}=1\,;$ $P_t=0$	$P_{t-1}=1\,;$ $P_t=1$	$W_{t-1}=0\,;$ $W_t=0$	$W_{t-1}=0\,;$ $W_t=1$	$W_{t-1}=1\,;$ $W_t=0$	$W_{t-1}=1\,;$ $W_t=1$
ctry								
AT	89.7	2.6	3.4	4.3	14.0	4.8	4.2	77.0
BG	52.2	5.2	6.0	36.5	18.4	4.1	4.1	73.4
CY	66.2	9.0	9.3	15.5	21.7	2.4	3.1	72.7
CZ	87.7	2.7	3.0	6.6	14.3	3.3	2.2	80.2
DK	91.0	2.2	2.3	4.5	13.7	3.9	3.7	78.7
EL	57.7	7.8	7.4	27.0	39.7	4.2	3.8	52.3
FR	85.6	3.4	4.4	6.5	15.4	3.1	2.9	78.6
HR	67.9	7.5	7.7	16.9	24.6	3.3	2.8	69.3
IT	71.8	7.3	9.3	11.5	31.2	3.7	3.4	61.6
LV	67.1	6.8	9.9	16.2	16.4	5.4	5.1	73.2
MT	84.9	3.9	4.4	6.9	30.1	1.7	1.3	66.9
PL	77.6	3.9	5.3	13.3	24.5	2.8	2.9	69.7
RO	65.0	5.6	6.1	23.3	17.7	1.3	0.7	80.4
SI	85.2	4.2	4.7	5.9	10.7	2.6	2.5	84.2
Total	75.6	5.1	6.2	13.1	22.9	3.2	3.0	70.9

Note: Pooled years 2011–2023

Table A8: Socio-economic characteristics of trajectories - Material deprivation

Trajectory		Pooled	AT	BG	CY	CZ	DK	EL	FR	HR	IT	LV	MT	PL	RO	SI
All	Female	53.9	51.1	51.3	54.2	52.6	51.4	56.0	53.7	53.0	56.2	55.4	55.6	54.2	51.5	50.0
	Age	45.1	44.4	45.6	45.1	44.9	45.9	43.8	45.5	44.6	45.8	45.4	43.9	44.9	43.6	44.1
	Hh. with children	43.6	43.2	42.7	45.9	42.5	37.2	42.1	50.0	44.4	41.5	42.9	46.8	46.9	36.5	48.3
	One adult hh.	13.4	18.4	7.2	10.5	12.2	36.4	7.8	20.5	5.9	14.0	14.9	11.2	8.5	7.2	9.3
	Missing items	1.2	0.5	2.2	1.4	0.7	0.6	1.9	0.7	1.5	1.2	1.5	0.8	1.2	1.7	0.8
1	Female	76.3	76.0	63.3	80.0	74.3	54.1	77.4	69.2	72.2	82.6	64.0	90.0	68.4	90.1	61.1
	Age	46.7	43.3	45.6	50.2	43.6	43.9	45.4	48.3	46.0	47.0	44.9	50.6	48.4	44.8	44.9
	Hh. with children	39.5	51.8	53.7	27.5	52.0	29.2	32.0	38.7	40.7	37.1	47.4	36.2	41.9	41.9	32.8
	One adult hh.	7.9	13.6	4.4	6.0	8.5	48.4	3.3	17.6	2.3	5.6	7.4	8.7	4.8	2.3	7.2
	Missing items	1.1	0.7	1.2	1.3	0.8	0.7	1.4	1.0	1.4	1.2	1.4	0.8	1.2	1.4	1.1
2	Female	60.0	67.7	56.9	54.1	72.5	53.7	56.3	57.4	57.5	59.4	62.6	67.2	58.7	63.3	54.5
	Age	43.3	41.4	44.3	45.6	41.9	42.8	41.0	43.1	42.1	44.3	42.5	42.2	43.8	46.2	45.7
	Hh. with children	45.3	52.9	48.1	39.3	59.8	37.2	40.3	48.2	46.0	39.1	54.8	45.1	48.9	30.2	40.3
	One adult hh.	13.4	18.3	4.5	5.4	10.9	34.9	8.6	15.5	6.1	15.6	11.1	18.8	5.1	7.6	8.6
	Missing items	1.1	0.5	1.4	1.5	0.7	0.9	1.8	0.7	1.5	1.3	1.2	1.1	1.1	1.7	0.9
3	Female	66.9	59.1	54.0	65.7	59.1	61.4	66.9	61.0	56.8	74.2	53.5	75.0	56.7	78.6	54.3
	Age	46.4	45.8	45.6	47.5	47.0	45.2	44.8	47.6	47.0	46.2	46.7	47.6	49.2	43.8	47.3
	Hh. with children	39.2	39.7	45.7	41.7	38.3	26.3	38.3	40.1	33.7	41.3	32.7	41.2	32.5	45.4	28.3
	One adult hh.	16.1	40.1	9.4	11.1	26.8	72.7	7.8	45.4	9.8	10.7	21.0	25.9	18.8	5.4	23.6
	Missing items	3.4	3.2	4.3	3.0	3.3	3.3	3.7	3.2	3.5	2.9	3.5	3.0	3.5	3.8	3.0
4	Female	52.3	53.2	46.8	46.9	52.5	70.3	45.4	60.0	45.7	55.5	58.8	47.5	44.7	58.5	46.9
	Age	44.5	42.9	44.5	44.1	45.7	44.7	41.9	44.8	42.2	44.7	45.0	39.7	45.9	44.5	44.1
	Hh. with children	43.3	50.7	38.6	57.8	32.7	22.8	42.5	57.3	51.0	39.6	42.3	55.5	44.7	41.8	31.2
	One adult hh.	22.5	37.9	7.0	11.1	26.1	90.3	9.7	32.5	12.8	25.5	21.2	26.7	16.4	6.2	18.1
	Missing items	3.3	2.9	4.0	3.0	3.2	3.0	3.7	3.2	3.2	3.3	3.4	3.2	3.3	3.6	2.9
5	Female	64.4	73.2	56.5	50.6	79.5	60.6	59.9	56.1	59.9	62.6	63.9	88.5	67.6	70.7	60.4
	Age	40.4	39.8	42.1	41.1	38.8	40.9	39.4	41.3	39.7	40.8	40.9	38.6	40.0	40.3	39.4
	Hh. with children	50.6	62.1	49.1	46.6	72.2	36.0	42.4	52.2	44.9	39.8	60.8	67.3	60.1	48.2	42.4
	One adult hh.	11.7	13.3	5.9	10.1	7.0	29.2	4.9	18.6	3.5	13.0	9.4	4.6	4.4	4.7	7.7
	Missing items	0.9	0.4	1.0	1.2	0.7	0.5	1.3	0.8	1.4	0.9	1.1	0.6	1.0	1.2	0.6
6	Female	47.7	45.2	49.5	47.6	47.7	50.1	44.8	50.4	48.9	45.3	52.4	41.0	50.3	44.5	48.6
	Age	44.8	44.9	45.9	44.1	45.3	46.6	43.2	45.3	44.2	45.8	45.5	41.3	43.7	43.4	44.0
	Hh. with children	44.9	40.2	41.7	48.8	40.0	39.4	46.7	52.0	47.2	43.2	42.4	51.0	49.8	34.1	51.6
	One adult hh.	13.9	17.7	5.9	11.4	11.6	32.0	9.4	18.5	5.8	16.8	14.8	10.2	7.9	7.4	8.3
	Missing items	0.6	0.3	0.9	0.8	0.4	0.3	0.9	0.4	0.9	0.6	0.8	0.5	0.6	0.9	0.5
7	Female	53.8	50.2	49.9	55.0	74.3	70.4	49.8	61.9	42.6	45.9	55.6	58.1	61.0	55.1	53.2
	Age	42.8	40.6	44.0	43.5	42.5	44.1	41.3	41.8	41.2	43.5	43.6	37.4	44.9	40.1	42.4
	Hh. with children	46.9	51.8	49.0	42.6	42.7	31.0	45.4	58.0	40.6	43.6	49.0	61.1	49.7	39.4	41.8
	One adult hh.	19.7	21.8	9.7	14.9	16.5	56.7	11.5	42.5	10.4	19.8	15.7	15.2	12.8	6.8	22.6
	Missing items	2.8	2.4	3.7	2.7	3.1	3.0	2.9	2.3	3.0	2.5	3.1	3.1	3.1	3.8	2.5
8	Female	44.9	52.1	50.4	52.1	50.8	41.2	41.2	57.9	46.7	35.9	59.8	35.3	48.5	42.4	47.0
	Age	44.5	43.8	45.6	43.8	44.8	47.0	43.0	45.5	44.4	45.0	46.3	41.4	44.7	43.5	43.9
	Hh. with children	43.2	51.5	39.5	53.5	41.5	24.8	50.0	52.4	44.0	43.0	40.4	44.8	46.1	36.8	42.1
	One adult hh.	15.5	30.1	9.4	11.0	19.1	66.4	10.0	32.1	6.1	19.3	17.8	16.3	10.8	9.8	15.5
	Missing items	2.8	2.4	3.6	2.6	2.7	2.4	3.1	2.5	2.7	2.4	2.8	2.3	2.9	3.2	2.5

Note: Equivalent disposable income is expressed in thousands of euros. Pooled years 2011 – 2023

Table A9: Trajectory trends (frequencies) - Material Deprivation

	Pooled				AT				BG				CY				CZ				DK				EL			
	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.
Tr. 1	11.6	14.3	2.7	14.5	10.1	12.0	1.9	10.7	2.9	7.9	5.1	5.7	13.7	10.4	-3.3	12.4	11.2	11.0	-0.2	10.6	10.2	4.6	-5.5	10.4	20.1	17.3	-2.8	20.3
Tr. 2	2.5	2.1	-0.4	2.1	3.9	4.0	0.0	3.5	1.9	2.2	0.3	1.7	2.5	1.8	-0.7	2.0	2.3	1.7	-0.6	1.9	6.0	2.7	-3.3	3.1	5.8	1.5	-4.3	2.3
Tr. 3	10.1	5.3	-4.8	8.4	4.3	1.5	-2.8	3.4	15.2	7.7	-7.5	12.7	5.5	6.6	1.1	9.3	4.9	2.4	-2.5	3.7	3.3	0.3	-2.9	3.3	9.5	17.1	7.6	19.4
Tr. 4	1.7	0.3	-1.3	0.8	1.2	0.2	-1.0	0.6	4.9	1.2	-3.7	2.4	0.4	0.3	-0.1	1.1	0.8	0.3	-0.5	0.3	0.1	0.1	-0.0	0.6	2.5	0.8	-1.7	1.4
Tr. 5	2.0	2.8	0.8	2.3	4.4	3.8	-0.6	3.9	0.7	3.1	2.4	1.8	2.0	2.5	0.5	1.5	4.1	2.8	-1.3	2.6	6.4	4.4	-2.0	3.1	2.5	2.5	-0.0	2.1
Tr. 6	55.5	68.3	12.7	61.8	70.6	75.5	5.0	74.2	36.6	62.5	25.9	48.2	63.7	68.3	4.7	59.2	67.9	79.4	11.5	75.2	72.0	81.0	9.1	76.6	50.5	45.4	-5.1	40.8
Tr. 7	1.3	0.8	-0.6	1.0	1.0	0.5	-0.5	0.9	2.7	2.3	-0.4	2.2	0.4	0.4	0.1	0.9	0.9	0.2	-0.7	0.6	0.7	1.8	1.1	0.7	1.5	2.1	0.6	2.1
Tr. 8	15.3	6.3	-9.0	9.1	4.5	2.5	-2.0	2.9	35.0	13.1	-21.9	25.3	11.9	9.6	-2.2	13.5	7.9	2.3	-5.6	5.0	1.4	5.0	3.6	2.1	7.5	13.2	5.7	11.5

Note: Differences in frequencies over time are expressed in percentage points

Table A10: Trajectory trends (frequencies) - Material Deprivation

	FR				HR				IT				LV				MT				PL				RO				SI			
	2011	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2012	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2012	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.
Tr. 1	12.5	9.2	-3.3	10.9	14.5	11.5	-2.9	13.8	19.0	22.8	3.8	20.8	7.1	6.6	-0.5	8.0	33.7	20.8	-12.9	23.8	14.2	15.3	1.1	16.1	7.3	6.8	-0.5	8.6	6.7	7.2	0.5	7.2
Tr. 2	2.6	2.3	-0.3	2.4	1.4	2.0	0.6	1.9	3.1	2.4	-0.7	2.4	4.5	3.2	-1.3	3.6	0.8	0.9	0.0	1.0	2.1	1.7	-0.4	2.1	1.2	0.5	-0.8	0.5	1.5	1.2	-0.3	2.0
Tr. 3	2.7	4.5	1.8	4.5	15.5	5.6	-9.9	10.8	11.0	6.2	-4.7	10.5	11.7	5.1	-6.6	8.4	8.6	2.9	-5.7	6.3	12.6	2.4	-10.2	8.4	9.6	6.4	-3.2	9.1	3.5	1.6	-1.9	3.5
Tr. 4	0.6	0.4	-0.1	0.6	1.4	0.2	-1.2	0.9	0.9	0.2	-0.7	1.0	2.5	1.1	-1.5	1.4	0.3	0.0	-0.2	0.3	1.4	0.2	-1.2	0.9	0.9	0.1	-0.8	0.2	0.9	0.0	-0.9	0.6
Tr. 5	3.2	2.4	-0.8	2.3	2.1	2.3	0.2	2.2	2.2	3.7	1.4	2.6	3.7	3.0	-0.7	3.5	1.1	1.0	-0.1	1.5	1.7	1.9	0.3	1.9	0.9	1.2	0.3	0.7	1.9	1.7	-0.3	2.1
Tr. 6	72.3	74.1	1.8	73.4	47.7	69.7	22.0	57.5	52.2	59.4	7.2	53.4	43.0	73.7	30.7	58.8	51.1	71.9	20.8	62.5	54.0	75.2	21.2	61.3	54.7	68.3	13.6	60.8	76.9	83.9	7.1	78.2
Tr. 7	1.6	1.0	-0.5	0.8	0.8	0.3	-0.5	1.1	1.2	0.5	-0.7	1.1	3.6	0.9	-2.8	1.8	0.2	0.0	-0.2	0.2	1.4	0.2	-1.2	0.9	0.4	0.8	0.4	0.5	0.4	0.5	0.1	0.5
Tr. 8	4.6	6.2	1.5	5.2	16.5	8.3	-8.2	11.8	10.4	4.7	-5.7	8.3	23.8	6.5	-17.3	14.4	4.2	2.5	-1.7	4.4	12.7	3.0	-9.7	8.4	25.0	15.9	-9.1	19.5	8.2	3.9	-4.3	6.0

Note: Differences in frequencies over time are expressed in percentage points

Table A11: In-work material deprivation trends - poverty rate and composition

	Pooled				AT				BG				CY				CZ				DK				EL			
	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.
IWMD rate																												
	22.7	9.2	-13.5	12.5	5.3	6.9	1.6	3.8	53.8	20.4	-33.4	34.7	22.3	18.0	-4.3	19.5	9.3	4.3	-4.9	6.3	2.8	8.2	5.5	3.5	15.6	22.2	6.6	23.6
IWMD composition																												
Tr. 5	0.4	0.4	0.0	0.3	0.1	1.1	1.0	0.2	0.5	0.2	-0.2	0.2	1.1	0.7	-0.4	0.3	0.4	0.4	0.0	0.2	0.0	0.7	0.7	0.2	0.5	0.5	0.0	0.7
Tr. 6	5.9	3.9	-2.0	3.7	2.3	3.1	0.7	1.4	13.4	3.9	-9.5	5.4	10.1	8.8	-1.2	8.0	2.6	2.1	-0.6	1.9	1.4	3.7	2.3	1.2	7.1	5.5	-1.6	5.8
Tr. 7	1.0	0.6	-0.4	0.8	0.6	0.6	0.1	0.4	3.1	2.6	-0.5	2.4	0.4	0.5	0.1	0.8	0.8	0.2	-0.6	0.5	0.0	2.0	2.0	0.8	1.1	2.1	0.9	2.3
Tr. 8	15.4	4.4	-11.1	7.7	2.3	2.1	-0.2	1.7	36.8	13.6	-23.2	26.7	10.8	8.0	-2.7	10.4	5.5	1.7	-3.8	3.7	1.4	1.9	0.5	1.4	7.0	14.2	7.2	14.8

Note: Consistently with IWMD definition, figures refers to the subsample of working individuals

Table A12: In-work material deprivation trends - poverty rate and composition

	FR				HR				IT				LV				MT				PL				RO				SI			
	2011	2023	Diff.	Avrg.	2013	2023	Diff.	Avrg.	2012	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2012	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.	2011	2023	Diff.	Avrg.
IWMD rate																																
	6.8	7.1	0.3	6.1	28.3	8.2	-20.1	17.1	19.1	9.1	-10.0	12.6	36.7	11.9	-24.8	17.6	8.9	6.0	-2.9	6.3	18.9	5.1	-13.9	11.3	33.6	17.8	-15.8	24.2	11.2	5.3	-5.9	7.1
IWMD composition																																
Tr. 5	0.4	0.2	-0.2	0.3	0.8	0.1	-0.7	0.4	0.6	0.6	0.0	0.4	0.7	1.1	0.4	0.5	0.1	0.2	0.0	0.1	0.7	0.3	-0.4	0.2	0.0	0.1	0.1	0.1	0.3	0.0	-0.3	0.1
Tr. 6	3.8	2.5	-1.3	2.3	9.6	3.0	-6.6	6.0	7.3	5.6	-1.8	5.3	8.8	6.1	-2.8	5.6	4.0	5.1	1.1	2.7	3.4	2.3	-1.1	2.8	8.4	7.1	-1.3	5.4	5.9	3.3	-2.7	3.3
Tr. 7	1.1	0.7	-0.4	0.4	0.7	0.0	-0.6	1.0	1.3	0.2	-1.0	0.8	3.7	0.8	-3.0	1.4	0.0	0.4	0.4	0.3	0.8	0.2	-0.6	0.8	0.4	0.7	0.2	0.6	0.1	0.5	0.4	0.3
Tr. 8	1.6	3.8	2.2	3.2	17.3	5.1	-12.2	9.7	10.0	2.8	-7.2	6.1	23.5	4.0	-19.4	10.1	4.8	0.7	-4.1	3.3	14.1	2.3	-11.8	7.5	24.8	9.9	-14.9	18.1	4.8	1.5	-3.3	3.4

Note: Consistently with IWMD definition, figures refers to the subsample of working individuals

Table A13: At-risk of poverty and employment. Muiltivariate regression with Mundlak specification. Panel A

	Pooled		AT		BG		CY		CZ		DK		EL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.
Employm.	-1.251***		1.310		0.725		-2.480***		-0.123		-1.125		-1.636***	
	-0.031		0.038		0.026		-0.053		-0.002		-0.026		-0.089	
L.arop	5.946***	-0.334***	4.509***	-0.650**	4.882***	-0.463**	6.316***	-0.276*	4.804***	-0.418**	3.449***	-1.591	4.095***	0.068
	0.149	-0.016	0.131	-0.031	0.173	-0.022	0.135	-0.013	0.080	-0.012	0.081	-0.074	0.222	0.004
L.Employm.	-0.883***	4.288***	-2.490***	4.590***	-2.125	5.151	-0.218	4.274	-1.772***	6.911***	0.583	4.194	-0.098	4.553
	-0.022	0.208	-0.072	0.217	-0.075	0.244	-0.005	0.201	-0.030	0.202	0.014	0.196	-0.005	0.257
I.c. arop	2.717***	-0.110**	2.312***	-0.255	1.943***	-0.231	2.192***	0.035	2.039***	0.061	1.557***	0.555	1.846***	-0.220*
	0.068	-0.005	0.067	-0.012	0.069	-0.011	0.047	0.002	0.034	0.002	0.037	0.026	0.100	-0.012
I.c. Employm.	-0.188*	1.607***	-0.761***	1.790***	-0.280	1.294***	1.013***	1.653***	0.252	0.991***	-0.999	1.791	0.234	1.688***
	-0.005	0.078	-0.022	0.084	-0.010	0.061	0.022	0.078	0.004	0.029	-0.023	0.084	0.013	0.095
Female	-0.352***	-0.540***	-0.411*	-0.711***	-0.171	-0.245**	-0.057	-0.442***	0.096	-0.530***	-0.262	-0.228	-0.335***	-0.553***
	-0.009	-0.026	-0.012	-0.034	-0.006	-0.012	-0.001	-0.021	0.002	-0.015	-0.006	-0.011	-0.018	-0.031
Aged 35-44	0.019	0.100**	-0.188	0.299*	0.131	0.101	0.073	0.025	0.298*	0.569***	0.642	0.137	-0.049	-0.094
	0.000	0.005	-0.005	0.014	0.005	0.005	0.002	0.001	0.005	0.017	0.015	0.006	-0.003	-0.005
Aged 45-54	0.098	0.004	-0.228	0.188	0.153	0.134	-0.286	-0.172	0.475***	0.216	0.041	0.107	-0.069	-0.021
	0.002	0.000	-0.007	0.009	0.005	0.006	-0.006	-0.008	0.008	0.006	0.001	0.005	-0.004	-0.001
Aged 55-65	0.085	-0.440***	0.168	-0.308*	-0.106	-0.056	-0.285	-0.674***	0.124	-0.533***	0.203	0.103	-0.044	-0.314***
	0.002	-0.021	0.005	-0.015	-0.004	-0.003	-0.006	-0.032	0.002	-0.016	0.005	0.005	-0.002	-0.018
Mid. educ. level	-0.872***	0.515***	-1.127***	0.513**	-1.200***	0.676***	-0.295*	0.241**	-0.896***	0.739***	-0.389	0.648	-0.605***	0.638***
	-0.022	0.025	-0.033	0.024	-0.042	0.032	-0.006	0.011	-0.015	0.022	-0.009	0.030	-0.033	0.036
High educ. level	-2.133***	0.938***	-1.687***	0.497**	-2.657***	1.229***	-1.727***	0.762***	-1.906***	1.000***	-0.550	1.074	-1.410***	1.209***
	-0.053	0.045	-0.049	0.023	-0.094	0.058	-0.037	0.036	-0.032	0.029	-0.013	0.050	-0.076	0.068
Single parent	0.729	-0.736***	2.893**	-2.406***	-1.171	-1.260	4.084**	-0.393	0.135	-3.103***	0.959	-0.887	-1.036	-0.767
	0.018	-0.036	0.084	-0.114	-0.041	-0.060	0.088	-0.018	0.002	-0.091	0.023	-0.042	-0.056	-0.043
2+ aduts, no chil.	-2.321***	0.145	-0.767	0.163	-2.546***	-0.302	-0.316	0.004	-2.805***	0.166	-1.599	1.090	-1.791***	-1.174**
	-0.058	0.007	-0.022	0.008	-0.090	-0.014	-0.007	0.000	-0.047	0.005	-0.038	0.051	-0.097	-0.066
2+ aduts + chil.	-1.845***	-0.510***	0.188	-2.288***	-1.980**	-1.219	-0.397	-0.398	-2.617***	-3.527***	-2.292*	0.408	-1.427*	-0.867*
	-0.046	-0.025	0.005	-0.108	-0.070	-0.058	-0.009	-0.019	-0.044	-0.103	-0.054	0.019	-0.077	-0.049
a_i	1.000	-0.226***	1.000	-0.651	1.000	-0.574***	1.000	-0.037	1.000	-0.977***	1.000	-1.345	1.000	-0.515*
Log ps.lik.	-3.7e+08		-2.3e+07		-1.1e+07		-1.9e+06		-1.8e+07		-9.8e+06		-2.6e+07	
Obs.	283973.0		16774.0		14482.0		15605.0		28297.0		9853.0		25643.0	

Note: The table reports the coefficients (first row) and the average marginal effects (second row). Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include the average of the time varying variable (household composition) and years dummies. The model at European level also include countries dummies.

Table A14: At-risk of poverty and employment. Multivariate Regression with Mundlak approach. Panel B

	FR		HR		IT		LV		MT		PL		RO		SI	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.
Employm.	-0.588		-1.203***		-2.556**		-1.980***		-0.188		-2.777***		-3.658		-6.354***	
	-0.013		-0.025		-0.057		-0.066		-0.004		-0.084		-0.066		-0.034	
L.arop	5.258***	-0.552***	8.004***	-0.169	8.102***	-0.254***	4.809***	-0.322***	7.598***	-0.837**	5.281***	-0.200**	7.060***	-0.311	11.614***	-0.483***
	0.117	-0.027	0.164	-0.007	0.181	-0.014	0.161	-0.025	0.165	-0.017	0.160	-0.010	0.128	-0.005	0.063	-0.019
L.Employm.	-0.986**	4.052**	-1.786*	4.970*	-0.487	3.970	-0.775	3.233	-2.597	6.390	0.275	4.181	0.728	5.722	-0.438	3.998
	-0.022	0.196	-0.037	0.207	-0.011	0.221	-0.026	0.252	-0.056	0.127	0.008	0.213	0.013	0.098	-0.002	0.154
I.c. arop	2.758***	-0.002	3.299***	-0.315*	4.044***	-0.226**	2.256***	-0.331***	2.554***	0.029	2.128***	-0.021	2.381***	-0.160	5.428***	-0.211
	0.061	-0.000	0.068	-0.013	0.090	-0.013	0.075	-0.026	0.055	0.001	0.064	-0.001	0.043	-0.003	0.029	-0.008
I.c. Employm.	-0.757***	1.565***	-0.650*	1.809***	-0.028	1.670***	0.087	1.224***	0.254	1.912***	0.358**	1.504***	0.301	1.961***	1.191**	1.758***
	-0.017	0.076	-0.013	0.075	-0.001	0.093	0.003	0.095	0.006	0.038	0.011	0.077	0.005	0.034	0.006	0.068
Female	0.196	-0.319***	-0.867***	-0.365***	-0.792***	-0.782***	0.201	-0.234***	-0.581*	-0.932***	-0.378***	-0.311***	-0.708***	-0.966***	-0.342	-0.132*
	0.004	-0.015	-0.018	-0.015	-0.018	-0.044	0.007	-0.018	-0.013	-0.018	-0.011	-0.016	-0.013	-0.017	-0.002	-0.005
Aged 35-44	0.120	0.126	-0.161	0.038	0.086	0.130	0.328	-0.002	0.047	0.016	-0.305**	0.082	0.303	-0.041	-0.762	-0.207*
	0.003	0.006	-0.003	0.002	0.002	0.007	0.011	-0.000	0.001	0.000	-0.009	0.004	0.005	-0.001	-0.004	-0.008
Aged 45-54	0.485*	0.122	-0.084	-0.142	0.122	0.025	0.298	-0.031	-0.490	-0.436	-0.200	-0.003	0.415	-0.250	-0.287	-0.492***
	0.011	0.006	-0.002	-0.006	0.003	0.001	0.010	-0.002	-0.011	-0.009	-0.006	-0.000	0.008	-0.004	-0.002	-0.019
Aged 55-65	0.221	-0.387**	-0.215	-0.422**	0.386	-0.322***	0.170	-0.053	0.254	-1.202***	-0.403**	-0.676***	0.445	-0.810***	-0.250	-1.104***
	0.005	-0.019	-0.004	-0.018	0.009	-0.018	0.006	-0.004	0.006	-0.024	-0.012	-0.034	0.008	-0.014	-0.001	-0.042
Mid. educ. level	-0.688***	0.359***	-1.061***	0.624***	-1.079***	0.533***	-0.882***	0.347***	-1.065**	0.798***	-0.841***	0.378***	-0.636**	0.805***	-1.090**	0.481***
	-0.015	0.017	-0.022	0.026	-0.024	0.030	-0.029	0.027	-0.023	0.016	-0.025	0.019	-0.012	0.014	-0.006	0.019
High educ. level	-1.965***	0.535***	-3.712***	1.325***	-2.437***	1.012***	-2.396***	0.618***	-2.350**	1.982***	-2.182***	1.062***	-2.308***	1.517***	-2.983***	0.972***
	-0.044	0.026	-0.076	0.055	-0.054	0.056	-0.080	0.048	-0.051	0.039	-0.066	0.054	-0.042	0.026	-0.016	0.037
Single parent	1.076	0.205	-1.302	-1.814*	2.660**	-0.831	0.422	-1.276***	2.608	1.511	-2.350**	-0.315	-8.643***	-4.648	4.491	-0.005
	0.024	0.010	-0.027	-0.076	0.059	-0.046	0.014	-0.099	0.057	0.030	-0.071	-0.016	-0.157	-0.079	0.024	-0.000
2+ aduts, no chil.	-2.526***	0.475	-4.376**	-0.068	-3.392***	-0.166	-2.463***	0.065	-5.586***	2.565**	-2.508***	0.579	-5.332***	-1.997**	-4.851**	0.205
	-0.056	0.023	-0.090	-0.003	-0.076	-0.009	-0.082	0.005	-0.121	0.051	-0.076	0.030	-0.097	-0.034	-0.026	0.008
2+ aduts + chil.	-0.753	-0.174	-4.868**	-0.101	-2.421***	-0.578*	-1.728**	-1.307***	-1.956	-0.001	-2.711***	0.411	-6.367***	-2.271**	-3.200	-0.262
	-0.017	-0.008	-0.100	-0.004	-0.054	-0.032	-0.058	-0.102	-0.042	-0.000	-0.082	0.021	-0.115	-0.039	-0.017	-0.010
a_i	1.000	-0.164**	1.000	-0.289***	1.000	-0.107**	1.000	-0.178***	1.000	-0.368	1.000	-0.095	1.000	-0.174	1.000	-0.093**
Log ps.lik.	-5.3e+07		-6.8e+06		-1.2e+08		-6.2e+06		-6.6e+05		-6.4e+07		-2.2e+07		-3.0e+06	
Obs.	17200.0		13077.0		39681.0		15021.0		10542.0		33728.0		19082.0		24988.0	

Note: The table reports the coefficients (first row) and the average marginal effects (second row). Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include the average of the time varying variable (household composition) and years dummies. The model at European level also include countries dummies.

Table A15: Material deprivation and employment. Multivariate regression with Mundlak specification. Panel A

	Pooled		AT		BG		CY		CZ		DK		EL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.
Employm.	1.347***		2.090		-3.102		3.058**		2.986***		-0.061		-0.309	
	0.056		0.035		-0.139		0.183		0.070		-0.001		-0.036	
L.md	4.859***	-0.393***	4.933**	-0.704	6.942**	-0.508***	4.201***	-0.558***	5.056***	-0.757***	4.619***	-0.956**	2.797***	-0.175
	0.203	-0.018	0.083	-0.038	0.310	-0.031	0.252	-0.020	0.118	-0.022	0.091	-0.052	0.324	-0.006
L.Employm.	-1.810***	4.540***	-2.673	4.067	1.526	4.080	-2.970**	5.489**	-3.388***	6.891***	-1.148	3.814	-0.247	7.550
	-0.076	0.207	-0.045	0.217	0.068	0.251	-0.178	0.198	-0.079	0.197	-0.023	0.208	-0.029	0.250
I.c. md	2.452***	-0.080*	3.638**	-0.388	2.050***	-0.070	2.586***	-0.048	2.931***	-0.056	2.687***	0.206	0.951***	-0.105
	0.102	-0.004	0.061	-0.021	0.092	-0.004	0.155	-0.002	0.069	-0.002	0.053	0.011	0.110	-0.003
I.c. Employm.	2.452***	-0.080*	3.638**	-0.388	2.050***	-0.070	2.586***	-0.048	2.931***	-0.056	2.687***	0.206	0.951***	-0.105
	0.102	-0.004	0.061	-0.021	0.092	-0.004	0.155	-0.002	0.069	-0.002	0.053	0.011	0.110	-0.003
Female	-0.122**	-0.521***	-0.352	-0.594*	0.014	-0.127	0.138	-0.466***	-0.042	-0.521***	-0.200	-0.131	-0.233***	-0.881***
	-0.005	-0.024	-0.006	-0.032	0.001	-0.008	0.008	-0.017	-0.001	-0.015	-0.004	-0.007	-0.027	-0.029
Aged 35-44	-0.200***	0.130**	-0.749*	0.297	0.151	0.206	-0.129	0.041	-0.019	0.585***	-0.500	0.352	-0.115	-0.151
	-0.008	0.006	-0.013	0.016	0.007	0.013	-0.008	0.001	-0.000	0.017	-0.010	0.019	-0.013	-0.005
Aged 45-54	-0.151**	0.028	-0.634	0.253	0.281	0.176	-0.248	-0.160	-0.079	0.231	-0.002	0.504*	-0.081	0.044
	-0.006	0.001	-0.011	0.014	0.013	0.011	-0.015	-0.006	-0.002	0.007	-0.000	0.027	-0.009	0.001
Aged 55-65	-0.214***	-0.424***	-0.335	-0.246	-0.156	-0.069	-0.647**	-0.787***	0.476**	-0.512***	-0.736	0.300	-0.172*	-0.407**
	-0.009	-0.019	-0.006	-0.013	-0.007	-0.004	-0.039	-0.028	0.011	-0.015	-0.015	0.016	-0.020	-0.013
Mid. educ. level	-0.618***	0.521***	-1.392***	0.390	-1.635***	0.536***	-0.789***	0.110	-0.984***	0.806***	-0.329	0.463	-0.358***	0.937***
	-0.026	0.024	-0.023	0.021	-0.073	0.033	-0.047	0.004	-0.023	0.023	-0.007	0.025	-0.042	0.031
High educ. level	-1.741***	0.936***	-1.742**	0.338	-2.948***	0.907***	-2.084***	0.668***	-2.207***	0.969***	-0.989*	0.687**	-0.842***	1.869***
	-0.073	0.043	-0.029	0.018	-0.132	0.056	-0.125	0.024	-0.052	0.028	-0.020	0.037	-0.098	0.062
Single parent	-0.640	-0.736**	0.029	-2.615	-0.770	-0.579	0.271	0.335	1.579	-3.645***	1.619	-0.057	-0.189	-0.469
	-0.027	-0.034	0.000	-0.140	-0.034	-0.036	0.016	0.012	0.037	-0.104	0.032	-0.003	-0.022	-0.016
2+ Adults, no chil.	-1.022***	0.141	-1.413	0.331	-0.693	0.068	-1.657**	0.201	-0.897	0.212	-0.138	0.531	-0.453	-1.231
	-0.043	0.006	-0.024	0.018	-0.031	0.004	-0.099	0.007	-0.021	0.006	-0.003	0.029	-0.053	-0.041
2+ Adults + chil.	-1.156***	-0.513**	-1.428	-2.039*	-0.984	-0.348	-1.503**	-0.258	-0.732	-3.963***	-0.896	0.369	-0.326	-0.949
	-0.048	-0.023	-0.024	-0.109	-0.044	-0.021	-0.090	-0.009	-0.017	-0.113	-0.018	0.020	-0.038	-0.031
a_i	1.000	-0.325***	1.000	-0.419	1.000	0.242**	1.000	-0.417**	1.000	-0.784***	1.000	-0.409	1.000	-7.794
Log ps.lik.	-3.4e+08		-1.6e+07		-1.0e+07		-2.6e+06		-1.5e+07		-7.3e+06		-2.7e+07	
Obs.	225306.0		12790.0		12936.0		12994.0		17636.0		6685.0		23710.0	

Note: The table reports the coefficients (first row) and the average marginal effects (second row). Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include the average of the time varying variable (household composition) and years dummies. The model at European level also include countries dummies.

Table A16: Material deprivation and employment. Multivariate regression with Mundlak specification. Panel B

	FR		HR		IT		LV		MT		PL		RO		SI	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.
Employm.	-1.076		1.763		0.317		0.968		0.292		1.059		1.530**		2.307***	
	-0.021		0.080		0.020		0.037		0.015		0.034		0.102		0.060	
L.md	5.535***	-0.403**	5.759***	-0.510***	3.282	-0.378***	5.622***	-0.387***	2.957***	-0.851*	5.949***	-0.394***	4.337***	-0.120	4.911***	-0.860***
	0.110	-0.020	0.263	-0.023	0.211	-0.021	0.214	-0.030	0.149	-0.015	0.193	-0.018	0.289	-0.002	0.129	-0.027
L.Employm.	-0.719	3.953	-2.329	4.607	-0.927**	4.094**	-1.840***	3.230***	-1.115	7.313	-1.685**	4.543**	-1.731***	7.113***	-2.652***	4.775***
	-0.014	0.195	-0.106	0.211	-0.060	0.229	-0.070	0.250	-0.056	0.125	-0.055	0.211	-0.115	0.092	-0.069	0.150
I.c. md	3.518***	-0.125	2.717***	0.105	1.864	-0.150	3.535***	-0.095	1.627***	0.133	2.598***	-0.004	1.732***	-0.084	2.828***	-0.031
	0.070	-0.006	0.124	0.005	0.120	-0.008	0.134	-0.007	0.082	0.002	0.084	-0.000	0.115	-0.001	0.074	-0.001
I.c. Employm.	3.518***	-0.125	2.717***	0.105	1.864	-0.150	3.535***	-0.095	1.627***	0.133	2.598***	-0.004	1.732***	-0.084	2.828***	-0.031
	0.070	-0.006	0.124	0.005	0.120	-0.008	0.134	-0.007	0.082	0.002	0.084	-0.000	0.115	-0.001	0.074	-0.001
Female	0.317	-0.282***	-0.394*	-0.355***	-0.197	-0.784***	0.465**	-0.275***	-0.387**	-0.924*	-0.079	-0.255***	-0.094	-1.038***	0.084	-0.179**
	0.006	-0.014	-0.018	-0.016	-0.013	-0.044	0.018	-0.021	-0.020	-0.016	-0.003	-0.012	-0.006	-0.013	0.002	-0.006
Aged 35-44	-0.001	0.140	-0.798**	0.010	-0.354	0.177	0.111	0.063	-0.225	0.058	0.036	0.146	0.002	-0.200	0.040	-0.259*
	-0.000	0.007	-0.036	0.000	-0.023	0.010	0.004	0.005	-0.011	0.001	0.001	0.007	0.000	-0.003	0.001	-0.008
Aged 45-54	0.348	0.110	-0.418	-0.164	-0.510	0.035	0.382	0.088	-0.223	-0.451	0.083	0.068	0.043	-0.543**	0.081	-0.497***
	0.007	0.005	-0.019	-0.007	-0.033	0.002	0.015	0.007	-0.011	-0.008	0.003	0.003	0.003	-0.007	0.002	-0.016
Aged 55-65	-0.207	-0.405**	-0.670*	-0.432***	-0.517	-0.227*	0.510*	0.025	-0.163	-1.159**	-0.033	-0.673***	0.051	-1.140***	0.050	-1.234***
	-0.004	-0.020	-0.031	-0.020	-0.033	-0.013	0.019	0.002	-0.008	-0.020	-0.001	-0.031	0.003	-0.015	0.001	-0.039
Mid. educ. level	-0.361	0.440***	-1.121***	0.507***	-0.689	0.543***	-1.050***	0.473***	-0.864***	0.958*	-0.713***	0.285**	-0.324***	1.095***	-0.810***	0.437***
	-0.007	0.022	-0.051	0.023	-0.044	0.030	-0.040	0.037	-0.044	0.016	-0.023	0.013	-0.022	0.014	-0.021	0.014
High educ. level	-1.820***	0.611***	-3.028***	1.129***	-1.626	0.965***	-2.716***	0.718***	-1.181***	2.178*	-2.176***	1.046***	-1.072***	1.747***	-2.803***	0.928***
	-0.036	0.030	-0.138	0.052	-0.105	0.054	-0.103	0.056	-0.060	0.037	-0.070	0.048	-0.071	0.023	-0.073	0.029
Single parent	-2.726**	0.181	-0.762	-1.663	0.337	-0.817	0.896	-1.411***	-1.083	1.458	-2.813**	-0.550	0.693	-4.431*	-0.531	-0.033
	-0.054	0.009	-0.035	-0.076	0.022	-0.046	0.034	-0.109	-0.055	0.025	-0.091	-0.025	0.046	-0.057	-0.014	-0.001
2+ Adults, no chil.	-1.654*	0.586	-1.262	-0.131	-0.237	-0.139	-1.785**	0.059	-1.722**	2.705*	-2.294***	0.504	0.386	-0.878	-1.439*	0.062
	-0.033	0.029	-0.058	-0.006	-0.015	-0.008	-0.068	0.005	-0.087	0.046	-0.074	0.023	0.026	-0.011	-0.038	0.002
2+ Adults with chil.	-2.735**	-0.182	-2.496*	-0.079	-0.120	-0.542	-1.403	-1.515***	-0.805	-0.486	-2.321***	0.401	-0.217	-0.938	-1.274	-0.316
	-0.054	-0.009	-0.114	-0.004	-0.008	-0.030	-0.053	-0.117	-0.041	-0.008	-0.075	0.019	-0.014	-0.012	-0.033	-0.010
a_i	1.000	-0.049	1.000	-0.224	1.000	-0.265	1.000	-0.116**	1.000	-2.214	1.000	-0.220**	1.000	-0.812**	1.000	-0.393***
Log ps.lik.	-4.5e+07		-9.2e+06		-1.1e+08		-5.9e+06		-6.3e+05		-5.4e+07		-3.2e+07		-3.5e+06	
Obs.	14130.0		12900.0		25852.0		12377.0		9383.0		26948.0		16814.0		20151.0	

Note: The table reports the coefficients (first row) and the average marginal effects (second row). Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include the average of the time varying variable (household composition) and years dummies. The model at European level also include countries dummies.

Table A17: At-risk of poverty and employment. Multivariate regression. Panel A

	Pooled		AT		BG		CY		CZ		DK		EL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.
Employm.	-1.878***		-1.356***		-1.690***		-1.538***		-2.313***		-2.087***		-2.440***	
L.arop	3.398***	-0.459***	3.105***	-0.623***	3.063***	-0.456***	3.864***	-0.387***	3.919***	-0.245**	3.407***	-1.138***	3.131***	-0.054
L.Employm.	0.382***	4.768***	-0.391***	3.770***	0.227*	4.190*	0.360**	5.133**	0.501***	4.866***	0.716*	3.916*	0.990***	4.669***
Female	-0.250***	-0.617***	-0.450***	-0.619***	-0.113	-0.212***	-0.077	-0.592***	-0.015	-0.322***	-0.358	-0.150	-0.322***	-0.652***
Aged 35-44	0.022	0.187***	-0.036	0.377***	0.188	0.183	0.043	0.153	0.429***	0.583***	0.347	0.222	-0.065	0.015
Aged 45-54	0.075*	0.135***	-0.038	0.314***	0.188	0.177	-0.194	-0.024	0.524***	0.293***	-0.396	0.309	-0.059	0.114
Aged 55-65	-0.031	-0.338***	0.084	-0.187	-0.054	-0.028	-0.256*	-0.556***	0.069	-0.341***	-0.341	0.196	-0.104	-0.169*
Mid. educ. level	-0.504***	0.600***	-0.759***	0.506***	-0.828***	0.786***	-0.217**	0.337***	-0.691***	0.597***	-0.374	0.653***	-0.405***	0.682***
High educ. level	-1.192***	1.041***	-1.113***	0.478***	-1.783***	1.257***	-1.110***	0.884***	-1.593***	0.770***	-0.359	0.853***	-0.961***	1.269***
Single parent	0.671***	0.058	0.709***	0.036	0.344	0.334	0.690*	-0.027	0.697***	-0.392*	0.636	-0.193	0.682**	0.087
2+ aduts, no chil.	-0.970***	-0.092*	-0.875***	0.222**	-1.298***	-0.175	-0.560***	-0.341**	-1.404***	0.085	-1.259***	0.711***	-0.559***	-0.304**
2+ aduts + chil.	-0.452***	0.016	-0.475***	0.070	-0.696***	-0.050	-0.581***	-0.331*	-1.080***	-0.092	-1.446***	0.539***	-0.041	0.037
Log ps.lik.	-3.9e+08		-2.5e+07		-1.1e+07		-2.0e+06		-1.9e+07		-1.0e+07		-2.7e+07	
Obs.	284053.0		16774.0		14482.0		15605.0		28297.0		9853.0		25643.0	

Note: The table reports the coefficients. Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include years dummies. The model at European level also include countries dummies.

Table A18: At-risk of poverty and employment. Multivariate Regression. Panel B

	FR		HR		IT		LV		MT		PL		RO		SI	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.	arop	empl.
Employm.	-1.255***		-2.539***		-1.865***		-1.946***		-2.179***		-1.969***		-2.832***		-2.931***	
L.arop	3.059***	-0.711***	3.649***	-0.408***	3.504***	-0.471***	2.983***	-0.596***	3.939***	-0.695***	3.198***	-0.241***	4.163***	-0.402***	3.954***	-0.675***
L.Employm.	-0.227	4.609	0.714***	4.935***	0.383***	4.716***	0.076	3.557	0.494*	6.286*	0.568***	4.989***	1.188***	6.817***	0.789***	4.694***
Female	0.084	-0.393***	-0.450***	-0.390***	-0.328***	-0.960***	0.126	-0.248***	-0.468***	-1.015***	-0.263***	-0.382***	-0.418***	-1.051***	-0.109	-0.208***
Aged 35-44	0.056	0.170	-0.016	0.093	0.011	0.238**	0.238*	0.077	-0.001	-0.079	-0.154*	0.135	0.229*	0.032	-0.152	0.046
Aged 45-54	0.243*	0.199	0.057	-0.023	0.037	0.208**	0.246*	0.007	-0.355*	-0.443	-0.077	0.071	0.319**	-0.162	-0.055	-0.163
Aged 55-65	0.034	-0.335**	-0.072	-0.273*	0.059	-0.160*	0.137	-0.074	-0.022	-1.154***	-0.288***	-0.651***	0.191	-0.639***	-0.043	-0.795***
Mid. educ. level	-0.463***	0.440***	-0.366***	0.692***	-0.507***	0.634***	-0.551***	0.430***	-0.479***	0.836***	-0.547***	0.519***	-0.466***	0.966***	-0.387***	0.549***
High educ. level	-1.210***	0.670***	-1.420***	1.382***	-1.085***	1.072***	-1.545***	0.769***	-1.159***	1.877***	-1.448***	1.321***	-1.648***	1.766***	-1.168***	1.063***
Single parent	0.544***	0.349	0.883**	-0.528	0.918***	0.027	0.199	0.441*	0.362	0.192	-0.258	-0.350	1.828***	0.455	0.115	1.026**
2+ aduts, no chil.	-0.989***	-0.055	-1.022***	0.162	-1.072***	-0.405***	-1.016***	-0.038	-1.299***	0.548*	-0.994***	-0.012	-0.126	-0.179	-1.398***	0.055
2+ aduts + chil.	-0.367***	0.129	-0.882***	0.204	-0.399***	-0.223*	-0.768***	-0.010	-0.721***	0.782**	-0.640***	0.122	0.456***	-0.242	-0.847***	0.254
Log ps.lik.	-5.6e+07		-7.0e+06		-1.3e+08		-6.4e+06		-6.9e+05		-6.7e+07		-2.3e+07		-3.2e+06	
Obs.	17200.0		13077.0		39681.0		15021.0		10542.0		33728.0		19082.0		24988.0	

Note: The table reports the coefficients. Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include years dummies. The model at European level also include countries dummies.

Table A19: Material deprivation and employment. Multivariate regression. Panel A

	Pooled		AT		BG		CY		CZ		DK		EL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.
Employm.	-0.663***		-0.892***		-0.433***		-0.440***		-0.431**		-0.877*		-0.914***	
L.md	3.006***	-0.457***	3.231***	-0.793***	3.800***	-0.535***	2.235***	-0.496***	3.861***	-0.527***	3.786***	-0.938**	3.073***	-0.208***
L.Employm.	-0.126**	4.829**	-0.564***	3.749***	-0.099	4.170	-0.025	5.126	-0.526***	4.911***	-0.556	4.092	0.180*	4.646*
Female	-0.121***	-0.574***	-0.315**	-0.567***	0.040	-0.183**	0.019	-0.515***	-0.072	-0.314***	-0.349	-0.117	-0.257***	-0.654***
Aged 35-44	-0.113***	0.207***	-0.359*	0.422***	0.148	0.280**	-0.131	0.126	0.097	0.622***	0.104	0.544*	-0.140*	0.001
Aged 45-54	-0.089**	0.154***	-0.254	0.409***	0.171	0.251*	-0.197**	-0.010	0.007	0.330**	0.016	0.766***	-0.098	0.173
Aged 55-65	-0.203***	-0.310***	-0.231	-0.100	-0.045	-0.007	-0.447***	-0.585***	0.262*	-0.315**	-0.430	0.583**	-0.236***	-0.116
Mid. educ. level	-0.395***	0.594***	-0.798***	0.378***	-1.027***	0.686***	-0.438***	0.199*	-0.703***	0.658***	-0.238	0.555**	-0.406***	0.635***
High educ. level	-1.119***	1.025***	-1.142***	0.345**	-1.810***	1.093***	-1.187***	0.697***	-1.722***	0.749***	-0.803**	0.597**	-0.948***	1.213***
Single parent	0.364***	0.029	0.472*	-0.107	0.567*	-0.126	0.635***	0.277	0.859***	-0.577*	0.445	0.070	0.476*	0.188
2+ Adults, no chil.	-0.483***	-0.103*	-0.535***	0.278**	-0.307**	-0.174	-0.345***	-0.358*	-0.420***	0.029	-0.783***	0.636***	-0.403***	-0.294**
2+ Adults + chil.	-0.496***	-0.012	-0.526***	0.106	-0.591***	-0.111	-0.307***	-0.308	-0.451***	-0.129	-1.102***	0.504**	-0.201**	0.095
Log ps.lik.	-3.6e+08		-1.7e+07		-1.0e+07		-2.8e+06		-1.5e+07		-7.7e+06		-2.8e+07	
Obs.	225306.0		12790.0		12936.0		12994.0		17636.0		6685.0		23710.0	

Note: The table reports the coefficients. Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include years dummies. The model at European level also include countries dummies.

Table A20: Material deprivation and employment. Multivariate regression. Panel B

	FR		HR		IT		LV		MT		PL		RO		SI	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.	md	empl.
Employm.	-0.896***		-0.619***		-0.723***		-0.625***		-0.741**		-0.507***		-0.372*		-0.744***	
L.md	3.143***	-0.607***	2.641***	-0.438***	2.178***	-0.470***	2.320***	-0.461***	3.188***	-0.631**	3.532***	-0.438***	3.641***	-0.242*	2.694***	-0.794***
L.Employm.	-0.278	4.705	-0.149	5.021	-0.031	4.714	-0.228**	3.632**	-0.102	6.367	-0.212*	5.080*	-0.122	7.047	-0.244*	4.783*
Female	0.159*	-0.365***	-0.186***	-0.413***	-0.209***	-0.922***	0.195***	-0.273***	-0.419***	-0.884***	-0.044	-0.307***	-0.116**	-0.982***	0.046	-0.233***
Aged 35-44	-0.036	0.217	-0.295***	0.053	-0.246***	0.257**	0.070	0.168	-0.337*	-0.075	0.014	0.162	-0.013	-0.031	-0.092	0.053
Aged 45-54	0.154	0.235	-0.157	-0.073	-0.343***	0.186*	0.223**	0.148	-0.288	-0.444	0.041	0.133	-0.001	-0.324*	-0.099	-0.084
Aged 55-65	-0.228	-0.316*	-0.335***	-0.320**	-0.399***	-0.088	0.290***	0.018	-0.326*	-1.044***	-0.095	-0.637***	-0.053	-0.818***	-0.194*	-0.761***
Mid. educ. level	-0.249**	0.525***	-0.478***	0.622***	-0.491***	0.638***	-0.456***	0.542***	-0.967***	0.825***	-0.470***	0.416***	-0.320***	1.113***	-0.460***	0.465***
High educ. level	-1.065***	0.770***	-1.438***	1.296***	-1.125***	1.045***	-1.201***	0.873***	-1.261***	1.960***	-1.388***	1.257***	-1.039***	1.823***	-1.585***	0.913***
Single parent	0.189	0.227	0.403	-0.558	0.324*	-0.060	0.417**	0.546**	0.166	0.088	-0.254	-0.429	0.750**	1.146	0.505	0.671
2+ Adults, no chil.	-0.674***	-0.093	-0.603***	0.086	-0.310***	-0.370***	-0.449***	0.031	-0.827***	0.569*	-0.779***	-0.123	-0.104	-0.085	-0.744***	-0.004
2+ Adults + chil.	-0.712***	0.009	-0.561***	0.121	-0.347***	-0.206	-0.468***	0.069	-0.703***	0.827**	-0.743***	0.014	-0.079	-0.126	-0.760***	0.203
Log ps.lik.	-4.8e+07		-9.7e+06		-1.1e+08		-6.2e+06		-6.7e+05		-5.6e+07		-3.3e+07		-3.7e+06	
Obs.	14130.0		12900.0		25852.0		12377.0		9383.0		26948.0		16814.0		20151.0	

Note: The table reports the coefficients. Stars mark statistical significance at 10% (*), 5% (**) and 1% (***) levels.The reference group for age is 25-34. The reference group for the education is Low education. The reference group for household composition is Single person household. All models include years dummies. The model at European level also include countries dummies.