WeLaR

Reforms, labour market outcomes and the quality of work

An analysis of the drivers of in-work poverty and of the moderating effects of reforms of family policies, labour market institutions and social protection

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Abstract

Although employment shelters most of those living in the EU from economic hardship, a significant and growing share of workers fall into conditions of in-work poverty or deprivation. This is due to a complex set of interrelated factors related to the intensity of employment, the quality of jobs and the structural characteristics of the household.

In this paper, we offer a comprehensive view of in-work poverty and its individual and institutional drivers in the EU. The first part of the paper is devoted to mapping the individual and household characteristics associated with in-work poverty and the probability of transitions in and out of it. To this end, we use the most recent waves of EU-SILC longitudinal data for EU counties. Our findings suggest that while demographic characteristics (gender and age) play a limited role, higher education levels significantly reduce the likelihood of in-work poverty; similarly, household involvement in the labour market plays a key role. However, the impact of personal and household characteristics differs between countries, highlighting the importance of the general context and of the specific institutional settings.

In the second part of the paper, we shed light on these aspects by analysing which changes in policies and institutional arrangements have an impact on reducing in-work poverty. To this purpose, we use EU-SILC cross-sectional data to assemble a longitudinal dataset at the demographic group level (defined by gender, age, education and country) for 25 EU countries, from 2006 to 2018. We use these data to identify the effects of three sets of country-level reforms in the following domains: family policies, labour market institutions, social protection and regulation of product markets. Our results indicate that changes in family policies, particularly related to the presence of children, have a key role in reducing in-work poverty by increasing both work intensity and labour earnings. Conversely, labour market institutional settings, social protection systems and competition policy only play an ancillary role.

1. Introduction

Participation in employment shelters most of those living in the EU from economic hardship. However, a substantial and growing share of workers are in-work poor or in-work deprived, despite advanced economic development and the social protection systems implemented by European countries (Peña-Casas et al., 2019).

An examination of in-work poverty requires us to consider 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 predominantly at the household level. The empirical literature developed in the last 10-15 years has provided a thoughtful debate on the manifold measurement issues associated with the concept of in-work poverty and led to a proliferation of studies applying varying definitions, making cross-study comparability difficult (e.g., Crettaz, 2013; Ratti, 2022). The 2005 inclusion of the in-work poverty (IWP) indicator in the EU Social Indicators Portfolio marked a turning point, fostering consensus on measurement standards and enhancing comparability across research in this field (Bardone and Guio, 2005).

In-work poverty (i.e., individuals who, despite being employed, belong to a household with an equivalised income below the poverty threshold) is a concept that encompasses, and allows us to consider simultaneously, a number of crucial factors that shape individuals' well-being: intensity of employment (at the extensive and at the intensive margin); the quality of jobs (in terms of labour remuneration, working conditions and employment contracts); the structural characteristics of the household (size, demographic structure, labour market participation and income sources of the family members). All these interrelated factors determine the resources available to each individual and, consequently, his/her well-being. The advantage of such a comprehensive concept (in-work poverty) is that it accounts for the complexity of the mechanisms at work and emphasises that many conditions need to be fulfilled to reach a minimum threshold of well-being. In this sense, it overcomes the issue implicit in a partial approach to labour market and poverty analysis. Indeed, it might be not enough for an individual to have a "good" job for he or she to be immune from poverty, as his/her household conditions (large size, low number of income earners, etc.) could push him/her towards the bottom of the distribution. Similarly, a low-quality job (e.g., a temporary, low-paid position) does not necessarily translate into in-work poverty, as the individual might be part of a household and contribute to income pooling that ensures a decent standard of living.

The latest Eurostat figures available (2023) indicate that around 10% of European workers are at risk of poverty, compared to around 8% reported at the end of the 2000s. Understanding the dynamics of in-work poverty and the transition trajectories has been increasingly identified as a priority in the EU policy framework (Eurofound, 2017), as it is crucial to guide policy actions aimed at maximising the probability of someone exiting (or preventing) poverty without leaving (or staying out of) employment. The empirical literature on such transition dynamics, although growing, is still limited. The primary purpose of this paper is to map the drivers of risk of in-work poverty and its dynamics across EU countries, and to investigate how they are moderated by national-level institutional and policy settings which directly or indirectly impact labour market settings.

The drivers of the dynamics of in-work poverty identified by the empirical literature can be grouped into three main domains. The first two pertain to individual/household factors (see, e.g., Hick and Lanau, 2018; Vandecasteele and Giesselmann, 2018; Crettaz, 2015): (i) workers'/job attributes (age, gender, education and job characteristics - particularly, temporary/permanent contract and full-time/part-time jobs); and (ii) household characteristics (size, composition, number of income earners and work intensity). The third domain pertains to institutional/policy factors directly or indirectly influencing in-work poverty. The available literature has analysed, either on a qualitative basis or using aggregate trends, a wide array of settings that include wage decentralisation/coordination, minimum wage legislation, employment protection legislation, tax structure and incentives, access to services such as childcare and training (see Eurofound, 2017; Peña-Casas et al., 2019 and 2021; Marchal et al. 2017; Lohmann and Marx, 2008; Lohmann, 2009).

In this paper, we offer a comprehensive view of in-work poverty and its individual and institutional drivers in the EU. The first part of the paper (Section 2) is devoted to mapping the individual and household characteristics associated with in-work poverty and the probability of transitions in and out of it. To this end, we use the most recent waves of EU-SILC longitudinal data for EU counties.

In the second part of the paper (Section 3), we analyse which changes in policies and institutional arrangements have an impact on reducing in-work poverty. To this aim, we use EU-SILC cross-sectional data to assemble a longitudinal dataset at the demographic group level (defined by gender, age, education and country) for 25 EU countries, from 2006 to 2018. This panel dataset is used to identify the impact of three sets of reforms in the following domains: family policies, labour market institutions, and social protection and competition policies. Section 4 provides a summary of our findings and some concluding remarks.

2. Mapping individual characteristics associated with in-work poverty

2.1. Literature review

The dual nature of IWP suggests that both demographic and employment characteristics play a role in defining the poverty profile. Among demographic factors, household composition is one of the factors most associated with IWP. In particular, the presence of children is positively correlated with the risk of IWP (Gutiérrez et al., 2011). When examining household labour market participation, additional earnings are generally found to be a protective factor against IWP (Barbieri et al., 2024). Many studies emphasise household work intensity as a central factor in explaining IWP, and the number of employed individuals in a household is seen as a strong predictor (Hick and Lanau, 2017; Marx and Nolan, 2014; Ponthieux, 2010). Additional earners are particularly relevant in preventing poverty for individuals in precarious employment (Tamayo and Tumino, 2021). 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 explaining IWP, 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 and Lanau, 2017; 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, according to Horemans (2018), temporary and part-time workers are at higher risk of IWP than workers with permanent and full-time contracts (see also Eurofound, 2017). However, even among atypical workers, there are considerable differences in the types of safety nets that support the individual in the event of economic hardship. Indeed, while temporary workers may be protected by the tax-benefit system, the household may act as a safety-net for part-time workers (Horemans, 2018).

From a comparative perspective, the difference in IWP levels between countries may be driven by institutional factors. Both labour market institutions and the tax-benefit system seem to play a relevant role in defining a country's level of IWP, through many possible channels (Gerlitz, 2018; Lohmann, 2009; Peña-Casas et al., 2019). First, although a large proportion of low-wage workers do not live in poor households, earnings still represent the most important source of household income. The difference in wage levels and wage setting may partly explain the different levels of IWP across countries. Despite the

varying share of low-paid workers across European countries, the nature of the phenomenon seems similar; indeed in many countries, young people and workers in sectors such as the wholesale and retail trade, health services, agriculture or accommodation and food service activities seem to be the most affected (Lucifora, 2005; Maître et al., 2018; Peña-Casas et al., 2019, Ratti, 2022). Furthermore, there is evidence that in countries with higher union density, a lower level of earnings inequality is observed (Salverda and Checchi, 2015). Regarding wage setting policies, the minimum wage may be effective in alleviating IWP by acting on the lowest part of the distribution of equivalent household incomes (Dube, 2019; Fields and Kanbur, 2007). In Europe, almost all countries have adopted minimum wage levels, even if the design and the level of this minimum wage is very heterogeneous (Peña-Casas et al., 2019). However, the minimum wage alone may not be adequate to protect workers living with other household members (Peña-Casas et al., 2019). Policies that aim at increasing the income of low-wage workers, through work-contingent tax credits, tax allowances or benefit schemes, are in place in many countries, with the dual purpose of alleviating IWP and increasing work incentives for low-wage or inactive workers (Peña-Casas et al., 2019).

Furthermore, as highlighted by Lohmann (2009), the tax-benefit system can act on IWP through two main channels: decommodification and defamiliarisation. 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, for example, can incentivise the employment of inactive members who engage in care work and whose employment could lead the household out of IWP. In general, generous family policies improve the work-life balance, which makes it easier for parents to escape or avoid IWP. Countries with higher spending on active labour market policies also tend to have lower IWP rates (Spannagel and Seikel, 2018). Conversely, 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 and Marx, 2023; Spannagel and Seikel, 2018). Studying individual transitions into and out of IWP may guide our understanding of the dynamics determining the varying levels of IWP in different countries. The pioneering literature on poverty dynamics and much of the subsequent analysis, however, has focused on poverty persistence and transitions, without specifically concentrating on workers and the special case of in-work poverty. These analyses highlight how different transitions contribute differently to poverty levels (Biewen, 2009; Cappellari and 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 and Raitano, 2014; Valletta, 2006; Vandecasteele, 2010). This literature showed that 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 and Ellwood, 1986; Jenkins, 2011). 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 and Ellwood, 1986; Jenkins, 2011; Polin and Raitano, 2014).

A small number of studies have used longitudinal data to study IWP transitions. This perspective allows a dissection of the phenomenon, facilitating an understanding of how specific policies can act on IWP. Gutiérrez et al. (2011) examined 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.

Using German four-year panel data, Gebel and Gundert (2023) found that for unemployed individuals, starting a job significantly reduces the risk of poverty (from 70% to 30%), 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.

Halleröd et al. (2015) analysed the incidence of IWP across labour market trajectories in 22 European countries. They 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.

These studies highlight some aspects of IWP transitions. However, given IWP's dual nature, individual trajectories can follow several paths originating from both employment and poverty conditions. To address this dual aspect, Hick and Lanau (2018) analysed IWP transitions in the UK between 2010 and 2014, considering both employment and poverty transitions, focusing particularly on the events that trigger IWP transitions. Focusing solely on workers, they analysed transitions in and out of poverty, using multivariate analysis, demonstrating 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, non-working individuals in jobless households often remain in poverty upon re-entering

employment. The authors suggest that maximising positive transitions is a critical policy challenge. Guio, Marguerit and Salagean (2021) extended previous analyses by using both income poverty and material deprivation to measure in-work poverty. They investigated to what extent the trajectories into and out of in-work poverty or in-work material deprivation can be explained by individual factors, household characteristics and trigger events. They showed similar patterns of income poverty and deprivation, except in the cases of self-employed and workers having health problems. For the former, this highlights the difficulty in accurately measuring self-employment income in surveys. For the latter, this shows that healthcare costs impact in-work deprivation and are not taken into account in in-work poverty.

Against this background, this section adopts a comparative perspective and explores how the nature of IWP varies across European countries. Because of IWP's dual nature, similar indicator levels may conceal different underlying dynamics. The section builds on the 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. Furthermore, following Guio et al (2021), the paper applies this framework of analysis to both in-work poverty and in-work deprivation. Relative and more absolute poverty measures complement each other and allow different perspectives for some groups of workers. Furthermore, using the material deprivation indicator facilitates interpretation of the 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.

2.2. Methods and data

In order to understand how the nature of IWP varies across countries, we analyse the poverty risk for individuals following specific trajectories of employment status and poverty. Specifically, the trajectories are defined by current and previous employment status and past poverty status. We therefore examine how current (in-work) poverty risk varies with alternative configurations of past employment and poverty. This perspective provides insight into whether IWP is a problem related to workers who fall into poverty at some point in their working careers, or the working poor who are unable to escape poverty.

To conduct our analysis, we use fifteen waves of the longitudinal dataset of the European Union Statistics on Income and Living Conditions (EU-SILC), from 2007 to 2021. 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. The countries analysed were chosen in order to ensure the widest possible representation of European countries, which are characterised by different welfare and labour market systems. However, due to some limitations related to data availability, sample design and sample size, especially for register countries, the analysis was conducted on 16 out of 27 European countries: Austria, Belgium, Bulgaria, Cyprus, Czechia, Estonia, Greece, Spain, France, Croatia, Hungary, Italy, Lithuania, Luxembourg, Latvia, Poland. In our analysis we consider individuals of working age, so for each wave we have selected those aged between 25 and 65.

As explained in the introduction, we adopt two different definitions of poverty in order to gain a more complete and exhaustive understanding of the phenomenon. The first indicator we use is the EU at-risk-of-poverty rate, 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 satisfactorily captured by this 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 (9 items[1]) available from EU-SILC at that time, (see Guio, 2009). This indicator was revised in 2017 and now includes a larger set of more reliable items. In this paper, 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 characteristics, to be consistent with the EU definition of IWP, each individual was assigned a main activity, based on the prevalent activity declared in the activity calendar

[1] These 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).

for the period for which the information is reported. The possible statuses are employees, self-employed, retired, unemployed and inactive. In order to interpret transitions in a way that is clear and consistent across countries, we exclude those who declared themselves to be retired for most of the reference period. Due to the potential for income underreporting among the self-employed, we exclude this group across all countries in the analysis. Furthermore, 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. As far as poverty status is concerned, an individual is defined as poor if his or her equivalent household income is less than 60 per cent of the median. Once all variables of interest have been defined, all longitudinal datasets are merged, and any duplications eliminated. Our final dataset consists of 297,060 individuals for the at- risk of poverty indicator and 226,155 individuals for the material deprivation indicator (see sample size and sample characteristics in Tables A1 and A2 in the Appendix).

While most of the studies on IWP reviewed in Section 2.1 restrict the sample to the population of workers, we consider all working-age individuals (employed and non-employed) and use information on past poverty status and current and past employment status to identify the trajectories that shape IWP. Considering the whole population, without selecting those in employment, has two main advantages. First, from a comparative perspective, it avoids sample selection issues that might occur if the analysis focuses only on workers (Hick & Lanau, 2018). In a static analysis, the characteristics of the in-work poor depend on the characteristics of the workers. Indeed, different income support, labour market regulations, activation and labour policies may create incentives or disincentives to work that lead to significant differences in the composition of the people at work across countries. Moreover, a longitudinal analysis that focuses only on workers is subject to sample selection from one period to the next, which may be driven by temporary policy changes in single countries. Restricting the analysis over time to workers alone may therefore result in a shifting sample, influenced by country-specific policy changes, which could impact comparative analysis outcomes.

To summarise transition patterns, we estimated, for each country under analysis, a regression model that describes the poverty through a Markovian process, where the current poverty condition (P_t) depends on its past realisation P_{it-1}, and to assess in-work poverty transitions, we also make this conditional on current and past employment status:

$$P_{it}^{*} = \beta P_{it-1} + \gamma W_{it} + \omega W_{it-1} + \tau W_{i0} + \varphi P_{i0} + \vartheta {X^{I}}_{i} + \omega {X^{V}}_{it} + \tau {\bar{X}^{V}}_{i} + \pi Year_i + u_i \quad (2.1)$$

$$P_{it} = 1[P_{it}^{*} > 0];\ u_i \underset{iid}{\sim} Normal, \text{independent of } P_{it-1}, W_{it}, W_{it-1}, W_{i0}, P_{i0}, {X^{V}}_{it}, {X^{I}}_{i} \quad (2.2)$$

where P_{it-1} represents the past poverty condition, while W_t, and W_{t-1} are dummy variables for, respectively, the current and past employment conditions. Following the definition of the IWP indicator, W_{it}, and W_{it-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. In this simple specification, employment status is treated as exogenous to poverty. In other words, what the model captures is the implication for poverty risks of different configurations of current and previous period employment statuses.[2] To adjust for baseline poverty and employment risks, we include as a covariate the initial condition in the 4-year window for both the employment status (W_0) and the poverty status (P_0). We also control for other time invariant covariates ($X^I{}_i$), such as sex and the highest education level achieved, and time variant covariates ($X^V{}_{it}$), such as age group, household composition[3], household work intensity[4] and the presence of household members over the age of 65. Moreover, to deal with the potential endogeneity between non-observable individual fixed effects and the other covariates, the average of the time-varying covariates is included (Woolridge, 2005)[5]. To assess how countries rank compared to the European average, we also estimate a European-level model, to which, in addition to the variables described above, we add country fixed effects. Since the dataset includes all individuals of active age – whether employed or not -- employment characteristics are not included in the model, as such information is unavailable for non-working individuals.

[2] Although it would be desirable to endogenise employment status in a more refined specification of the joint poverty and employment dynamics, our attempts at estimating such models with EU-SILC data have been unsuccessful. We conjecture that the short time span available in the rotating EU-SILC design, combined with the relative stability of the employment and poverty statuses, do not provide sufficient variation in the data to enable us to fit these more elaborate models.

[3] We consider six household types: i) single person; ii) single parent with children; iii) two adults without children; iv) two adults with children; v) more than two adults without children; vi) more than two adults with children

[4] Household work intensity is calculated as the sum of the number of months worked over all working-age household members, divided by the sum of the number of potentially workable months. For simplicity, for workers who report that they work part time, the number of months worked was multiplied by 0.5.

[5] We do not consider the average of the age group and the presence of an over-65-year-old household component, because the four-year panel does not provide enough variability for this information.

As highlighted before, the model makes it possible to identify trajectories that involve the past poverty status, and both the current and past employment conditions. Through the model described above, we estimate the probability of falling into poverty when individuals are on single trajectories, by computing the predicted value for the probability to be poor at specific values of W_{it-1}, P_{it-1} and W_{it} and averaging prediction over the other control variables (predictive margins).Table 1 shows the eight possible trajectories that can be deduced from the model described in equation (2.1).

Table 1. Combinations of past employment condition, past poverty condition and current employment condition

Trajectory	Past Employment condition (W_{t-1})	Past poverty condition (P_{t-1})	Current Employment condition (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 continue working

For each country under analysis, the entire sample is then used to estimate the predicted probabilities of the trajectories reported in Table 1. Potentially, all trajectories involving employment at time t directly influence current levels of IWP (i.e. trajectories 5, 6, 7 and 8). However, other transitions are also of interest, as they provide an insight into the capacity of the social security system to protect workers from poverty (i.e. trajectories 2 and 4).

To characterise the poverty risk for individuals undergoing specific transitions, we calculate the relative trajectory poverty-risk share. This measure is derived from the model described above and is the ratio between the predicted poverty risk in individual trajectories ($\Pr(P_t|W_t; P_{t-1}; W_{t-1})$ and the overall predicted poverty risk in the country ($\widehat{\Pr(P_t)}$) :

$$T_t = \frac{\Pr(P_t|W_t; \widehat{P_{t-1}}; W_{t-1})}{\widehat{\Pr(P_t)}}$$

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 national average.

To identify vulnerable groups, we estimate the model by gender, age group (under 35 vs over 35), educational level (low/middle vs high education level) and household work intensity, we predict the

poverty risk for each population group involved in single trajectories and we explore the trajectory poverty risk across socio-economic groups.

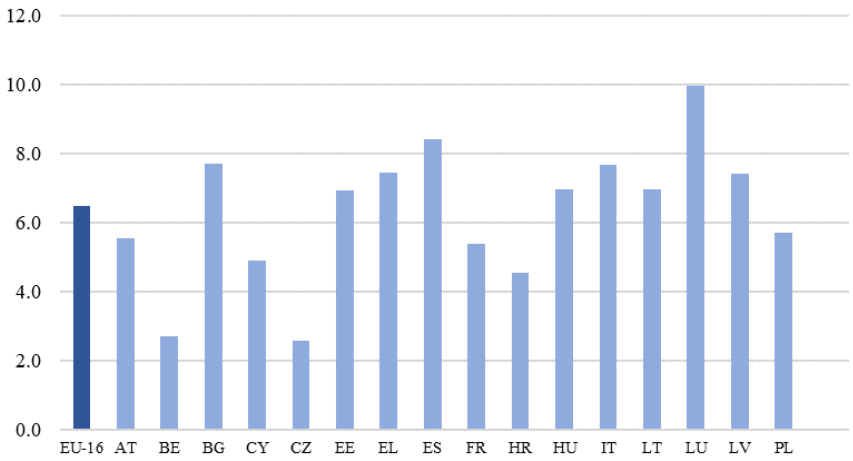
Since it is crucial to consider trigger events in longitudinal analyses of IWP, to better identify and understand the specific factors influencing transitions into or out of poverty over time, we also analyse significant changes, such as changes in family structure or in the number of working household members. In particular, we explore how the entry and the poverty rate change when some trigger events are observed, as compared to the overall entry and exit rates. The trigger events related to poverty entries include: the increase in the number of household members (childbirth or other household recomposition) and the reduction in the number of (full-time) workers. Consistently, concerning poverty exit we explore the impact of a decrease in the number of household members, an increase in the number of workers and an increase in the number of full-time workers. To have a clearer view of the association between poverty entries/exits and demographic events - such as childbirth, return of adults to parental home, union with non-workers or other household size increases due to new inactive or unemployed members - we consider the changes in household size by keeping constant the number of workers. Similarly, we estimate poverty exits/entries when there is a change in the number of workers by keeping constant the household size.

2.3. Descriptive statistics

2.3.1. In-work poverty

Figure 1 illustrates the estimated IWP rate from 2004 to 2021 across the countries analysed. At the European level, the average IWP rate is around 6%.

Figure 1. Average in-work poverty rate. Pooled longitudinal data 2004 - 2021



Source: Elaboration of the authors based on EU-SILC data

The phenomenon is particularly pronounced in Luxembourg, where the rate is close to 10%. Additionally, above-average IWP rates are observed in several Eastern European and Mediterranean countries. In contrast, countries such as Belgium and Czechia report significantly lower levels of IWP, with rates just above 2%.

As previously noted, the dual nature of the indicator makes it more difficult to understand this phenomenon. Similar levels of IWP may arise in very different contexts, potentially requiring distinct policy measures. Figure 2 presents the employment and poverty rates for the countries analysed, showing that countries with similar IWP rates, such as France and Croatia for example, actually have very different socio-economic profiles (on average over the period). While France has a poverty rate for working-age people below the European average (11%) and a high employment rate (81%), Croatia's employment rate is close to the European average (71%) and its poverty rate is higher than the EU average (14%). Despite a similar risk of poverty for workers in both countries, their probability of being employed and the risk of poverty when not employed are very different. On the other hand, while Luxembourg's employment and poverty rates are in line with the European average, its IWP level is the highest and deviates markedly from the other countries with similar levels of employment. This underscores the need for a more detailed exploration of the nature of the phenomenon.

Figure 2. Average at-risk of poverty (left-hand axis) and employment rates (right-hand axis). Years 2004 – 2021. Pooled longitudinal data

Source: Elaboration of the authors based on EU-SILC data

To illustrate the importance of taking into account the dynamics of both employment and poverty, Table 2 presents transition matrices for poverty status and employment status. As the data reveal, when these two phenomena are considered separately, countries exhibit quite different patterns. Overall, countries with higher persistence of poverty tend to show lower persistence in employment compared to the European average. Additionally, some of these countries, such as Bulgaria, Greece, Spain, Latvia and Hungary, also have higher levels of mobility than the European average, in terms of both poverty status and employment status. Coming back to the example of France and Croatia, we observe that although IWP levels are quite similar in Figure 1, Croatia experiences more persistent poverty and less persistent employment than France, while both countries have similar transitions into and out of poverty or employment.

Table 2. Transition matrices. Employment and poverty. Years 2004 – 2021. Pooled data

	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
AT	85.4	3.8	4.0	6.8	14.6	4.5	4.2	76.7
BE	84.6	3.4	3.7	8.3	24.4	2.6	3.2	69.8
BG	79.0	4.6	4.8	11.6	18.3	3.7	4.3	73.7
CY	86.9	2.6	3.4	7.1	22.0	2.4	3.2	72.4
CZ	91.7	1.9	2.2	4.2	14.4	3.4	2.4	79.9
EE	81.6	4.1	4.5	9.9	15.0	4.1	3.8	77.1
EL	73.6	6.3	5.9	14.2	39.5	4.0	3.9	52.5
ES	76.9	5.2	4.9	13.0	28.9	4.7	5.1	61.4
FR	85.8	3.9	3.6	6.7	15.9	3.0	3.1	78.1
HR	79.8	3.4	4.0	12.8	26.4	3.4	3.0	67.2
HU	82.7	5.1	4.8	7.4	15.7	4.5	3.9	75.9
IT	77.8	4.2	4.9	13.1	31.4	3.3	3.5	61.7
LT	80.0	3.8	4.8	11.4	18.6	2.9	3.3	75.2
LU	81.1	4.8	5.2	9.0	18.4	3.2	2.9	75.5
LV	79.9	5.0	4.7	10.4	15.9	5.1	5.5	73.6
PL	82.2	4.3	4.5	9.1	25.1	3.1	3.0	68.7
EU-17	80.7	4.3	4.5	10.5	25.2	3.7	3.7	67.4

Source: Elaboration of the authors based on EU-SILC data

While the previous table distinguishes between transitions into or out of employment and transitions into or out of poverty separately, IWP levels result from the intersection of employment and poverty trajectories. Table 3 crosses all possible transitions related to present and past employment status and past

poverty status. It presents the frequency of all possible trajectories and the corresponding at-risk-of-poverty rate for people in each specific trajectory. As noted in the previous section, the trajectories that directly contribute to IWP levels are those where individuals are currently employed, thus trajectories 5 – 8. Transition 5 (individuals moving from not working and not being poor to working) was excluded from the analysis because, while relevant for in-work poverty as it involves individuals who are currently working, it represents a peculiar category not aligned with the primary focus of this paper, which aims to examine poverty risks among those with more conventional employment and poverty trajectories. Trajectory 7 includes people who are poor and not working and start working. One out of every two of these individuals remains in poverty, illustrating that employment does not necessarily ensure an escape from poverty. This is a key transition which deserves analysis, but this is difficult due to small sample size.

Table 3. Employment and poverty trajectories. Years 2004 – 2021. Pooled data. European level

Trajectory	W_t	P_t-1	W_t-1	Freq.	Percent	At-risk of poverty
1	0	0	0	47,652	16.0	12.6
2	0	0	1	9,352	3.2	18.7
3	0	1	0	27,241	9.2	78.3
4	0	1	1	1,770	0.6	78.1
5	1	0	0	7,460	2.5	5.2
6	1	0	1	188,052	63.3	2.5
7	1	1	0	3,435	1.2	47.5
8	1	1	1	12,098	4.1	57.4
	Total			297,060	100.0	14.9

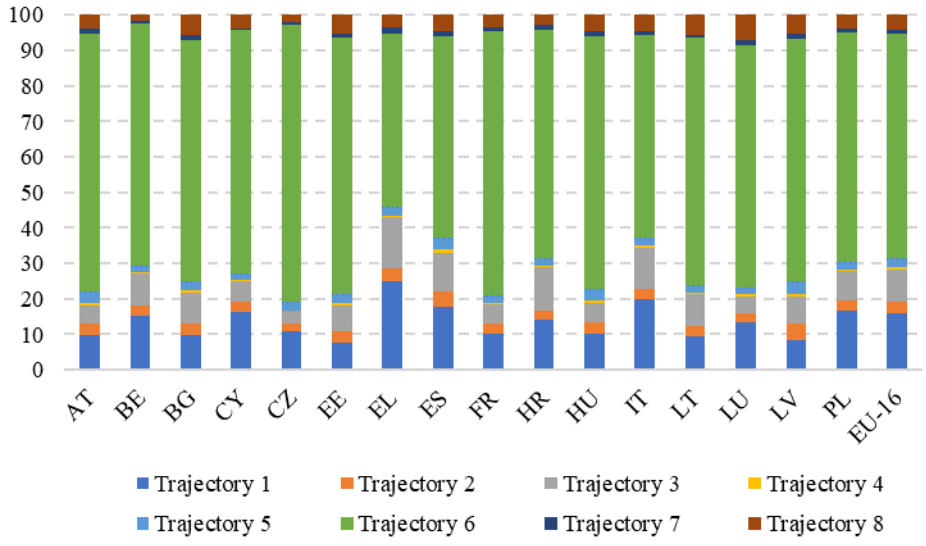
Source: Elaboration of the authors on EU-SILC data

However, trajectories 2 and 4 also indirectly influence the IWP indicator. Indeed, the individuals involved are no longer counted in the current indicator, as they cease working, so in a way they influence the current IWP level and composition. Moreover, trajectory 2, by tracking the path of non-poor workers who leave employment, can provide relevant information on the ability of the social security system to protect workers in the event of job loss. To some extent, this also influences levels of IWP, as a lower (higher) level of protection may make individuals more averse (more likely) to leave work and may therefore encourage them to accept (refuse) lower wages and worse working conditions. However, these transitions, while significant, involve only a small share of active-age individuals. For the sake of

simplicity, the following analysis will focus on the most relevant poverty and employment trajectories associated with the IWP phenomenon. In particular, we will look at how the risk of being in poverty varies between countries for the non-poor who continue to work (trajectory 6). Although the risk of poverty for those involved in this trajectory is very low (2.5%), this category makes up more than 60% of active-age individuals. It is, therefore, a low-risk trajectory, but an interesting one to analyse because it is a significant channel for defining the phenomenon under investigation. Furthermore, we will analyse how the poverty rate varies among those who are in in-work poverty and continue to work (trajectory 8). This trajectory is another relevant one, focusing on those trapped in IWP. It involves only 4% of individuals, but with a high poverty risk. Finally, in order to understand the extent to which working can prevent people from falling into poverty and how this varies between countries, we also look at transition 7.

At the country level, Figure 3 shows that the frequency of the underlying trajectories differs substantially. Working-age people in Trajectory 6 (i.e. working both periods and not poor in the previous period) are much less proportionally numerous in Greece, as well as in Croatia, Italy and Spain. On the other hand, those not working (trajectories 1 and 3) are overrepresented. In Luxembourg, those working during both years and poor in the first one are overrepresented (Trajectory 8), compared to other countries. The next section assesses the poverty risk of people in the key trajectories leading to IWP and the factors that influence them.

Figure 3. Employment and poverty trajectories. Years 2004 – 2021. Pooled data

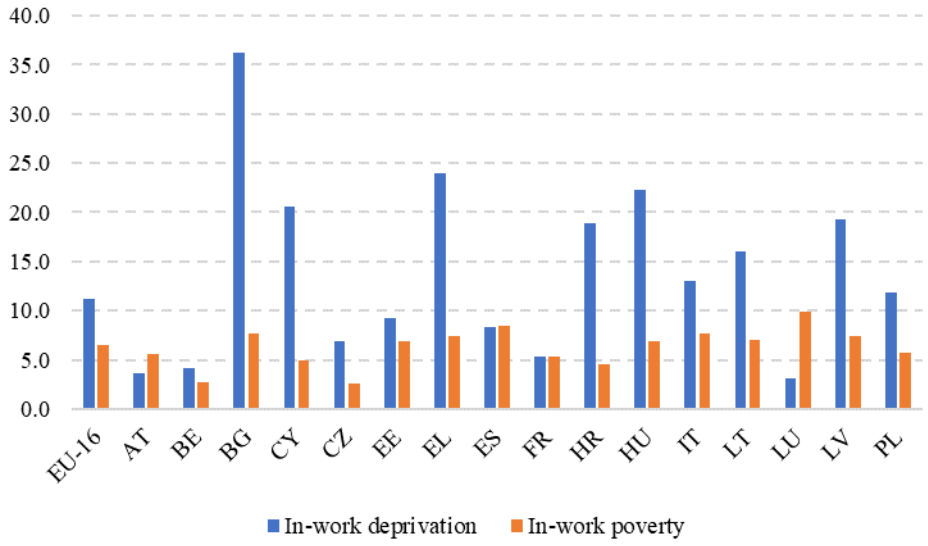


Source: Elaboration of the authors based on EU-SILC data

2.3.2. In-work deprivation

Figure 4 contrasts the IWP and the in-work material deprivation rate (IWMD), offering several noteworthy insights. IWMD rates vary significantly more than IWP rates (Figure 1), reflecting the diversity of living standards across the EU. In some countries—such as Bulgaria, Greece, Hungary, Cyprus, Croatia, and Latvia—a substantial share of workers (one fifth or more) experience MD. Conversely, the shift in perspective from a relative (IWP) to a more absolute indicator (IWMD) results in a much lower IWMD than IWP in Luxembourg.

Figure 4. Average in-work poverty and material deprivation rates. Pooled longitudinal data 2004 – 2021



Source: Elaboration of the authors based on EU-SILC data

Table 4 presents the transition matrix for material deprivation status. As expected, in the most deprived countries, the proportion of individuals having no deprivation episodes over two consecutive years is much lower than for income poverty. Conversely, 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 greater in most countries than in the case of income poverty. This trend may reflect the general improvement in living standards across most countries, especially during the post-financial crisis period. Figure 5 illustrates the frequency of trajectories at the country level and highlights that the types of

trajectories leading to IWP and IWMD differ. In the most deprived countries, the relative share of trajectory 8 is higher, while that of trajectory 6 is lower than for the trajectories leading to IWP (as shown in Figure 3). This demonstrates that the two indicators complement each other and provide valuable insights, warranting their continued use in the subsequent analysis.

Table 4. Transition matrices. Employment and material deprivation. Years 2004 – 2021. Pooled data European and country level

	M_t-1 = 0; M_t = 0	M_t-1 = 0; M_t = 1	M_t-1 = 1; M_t = 0	M_t-1 = 1; M_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
AT	89.3	2.3	3.7	4.6	14.1	4.7	4.3	76.9
BE	85.0	3.4	3.9	7.7	24.0	2.7	3.3	70.0
BG	49.9	5.2	6.6	38.3	18.7	3.8	4.5	73.0
CY	64.5	9.3	9.7	16.5	22.5	2.5	3.3	71.7
CZ	86.6	2.6	3.4	7.4	14.5	3.4	2.2	79.9
EE	80.9	4.6	6.1	8.4	14.7	4.1	3.3	77.9
EL	57.3	7.7	7.6	27.4	40.6	4.1	4.0	51.3
ES	80.1	5.8	6.4	7.7	29.5	4.9	4.7	60.8
FR	86.2	3.2	4.6	6.0	15.6	2.9	3.0	78.5
HR	65.0	8.1	8.2	18.6	25.9	3.4	3.0	67.7
HU	63.6	5.2	8.2	23.0	16.4	4.3	3.6	75.7
IT	71.3	6.9	9.3	12.6	31.5	3.5	3.6	61.4
LT	70.3	5.2	6.6	17.9	18.6	3.1	3.3	75.0
LU	93.2	2.0	2.3	2.4	18.3	3.1	2.9	75.8
LV	64.8	6.8	10.6	17.8	16.9	5.6	5.2	72.4
PL	76.6	3.8	5.6	14.0	25.1	2.9	3.0	69.0
EU-17	76.3	5.2	6.6	12.0	25.5	3.8	3.7	67.1

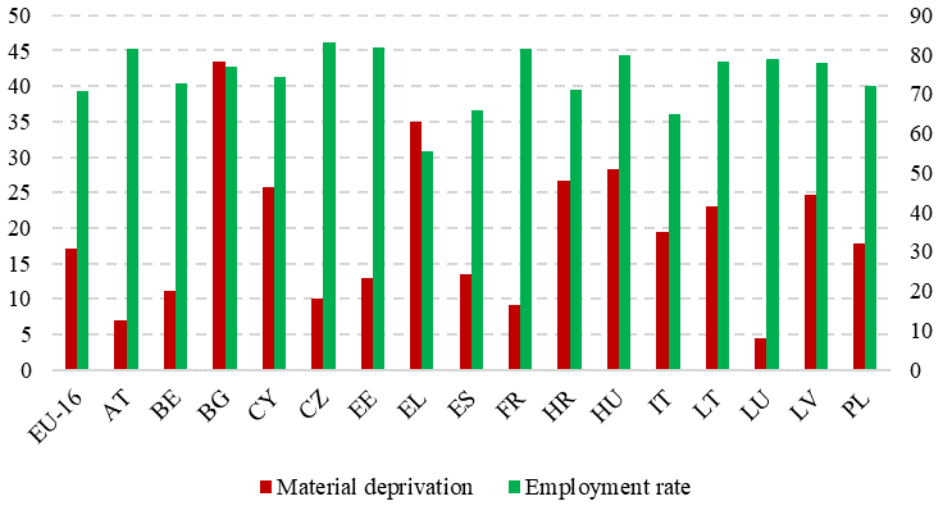
Source: Elaboration of the authors based on EU-SILC data

Table 5. Employment and deprivation trajectories. Years 2004 – 2021. Pooled data. European level

Trajectory	W_t	M_t-1	W_t-1	Freq.	Percent	Material deprivation
1	0	0	0	38,175	16.9	12.6
2	0	0	1	6,102	2.7	12.3
3	0	1	0	19,389	8.6	70.7
4	0	1	1	2,246	1.0	71.0
5	1	0	0	5,935	2.6	9.6
6	1	0	1	133,952	59.2	4.1
7	1	1	0	2,566	1.1	57.0
8	1	1	1	17,790	7.9	58.5
	Total			226,155	100.0	17.2

Source: Elaboration of the authors based on EU-SILC data

Figure 5. Employment and deprivation trajectories. Years 2004 – 2021. Pooled data



Source: Elaboration of the authors based on EU-SILC data

2.4. Trajectories and poverty risks: regression estimates

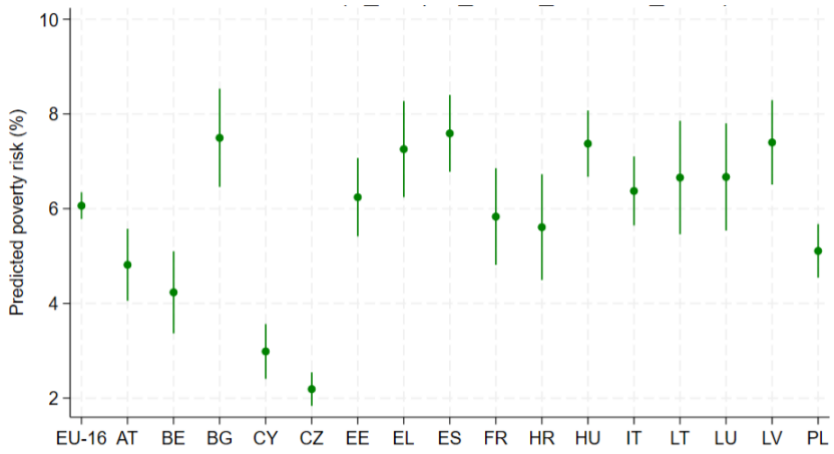
The results of the model are presented in Tables A3 and A4 in the Appendix.

The contribution of the independent variables to IWP aligns with expectations based on the existing literature. A key finding is the significant association between current and lagged poverty or deprivation status, indicating high state dependence. Current employment status provides a protective effect against poverty/ deprivation risk in all countries. However, its impact on material deprivation varies by country, and the correlation with lagged employment status is less consistent. Household work intensity is strongly associated with both poverty and material deprivation across all countries, with a stronger correlation observed for income poverty. Similarly, education seems to play a crucial role, as it is significantly associated with the risk of both poverty and even more with material deprivation. Demographic characteristics are also important. Single individuals and single parents face a higher risk of both income poverty and material deprivation compared to other household types. Conversely, the presence of household members aged over 65 is associated with a reduced risk in all countries, likely reflecting the protective role of old-age pensions. As previously discussed, to identify vulnerable groups, the model was estimated by gender, age group (under 35 vs. over 35), educational level (low/middle vs. high), and household work intensity. The poverty risk was then predicted for each population group involved in the particular trajectories. The results are presented in the next sections.

2.4.1. Workers falling into income poverty: risk and vulnerable groups

Figure 6 shows 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 (transition 6). The risk of poverty for those in this category varies greatly between European countries. This illustrates how complex the IWP phenomenon is, depending on the socio-economic context. At the European level, individuals in this category (i.e. working and non-poor in the previous period and working in the current period) have almost a 6% probability of falling into poverty in the current period, but in some countries this risk is significantly higher, including Bulgaria, Greece, Spain and Hungary. By contrast, the working non-poor have a low risk of falling into poverty in Austria, Belgium, Cyprus, Czechia and Poland.

Figure 6. Predicted poverty risk. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 0; W_{t-1} = 1)$

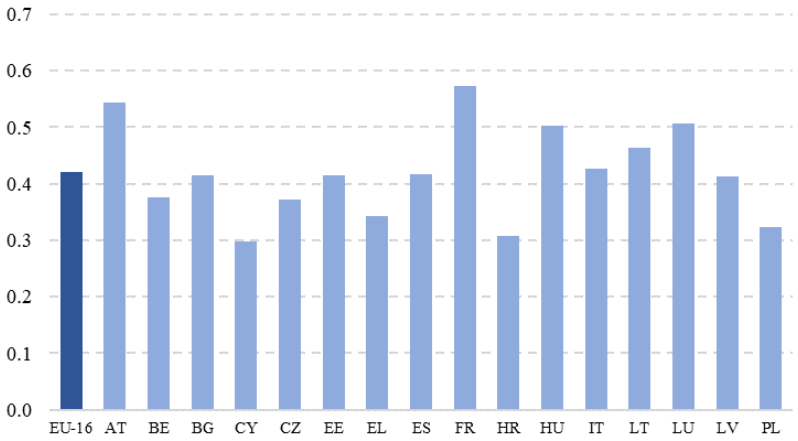


Notes: The predicted values are derived from estimated values presented in Table A3. Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented[6]. Source: Elaboration of the authors based on EU-SILC data.

[6] Confidence intervals were estimated without fully taking into account the complex sample design (involving stratification, geographical clustering) of EU-SILC, since the required design information is not available in the scientific use files. Our estimates take into account clustering at the level of households, and point estimates are weighted by sampling weights.

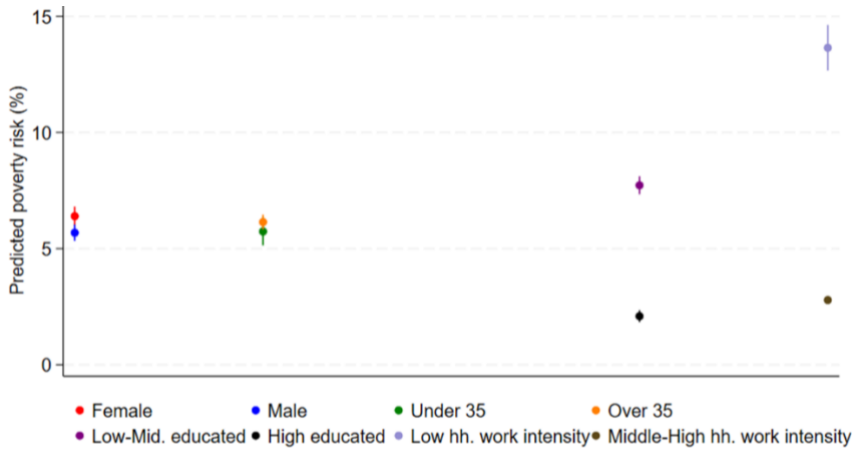
Figure 7 shows the relative trajectory poverty-risk share for transition 6. By contextualising the poverty risk of individuals in this transition with respect to the country's poverty level, we observe that in some countries previously identified as at high risk (Figure 6), the relative trajectory poverty risk is aligned with the European level. This is the case for Bulgaria, Greece, Spain and Latvia, while for Hungary the relative poverty risk share for the working non-poor remains high. On the other hand, we observe a high relative trajectory poverty risk in Austria and France, countries where individuals involved in this transition do not experience a high poverty risk (Figure 6). The relative poverty risk trajectory seems to be particularly low in Cyprus, Croatia and Poland, indicating that here, non-poor workers are better protected against poverty than the general population, as compared to other countries.

Figure 7. Trajectory poverty-risk share. Trajectory: $W_t = 1$; $P_{t-1} = 0$; $W_{t-1} = 1$



Source: Elaboration of the authors based on EU-SILC data

Figure 8. Predicted poverty risk by demographic and socio-economic group, trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 0; W_{t-1} = 1)$. European level



Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

Figure 8 shows the risk for specific socio-economic groups, breaking down the risk by gender and age, educational level and work intensity. These breakdowns are presented at the country level in Figure A1 in Appendix A. The difference by gender and age is not significant in most countries. The evidence broken down by gender confirms the literature and can be explained by a mix of factors, i.e. on one hand, increased vulnerability of women on the labour market and, on the other hand, the fact that women may be protected against poverty by men's labour income. Regarding age, while no statistically significant differences are observed, older workers in many countries tend to face a lower risk of poverty. This trend is aligned with wage patterns over the life cycle. In contexts where the early stage of a working career does not serve as a steppingstone and the labour is segmented, younger workers may experience a higher risk of falling into poverty than older workers (Scherer, 2004).

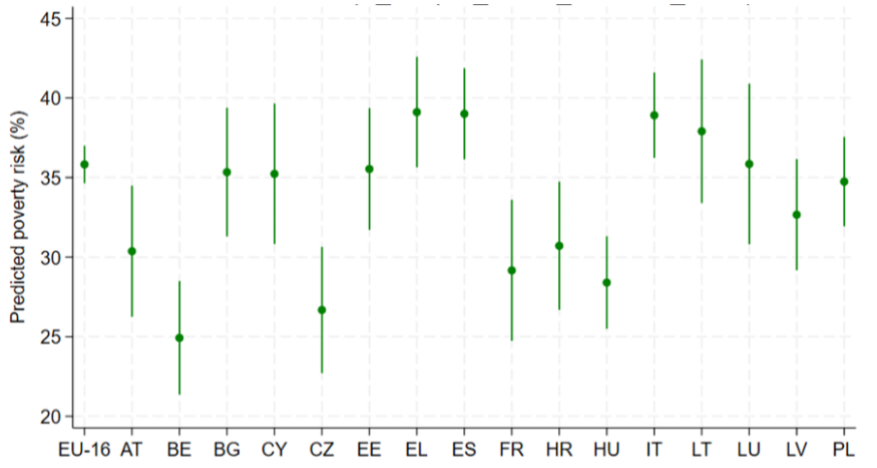
As far as education is concerned, there are significant differences at the EU level and in most countries (except in Cyprus or Czechia). As expected, the working non-poor with a low level of education have a higher risk of falling into poverty. As confirmed in the literature, household work intensity is one of the key risk factors for IWP. In Bulgaria and Estonia in particular, working non-poor who belong to households with low labour market attachment are particularly at risk of falling into poverty.

To better understand this transition, Table A5 in the Appendix presents the poverty entry rates associated with specific trigger events. Negative labour market events seem to be more influential than demographic events. In many countries, increases in the number of household members (birth of a child, recomposition of households) is not associated with a significant increase in the poverty entry rate (except for in Austria, Greece, Italy and Luxembourg). In contrast, for most of the countries under analysis, a decrease in the number of workers in the household is associated with a significantly higher entry rate.

2.4.2. In-work poverty stagnation: poverty risk and vulnerable groups

The following results pertain to individuals who were working poor in the previous period and have maintained their jobs in the current period while remaining poor. Figure 9 shows the predicted risk of poverty for this category. Many countries have a similar risk of remaining working poor. These countries include Poland and Cyprus, which, by contrast, had a lower risk of poverty than the European average in the previous case. As in the trajectory involving the working non-poor, Spain and Greece appear among the countries with the highest risk of stagnation in IWP. Hungary exhibits a particularly low risk of stagnation in IWP compared to the EU average, in contrast to the previous case.

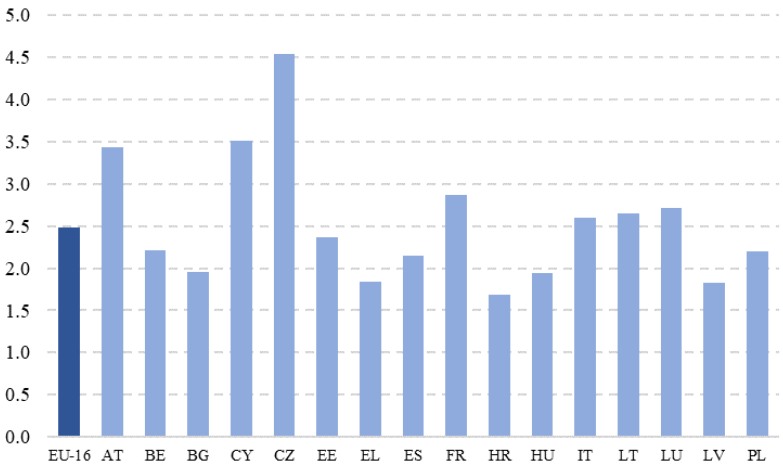
Figure 9. Predicted poverty risk. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 1)$



Notes: The predicted values are derived from Table A3. Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented.
Source: Elaboration of the authors based on EU-SILC data.

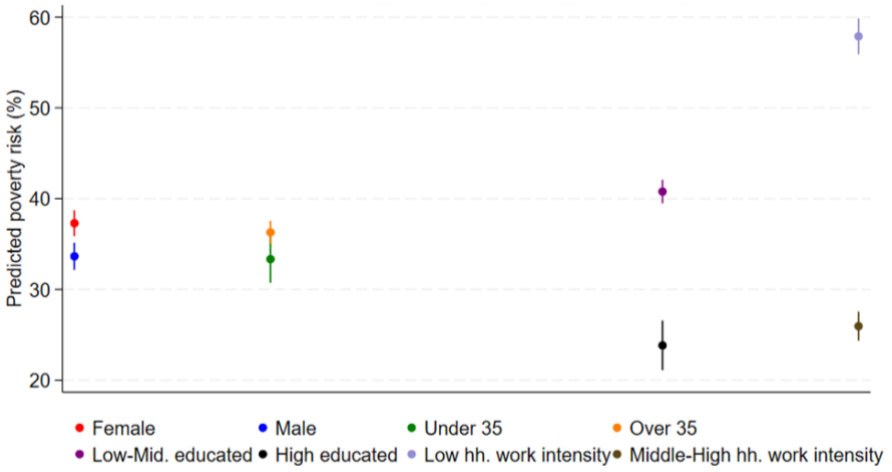
Similarly to Figure 7, Figure 10 illustrates the relative trajectory poverty-risk share for transition 8. Once again, when comparing the poverty risk of the individual trajectories to the overall poverty level, previously unobserved issues emerge. For example, in Austria and Czechia, the poverty risk of this trajectory appears much higher than the overall poverty risk. These countries, along with Cyprus, exhibit the highest relative trajectory poverty risk. In contrast, in other countries such as Bulgaria, Greece, Croatia and Latvia, the relative trajectory poverty risk is lower than at the EU level.

Figure 10. Trajectory poverty-risk share. Trajectory: $W_t = 1; P_{t-1} = 1; W_{t-1} = 1$



Source: Elaboration of the authors based on EU-SILC data

Figure 11. Predicted poverty risk by demographic and socio-economic group. Trajectory: $\Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 1)$. European level



Notes: The estimated models contain all the other variables presented in Table 3 in the Appendix (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

Figure 11 shows the predicted poverty risk for different groups. As in the previous section, gender and age do not appear to be particularly relevant in identifying vulnerable population groups. Exceptions include Estonia, where a higher risk of poverty is observed for individuals over 35 compared to those under 35 (see Figure A2 in the Appendix). The risk varies between population groups defined by level of education and household work intensity, especially in Mediterranean and Eastern European countries.

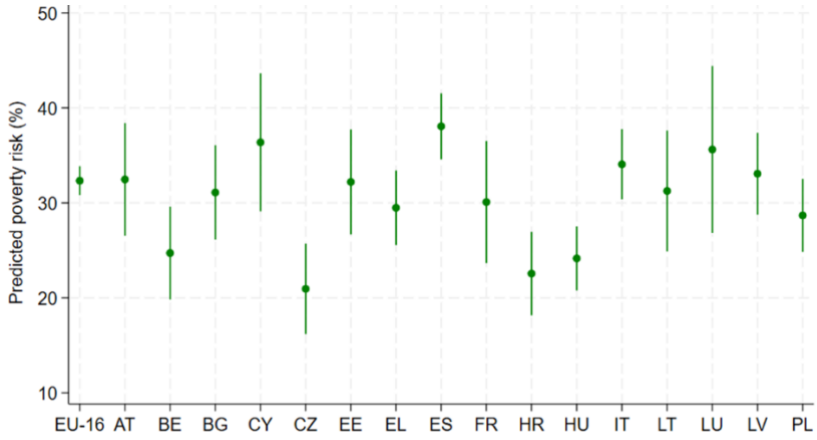
With regard to trigger events leading to exit from IWP (Table A6 in the Appendix), labour market-related events such as an increase in income earners and an increase in full-time workers are particularly associated with exiting poverty. Specifically, in Cyprus, Greece, Luxembourg and Poland, an increase in full-time workers appears to have a more significant effect than a more general increase in the number of workers. Decreases in household size, on the other hand, are associated with a higher exit rate, which is significantly different from the general rate in Bulgaria and Greece, as well as at the European level.

2.4.3. People starting to work but not escaping poverty

Figure 12 shows the predicted values of the poverty risk for those who were not working and poor in the previous period and who start working in the current period (transition 7). This shows that, at the EU

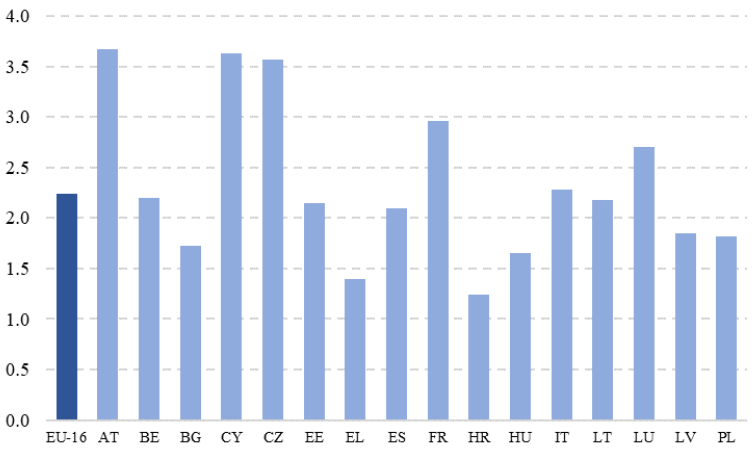
level, more than 30% of those finding a job do not escape from poverty. Although, due to the small sample size, the confidence intervals are large, Figure 12 shows that the risk is particularly large in Spain, Cyprus, Estonia, Italy, Luxembourg and Latvia. The detailed predicted probabilities (Figure 14) show that the level of education and the household work intensity are particularly important determinants. Age and gender are not significant (see Figure A3 in the Appendix).

Figure 12. Predicted poverty risk. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 0)$



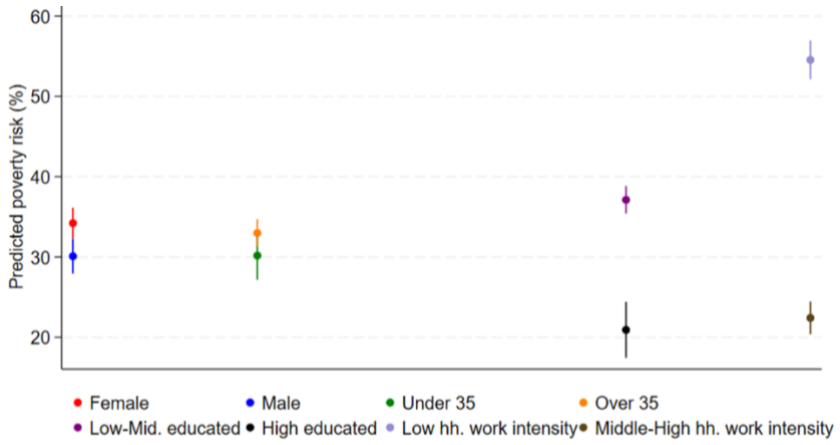
Notes: The predicted values are derived from estimates reported in Table A3. Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

Figure 13. Trajectory poverty-risk share. Trajectory: $W_t = 1; P_{t-1} = 1; W_{t-1} = 0$



Source: Elaboration of the authors based on EU-SILC data

Figure 14. Predicted poverty risk by demographic and socio-economic group. Trajectory: $\Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 0)$. European level



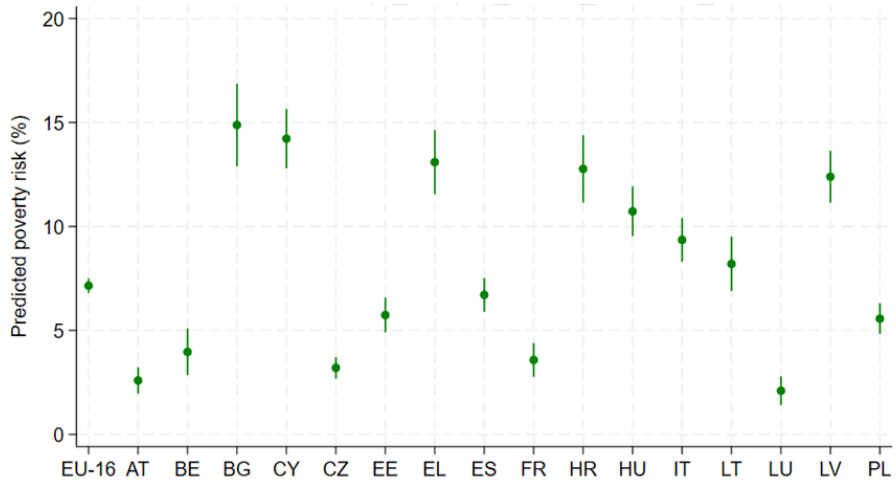
Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

2.4.4. Workers falling into material deprivation: risk and vulnerable groups

Using now the material deprivation concept, this section compares the results with those presented for income poverty in Section 2.4.1.

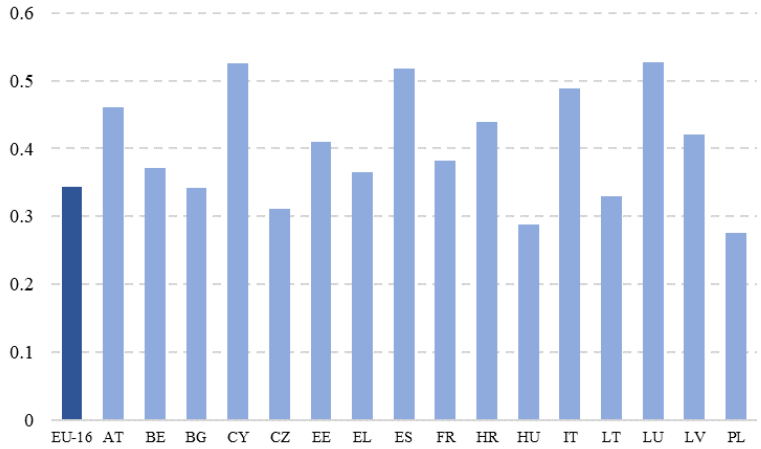
Figure 15 shows that the entry rates for workers across Member States vary far more than for income poverty, with workers in Eastern and Southern countries facing a much higher risk of deprivation and Luxembourg a much lower risk. Based on the relative share of material deprivation risk by trajectory, Figure 16 shows that the deprivation risk of workers in this trajectory is similar to the material deprivation rate of the entire active-age population, reaching approximately 40%-50% of the latter in most countries. Exceptions include Poland and Hungary, where non-poor workers are better protected against deprivation than in other countries. Conversely, the opposite is observed in Austria, Cyprus, Spain, and Luxembourg. Regarding risk factors (Figure 17, Figure A4 and Table A7), the findings align closely with those observed for income poverty, suggesting similar underlying vulnerabilities.

Figure 15. Predicted material deprivation risk. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 0; W_{t-1} = 1)$



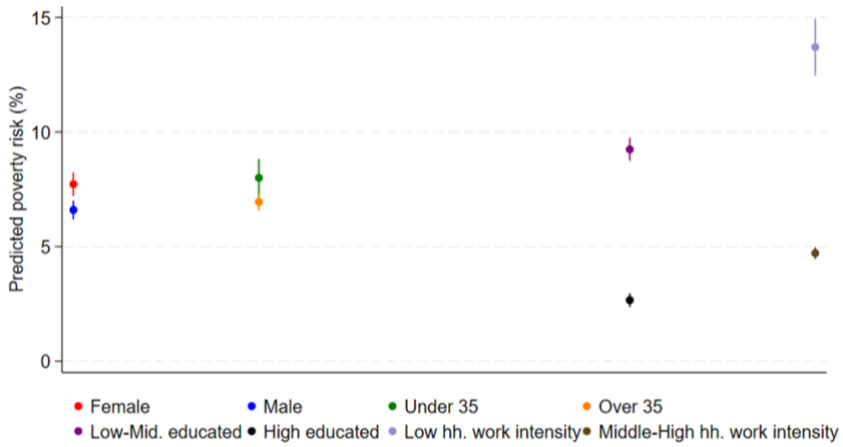
Notes: The predicted values are derived from estimates reported in Table A4 in the Appendix. Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

Figure 16. Trajectory material deprivation risk share. Trajectory: $W_t = 1; P_{t-1} = 0; W_{t-1} = 1$



Source: Elaboration of the authors based on EU-SILC data.

Figure 17. Predicted material deprivation risk by demographic and socio-economic group. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 0; W_{t-1} = 1)$. European level

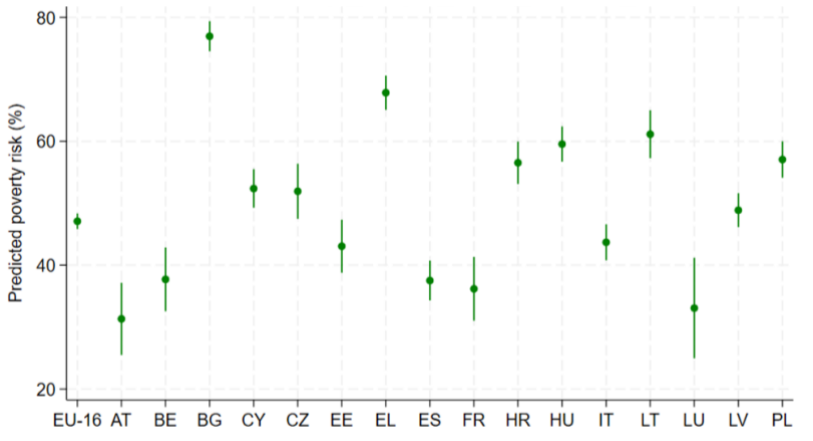


Notes: The estimated models contain all the other variables presented in Table A4 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

2.4.5. In-work material deprivation stagnation: risk and vulnerable groups

The probability of stagnating in material deprivation when working and deprived the previous year varies again a lot between countries (Figure 18).

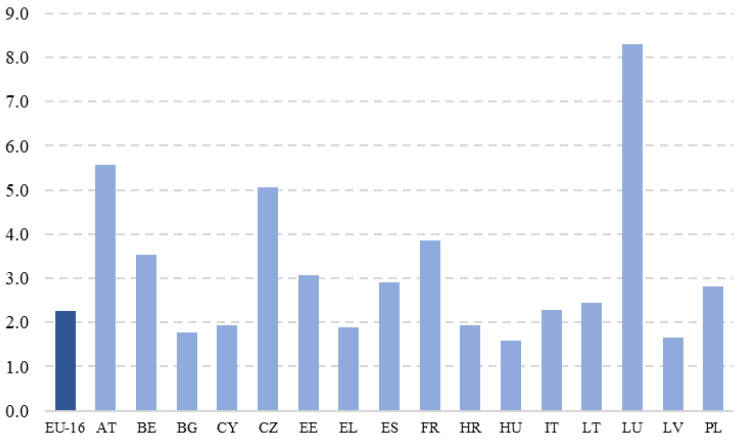
Figure 18. Predicted material deprivation risk. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 1)$



Notes: The predicted values are derived from estimates reported in Table A4. Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

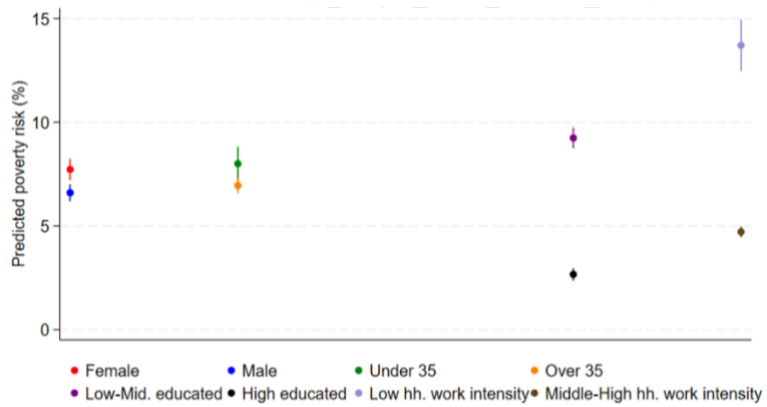
In Bulgaria and Greece, this risk is as high as 65 - 75%, showing the extent of the material deprivation trap for workers during the period covered. Figure 19 shows, however, that this risk is proportional to the material deprivation rate of the entire active-age population, and reaches around 1.5-2 times the latter in most countries. In terms of risk factors (Figure 20, Figure A5 and Table A8), the results are consistent with those identified for income poverty, except that household work intensity is associated with less differentiation in risk.

Figure 19. Trajectory material deprivation risk share. Trajectory: $W_t = 1$; $P_{t-1} = 1$; $W_{t-1} = 1$



Notes: Small sample size and large confidence intervals in Luxembourg and Czechia. Source: Elaboration of the authors based on EU-SILC data.

Figure 20. Predicted material deprivation risk by demographic and socio-economic group. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 1)$. European level



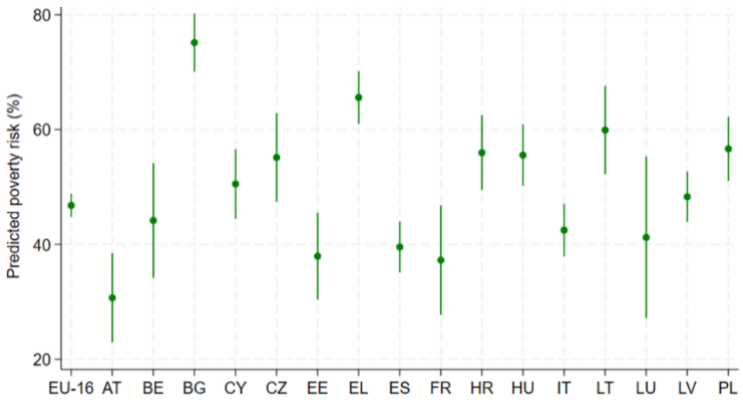
Notes: The estimated models contain all the other variables presented in Table A4 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with

four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

2.4.6. People starting to work but not escaping material deprivation

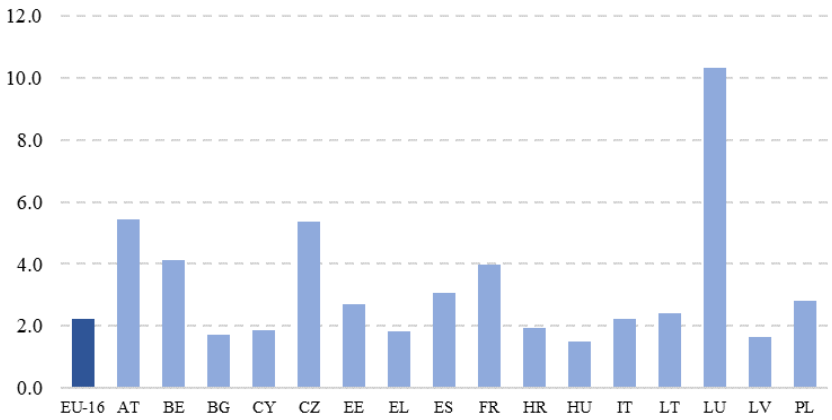
Figure 21 depicts the probability of deprivation for individuals following trajectory 7 (to be compared with Figure 12 in Section 2.4.3). The results reveal that in Bulgaria, and Greece, starting work is insufficient to escape poverty in 7 out of 10 cases. In other countries, the situation is comparatively better, though a non-negligible share of people who find a job still fail to escape material deprivation, underscoring the limitations of employment alone in addressing deprivation in most countries.

Figure 21. Predicted material deprivation risk. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 0)$



Notes: The predicted values are derived from estimates reported in Table A4. Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

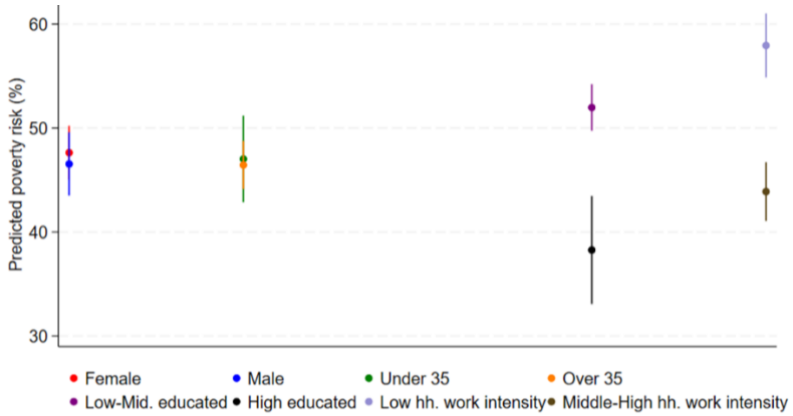
Figure 22. Material deprivation risk share. Trajectory: $W_t = 1; P_{t-1} = 1; W_{t-1} = 0$



Notes: Small sample size and large confidence intervals in Luxembourg. Source: Elaboration on EU-SILC data.

Again, the general deprivation level impacts the risk of workers (see Figure 22 and Figure A6). The educational level seems to be the most protective factor against this risk (Figure 23), exerting an even stronger influence than in the case of IWP.

Figure 23. Predicted material deprivation risk by demographic and socio-economic group. Trajectory: $Pr(P_t = 1 \mid W_t = 1; P_{t-1} = 1; W_{t-1} = 0)$. European level



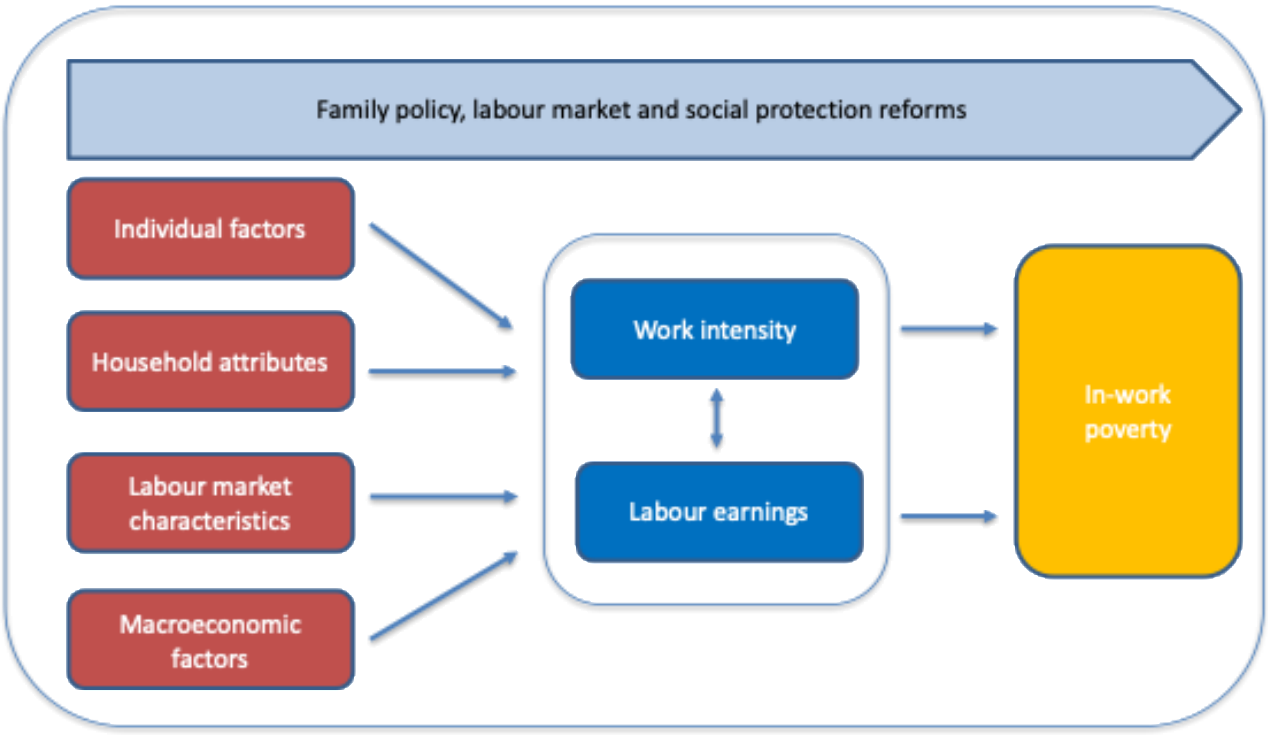
Notes: The estimated models contain all the other variables presented in Table A4 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level are presented. Source: Elaboration of the authors based on EU-SILC data.

3. Reforms and in-work poverty

In this section, we analyse how policy and institutional reforms affect in-work poverty and the channels through which their effects materialise. Our analysis covers 27 EU countries and spans from 2006-2018.

As explained earlier (see Sections 2.1), in-work poverty is conceptually associated either with low work intensity (at the individual or household level), low labour market returns, or both. In turn, those labour market performances are related to individual characteristics (age, gender, education, health, nationality), household characteristics (size, age structure, number of children, care needs, etc.) and employment characteristics of those who are employed (relative importance of self/dependent employment, distribution of employment by sectors, occupation and employers' size). Family policy, labour market and social protection reforms can impact in-work poverty by affecting either work intensity, labour earnings, or both. The following diagram summarises the conceptual basis of our analysis.

Diagram 1. In-work poverty, work intensity, earnings and reforms



To our aims, as explained in Section 3.1, we assemble a demographic group (dg) dataset based on EU-SILC data that we match with an original dataset on reforms introduced in the fields considered. In Section 3.2 we describe the methods used to identify the effects of policy reforms and in Section 3.3 we illustrate and discuss our results. Section 3.4 reports some robustness checks.

3.1. Data on in-work poverty and on reforms

3.1.1. In-work poverty, demographic and labour market data

In this section, we use data from the EU-SILC to assemble a demographic group-level dataset for the analysis of the effects of reforms on in-work poverty. As explained in Section 2.2., the length of the longitudinal dimension of EU-SILC is 4 years, and it is not sufficient to carry out the analysis of the effects of reforms on labour market and poverty using an event-study approach at the individual level. For this kind of analysis, we would indeed need to observe each individual over a time interval ranging from a few years before the event (birth of a child) to some years after.

Restricting the sample to the limited set of EU countries for which adequate and accessible longitudinal data are available proved to be not functional to the main aim of our analysis. To assess how policies and institutional settings reforms impact on in-work poverty, we indeed need to observe policy variability across countries and, more importantly, over time. Restricting the analysis to a few countries and for the time intervals available would have limited the scope of the analysis in terms of policy changes considered and posed serious limitations to the generalisation of results. As a second-best solution, we use EU-SILC microdata to assemble a pseudo-panel dataset in which the unit of observation is a demographic group. The same approach has been used in several analyses on labour market and distributive patterns (see, for example, Aksoy et al., 2021; Doorley et al., 2023; Albinowski and Lewandowski, 2024; Lewandowski et al., 2024). Specifically, for each country, we identify 30 demographic groups defined by gender (men and women), education level (basic, secondary, tertiary) and age (age groups: 20-29, 30-39, 40-49, 50-59, 60+ years-old). Our sample includes 25 out of 27 EU countries. Malta and Croatia have been excluded due to the unavailability of data for the first years of the period considered (Croatia) and to some inconsistencies over time in the definitions of months worked and the classification of occupations (Malta). To guarantee the reliability of information at the demographic group level, we restrict the sample used for the whole empirical analysis to those demographic groups in which we observe at least 10 individuals. The analysis covers the years from 2006 to 2018, a period long enough to include a variety of policy changes implemented before the outburst of the labour market effects of the Covid-19 pandemic, which might be a confounding factor difficult to handle.

EU-SILC data provides a rich set of variables that can be used to describe, besides in-work poverty, a large set of demographic and labour market characteristics, either referred to the individuals of the demographic groups or to their household. The nature of our dataset implies that all variables are expressed either as: (i) a rate/share in the demographic group (e.g., in-work poverty rate, employment rate, share of households with children, share of individuals employed in occupations/industries, etc.); (ii) an average of the demographic group (e.g., average household size, average number of months spent in caring activities, average hourly wage, etc.).

The first key variable for our analysis is the in-work poverty rate calculated, as in the previous section and in official Eurostat statistics, as the share of employed[7] individuals of the demographic group living in households with an equivalised household income lower than 60% of the median (of the country/year distribution). In view of our approach (see Diagram 1 above), we select a set of individual, household and employment characteristics that could be associated with in-work poverty through low work intensity or/and low earnings. To account for macroeconomic factors, instead of including specific variables and running the risk of multicollinearity and, at the same time, omitting important information, we rely on country/year fixed effects (see the following section for the detailed description of the empirical model).

As regards the individual variables, besides gender, age and education, which define the demographic groups and are the usual controls for employment and earnings, we include (i) the average self-reported health of the individuals of the demographic group (*'health'* - consistent with the EU-SILC original variable PH010, a higher score indicates worse health conditions), which is expected to impact on individual's labour supply (at the extensive and at the intensive margin); the percentage of individuals born outside of the country in which they are surveyed (*'migrant'* based on EU-SILC variable PB2010), likely to be related to earnings; and the percentage of individuals co-habiting with a partner, as a result of marriage or of a consensual union (*'partner_house'*). The latter variable is meant to account for the impact of household organisation and the allocation of time devoted to work and to household tasks.

As for the household level controls, we consider: (i) the average number of children in the household *('nchildren_h'*, as a control for the childcare workload on both labour supply and wages); (ii) the total number of months spent by the household member in domestic/caregiving tasks *('n_care_hh'*, as a constraint to labour supply); (iii) the number of retired household components (*'nretired_h'*, as the presence of elderly persons can impose an additional caring workload but, on the other side, represent an additional source of income and a potential support in care activities), and; (iv) the share of employed household components with tertiary education (*'sh_work_hedu_h'*), which should be associated to higher levels of household income (positive effect of assortative mating).

As regards the labour market conditions specific to the demographic group that can shape labour demand and heterogeneity on wage levels, we include as controls the share of employment in medium and large

[7] For a detailed description of the approach used to identify individuals employed, please refer to the data description provided in Section 2.

companies ('*firm_med_large*'), in the ISCO (88) major groups occupations and the share of employment in macro-industries[8].

As explained in the methods section (3.2), for the identification of the impact of the various types of reforms, we need a variable of exposure of the demographic group to each specific reform to interact with the dummy variable that identifies, for each country, the years before the reform (coded as zero) and after the reform (coded as one). As explained in detail in the next section, the variables that we use of this purpose are, at the demographic group level: (i) the share of individuals living in households with one or more children (for the family policy reforms); (ii) the temporary employment rate (for the reforms of employment protection legislation on temporary jobs); (iii) the permanent employment rate (for the reforms of employment protection legislation on permanent jobs and for reforms of the minimum wage); (iv) the unemployment rate (for the reforms related to unemployment benefits; (v) the at-risk-of-poverty rate (for reforms related to guaranteed minimum income); and (vi) the employment share in industries with a product market regulation over the median of country/year distribution (for the reforms related to labour market regulation).

Lastly, to investigate the channels through which reforms affect in-work poverty (see Diagram 1), we need proxies for work intensity and labour earnings. To this aim, we use the following variables (again at the demographic group level): the employment rate (*'employed_r'*), the part-time employment rate (*'part-time_r'*), the temporary employment rate (*'temp_r'*, already defined as an exposure variable"), the self-employment rate *('self_emp_r'*), the total number of hours worked per year (*'tot_hours_year'*), the total real hourly wage of employees (*'h_wage_r'*) and the real hourly earnings (from the self-employment *'h_earn_r'*, the average of hourly wage and hourly earnings from self-employment).

In Table 6, we report the median level of in-work poverty rates over time, calculated on our demographic group dataset (using as weights the share of the population in the demographic group by country and year).

[8] The ISCO (88) Major Groups occupations are: (1) Managers; (2) Professionals; (3) Technicians and Associate Professionals; (4) Clerical Support Workers; (5) Service and Sales Workers; (6) Skilled Agricultural, Forestry and Fishery Workers; (7) Craft and Related Trades Workers; (8) Plant and Machine Operators, and Assemblers; (9) Elementary Occupations; (0) Armed Forces Occupations. We limited the number of industry-level controls to the employment shares of the three usual macro-sectors (primary, secondary and tertiary) to avoid convergence issues of the estimations, given the high number of dummy and interaction variables needed for the correct identification (see section 3.3).

The levels and heterogeneity of in-work poverty across gender, age and education is consistent with the existing evidence from Eurostat data: in-work poverty rates are higher for man compared to women, for the younger cohort of workers (20-29 years-old) and for the middle age group (40-49 years-old) and for workers with a lower level of education, especially with regards to primary education.

Table 6. Median in-work poverty rates over time: total, by gender, age and education and age (25 EU-countries, median demographic group)

year	total	male	female	age20_29	age30_39	age40_49	age50_59	age60_	prim educ	sec_educ	ter_educ
2006	0.071	0.074	0.068	0.070	0.077	0.084	0.060	0.061	0.159	0.077	0.030
2007	0.069	0.069	0.070	0.062	0.070	0.087	0.066	0.062	0.141	0.075	0.029
2008	0.076	0.078	0.075	0.075	0.078	0.086	0.066	0.068	0.171	0.083	0.029
2009	0.075	0.079	0.071	0.075	0.074	0.084	0.066	0.073	0.178	0.081	0.031
2010	0.075	0.082	0.069	0.083	0.080	0.089	0.071	0.072	0.166	0.083	0.032
2011	0.082	0.084	0.075	0.092	0.082	0.098	0.075	0.080	0.168	0.087	0.033
2012	0.080	0.085	0.074	0.091	0.080	0.096	0.070	0.074	0.165	0.092	0.035
2013	0.082	0.083	0.080	0.100	0.076	0.093	0.076	0.076	0.184	0.093	0.035
2014	0.085	0.091	0.078	0.102	0.080	0.091	0.082	0.075	0.181	0.104	0.036
2015	0.088	0.093	0.085	0.113	0.077	0.099	0.088	0.084	0.183	0.104	0.040
2016	0.080	0.084	0.078	0.093	0.078	0.098	0.084	0.076	0.192	0.096	0.040
2017	0.083	0.086	0.080	0.092	0.085	0.097	0.080	0.080	0.207	0.097	0.040
2018	0.079	0.083	0.074	0.092	0.074	0.086	0.075	0.078	0.180	0.090	0.039
Total	*0.079*	*0.082*	*0.075*	*0.084*	*0.077*	*0.091*	*0.073*	*0.074*	*0.175*	*0.088*	*0.035*

Source: Own elaborations on EU-SILC data

Our data also confirm the heterogeneity of in-work poverty across countries (Table 7, column 1), with the Mediterranean countries (Greece, Spain, Italy and Portugal) exhibiting the highest levels, along with some central-eastern EU countries (Poland and Romania). The distribution of EU countries by in-work poverty is generally consistent with official Eurostat data; however, some discrepancies in the magnitude of IWP for some specific countries can be observed (in particular, for the Baltic and the Mediterranean countries. This is due to (i) non-perfect comparability of the age groups considered (Eurostat data refer to people aged 18-64, while our data to 20-69 years old); (ii) the fact that in our data, we have missing information for some demographic groups in which the number of observations is too low (as explained earlier, we keep only demographic groups in which we observe 10 individuals or more). The remaining columns of Table 7 highlight the levels of some key labour market variables at the demographic group level: total employment rates, part-time rate, temporary rate, self-employment rate, total hours worked per year and hourly wage and earnings (average of hourly wage and earnings from self-employment). The heterogeneity across countries in labour market outcomes is again generally consistent with the existing evidence from Eurostat data.

Table 7. In-work poverty rates and labour market outcomes across EU sample countries (2006-2018)

Country	In-work pov	Empl r	Part-t empl r	Temp empl r	Self-empl r	Tot hours year	H wage r (ln)	H earn r (ln)
AT	0.086	0.677	0.042	0.050	0.030	1456.577	2.966	2.997
BE	0.050	0.626	0.057	0.069	0.032	1464.860	3.013	2.953
BG	0.078	0.563	0.018	0.050	0.029	1733.925	0.684	0.677
CY	0.085	0.604	0.053	0.072	0.050	1534.527	2.389	2.377
CZ	0.028	0.642	0.013	0.084	0.049	1749.430	1.598	1.596
DE	0.087	0.639	0.065	0.062	0.023	1443.617	2.894	2.897
DK	0.064	0.754	0.052	0.009	0.035	1459.018	3.344	3.301
EE	0.071	0.697	0.041	0.030	0.029	1619.236	1.655	1.592
EL	0.159	0.403	0.037	0.103	0.074	1689.379	2.148	2.045
ES	0.133	0.539	0.039	0.210	0.051	1416.653	2.398	2.271
FI	0.052	0.715	0.036	0.061	0.069	1595.786	3.030	2.895
FR	0.085	0.687	0.044	0.072	0.032	1500.773	2.763	2.737
HU	0.077	0.594	0.024	0.073	0.029	1589.620	1.264	1.263
IE	0.058	0.517	0.096	0.063	0.035	1371.735	3.004	2.959
IT	0.124	0.532	0.036	0.090	0.070	1599.293	2.619	2.618
LT	0.084	0.642	0.032	0.030	0.031	1655.007	1.221	1.227
LU	0.101	0.668	0.038	0.063	0.023	1522.674	3.289	3.252
LV	0.075	0.650	0.034	0.016	0.027	1587.710	1.391	1.352
NL	0.070	0.709	0.154	0.042	0.055	1184.135	3.158	3.134
PL	0.117	0.571	0.035	0.144	0.061	1660.774	1.438	1.374
PT	0.136	0.608	0.028	0.110	0.046	1616.795	1.826	1.769
RO	0.233	0.557	0.050	0.014	0.065	1753.224	0.695	0.458
SE	0.076	0.768	0.088	0.051	0.034	1488.500	3.008	2.914
SI	0.073	0.561	0.012	0.048	0.026	1588.402	2.198	2.126
SK	0.053	0.678	0.012	0.088	0.034	1762.317	1.405	1.406
Total	*0.079*	*0.622*	*0.039*	*0.058*	*0.038*	*1572.979*	*2.409*	*2.352*

Source: Own elaborations on EU-SILC data

3.1.2. Family policy, labour market and social protection reforms

For the aims of our analysis and based on the existing literature described in Section 2.2.1, we identify three major groups of reforms related to (i) family policies, (ii) the labour market, and (iii) social protection and competition (see Annex B - Country level reform variables database). All variables are at the country level for the period 2006-2018 and are coded as dichotomic: zero in the years before the reform and one from the year of the reform onwards. For each variable, we define a group of 'treated' countries in which there was a reform either increasing (suffix 'up') or decreasing (suffix 'down') the intensity/extent of the relevant policy/provision. We only identify a reform when a 'significant' change, up or down is observed.

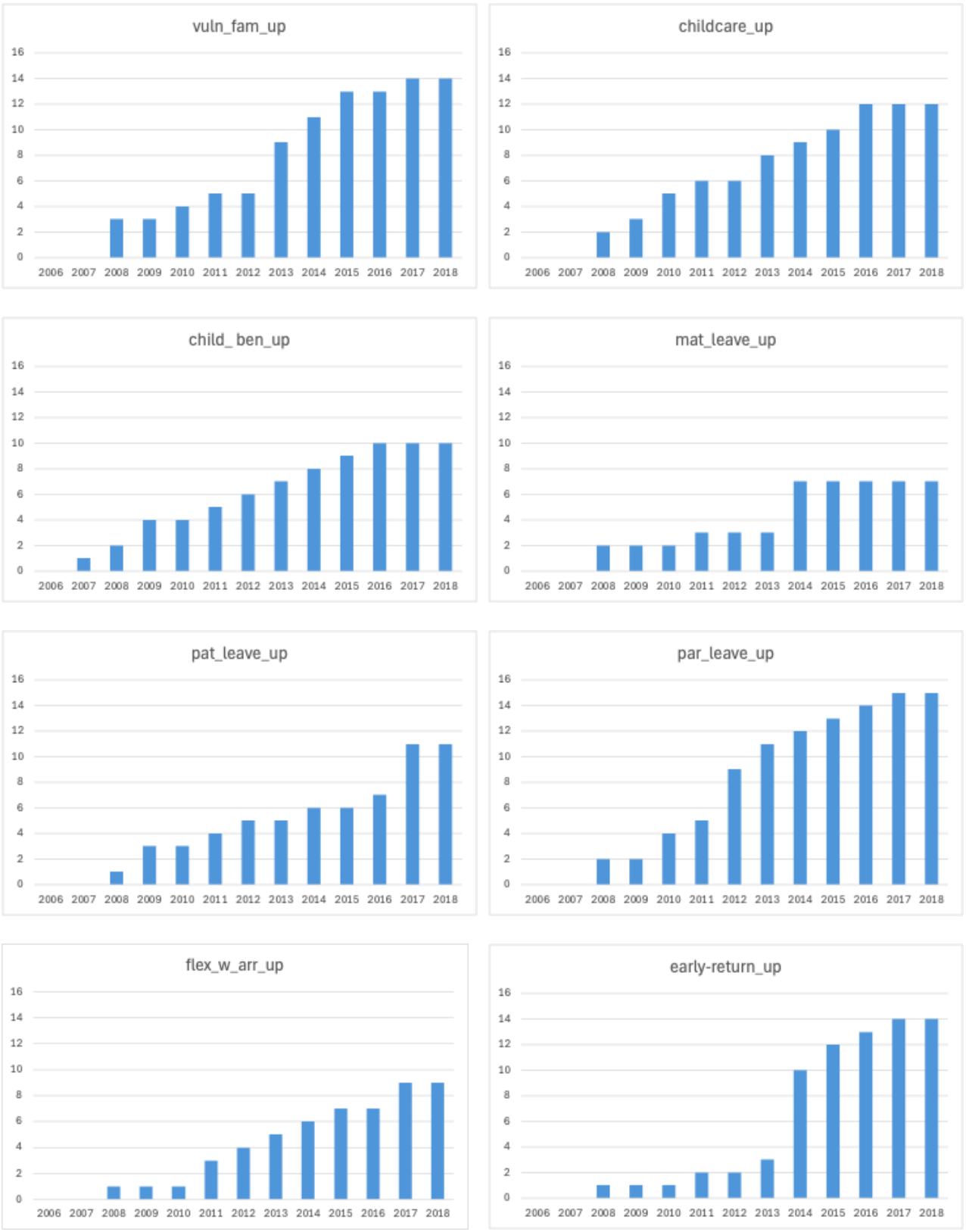
Setting the threshold of 'significant' implies some arbitrariness, that we make explicit in the notes to the definition of the variables in Appendix A. However, as a general rule, we only identify a reform when the indicator of the policy stabilizes at a clearly higher/lower level compared to the previous levels. The 'control' group is composed of the countries that, during the period considered, did not experience any reform (either 'up' or 'down'). The countries in which changes in both directions were observed are excluded from the analysis of the impact of the relevant reform.

The variables related to family policies were constructed form the European Commission Labour Market Reform Database (LABREF *database, DG Employment, Inclusion and Social Affairs - European Commission*), that records descriptively labour market and welfare policy measures introduced by the EU Member States[9]. The database is managed by the European Commission in cooperation with the Employment Committee (EMCO). To date, it provides information on the reform measures passed in the EU between 2000 and 2018. The measures are organised into 49 policy fields and further grouped in nine broad policy domains, resulting in a comprehensive database covering welfare benefits, active labour market policies, job protection legislation, disability and early retirement schemes, wage bargaining, working time organisation, as well as labour mobility and immigration policies. The database records the main features of the reforms, including, among others, a short description of the content of measure, the year of adoption, the timing of implementation, the scope and the direction. For the aims of our analysis we grouped the policy changes introduce in the EU-27 countries of our sample (period 2006-2018) into the following eight reforms: (i) increasing support to single/vulnerable parents, disabled children, vulnerable families *('vuln_fam')*; (ii) expanding access to childcare services ('childcare'); (iii) increasing the generosity of child-related tax/benefit *('child_ben')*; (iv) expanding maternity leave allowance/length *('mat_leave')*; (v) expanding paternity leave allowance/length *('pat_leave')*; (vi) expanding parental leave (non gender-specific) allowance/length *('par_leave')*; (vii) facilitating work-life balance through workplace flexible alternative work arrangements *('flex_w_arr')*; (viii) favouring early labour market return for parents (*'early_return'*).

[9] Database accessible at: https://webgate.ec.europa.eu/labref/application#!searchPublic (last accessed for the purpose of the analysis in October 2024).

A more detailed definition and description of the variables is provided in Appendix B; the number of countries that adopted the various reforms are also reported, along with the number of control countries (i.e., those not introducing any reform in the field).

Figure 24. Number of countries with a family policy change, by year (cumulative)



Source: Own elaborations on LABREF (Labour Market Reform) data
Notes: For the variables' definition, see Appendix A

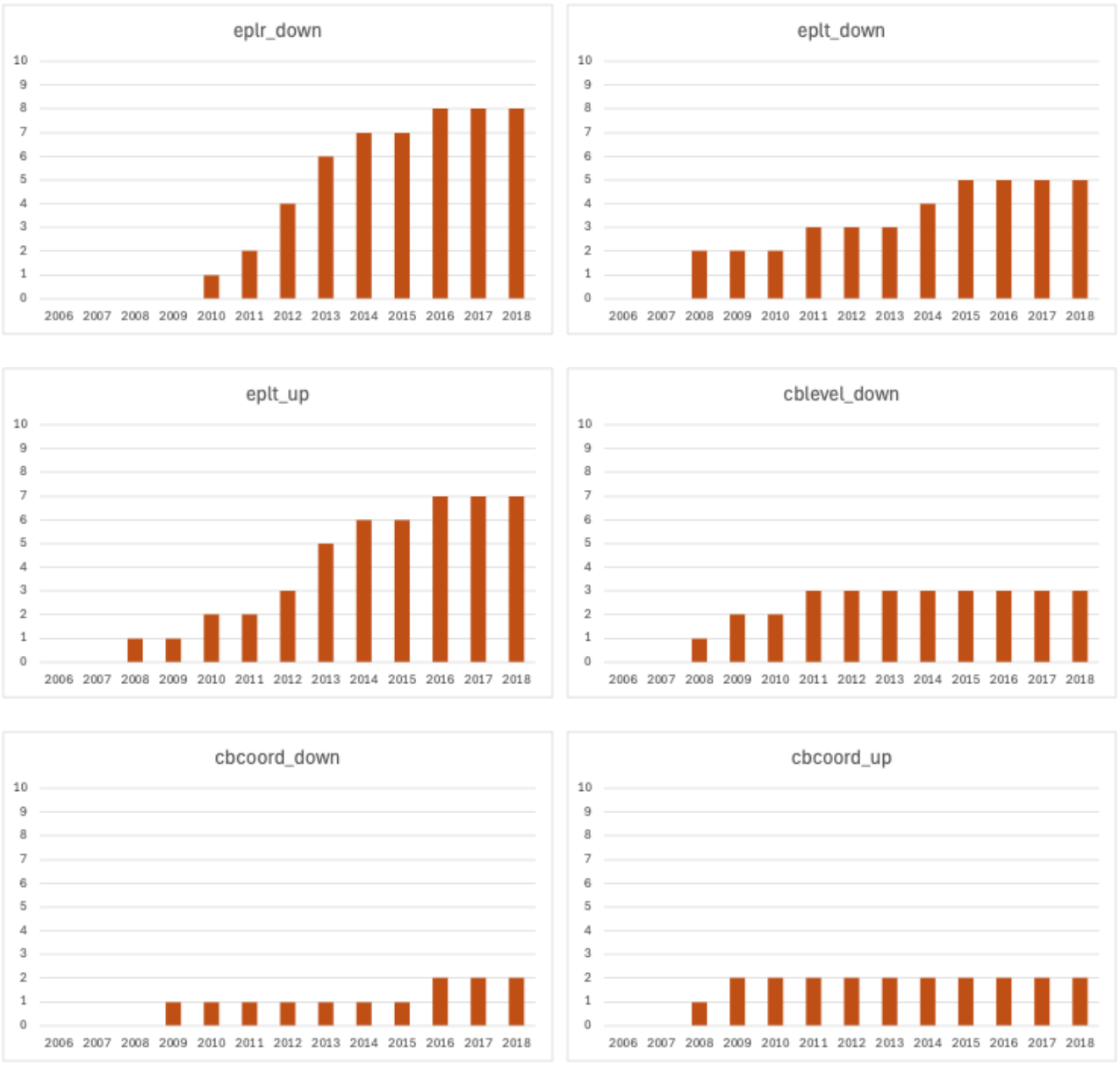
Figure 24 provides aggregate information on the pattern over time of the reforms introduced. The reforms adopted in the highest number of countries are increasing support to vulnerable families (*'vuln_fam_up'*, 14 countries), increasing length or generosity of non-gender-specific parental leave (*'par_leave_up'*, 15 countries) and supporting early re-entry into the labour market after a childbirth ('early-return', 14 countries). In all cases, the time pattern of reforms indicates that most of them were introduced in the second half of the period considered. A relatively lower number of EU countries has introduced reforms to expand access to childcare services ('childcare', 12 countries), to increase the generosity of the child-related tax/benefit system (*'child_ben'*, 10 countries), paternity leave (*'pat_leave'*, 10 countries), and flexible work arrangements for facilitate work-life balance (*'flex_w_arr'*, 9 countries). Changes in maternity leave provisions have been introduced in a more limited number of cases (*'mat_leave'*, 6 countries).

The second group of reform variables refers to changes in labour market institutional settings and is based on data from different sources (OECD, OECD-AIAS-ICTWSS, SPIN, EUROSTAT). A first set of reforms that have reshaped the labour markets throughout Europe regards the levels of employment protection legislation. We use here two indicators provided by the OECD: (i) employment protection on regular employment (*'eplr'*), which measures the strictness of regulation of individual dismissal of employees on regular/indefinite contracts and employment protection on temporary employment (*'eplt'*), which measures the strictness of regulation on the use of fixed-term and temporary work agency contracts. Both indicators range from 0 to 6, with higher scores representing stricter regulation[10]. A second group of dichotomic reform variables is based on the OECD/AIAS database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS), which provides comprehensive and comparable information on the evolving nature and scope of collective bargaining in OECD and EU countries[11].

[10] Database accessible at: https://www.oecd.org/en/data/datasets/oecd-indicators-of-employment-protection.html (last accessed for the purpose of the analysis in October 2024).

[11] Database accessible at: https://www.oecd.org/en/data/datasets/oecdaias-ictwss-database.html (last accessed for the purpose of the analysis in October 2024).

Figure 25. Number of countries with a labour market institutional change (employment protection and wage bargaining), by year (cumulative)



Source: Own elaborations on LABREF (Labour Market Reform) data
Notes: For the variables' definition, see Appendix B

In particular, we consider (i) the predominant level at which wage bargaining takes place *('cblevel')*; and (ii) coordination of wage-setting *('cbcoord')*. Both indicators range from 0 to 512.

As illustrated in Figure 25, a decrease in the protection for regular workers *('eplr_down')* and an increase for temporary workers *('eplr_up')* were the most pervasive policy changes (implemented in 8 and 7 countries, respectively). Reforms decreasing protection for temporary workers were also adopted in 5 countries during the period considered *('eplt_down'*, 5 countries), whereas wage bargaining systems were the focus of reforms for a limited number of countries.

We also included a reform variable related to the generosity of unemployment benefits based on the dichotomisation of the variable 'rr_u_33' (overall replacement rate – unemployment benefits) from the Social Policy Indicators (SPIN) database assembled by the Swedish Institute for Social Research, Stockholm University[13]. The variable is defined as the overall income replacement rate in unemployment benefits calculated for model families with the lowest level of previous earnings, i.e. from 33 to 200 per cent of the average wage. Alternative intervals (50-200 and 67-200) are also available, but as our focus is on poverty, we preferred to focus on the lowest income intervals (our empirical results are, anyhow, robust to the changes in other intervals). As illustrated in Figure 25, 3 countries implemented a reform that increased unemployment benefits and 5 countries in the opposite direction (decrease of unemployment benefits).

The last variable considered refers to minimum wage measures and is based on own elaborations from Eurostat data (Monthly minimum wage as a proportion of average monthly earnings (%) in the business

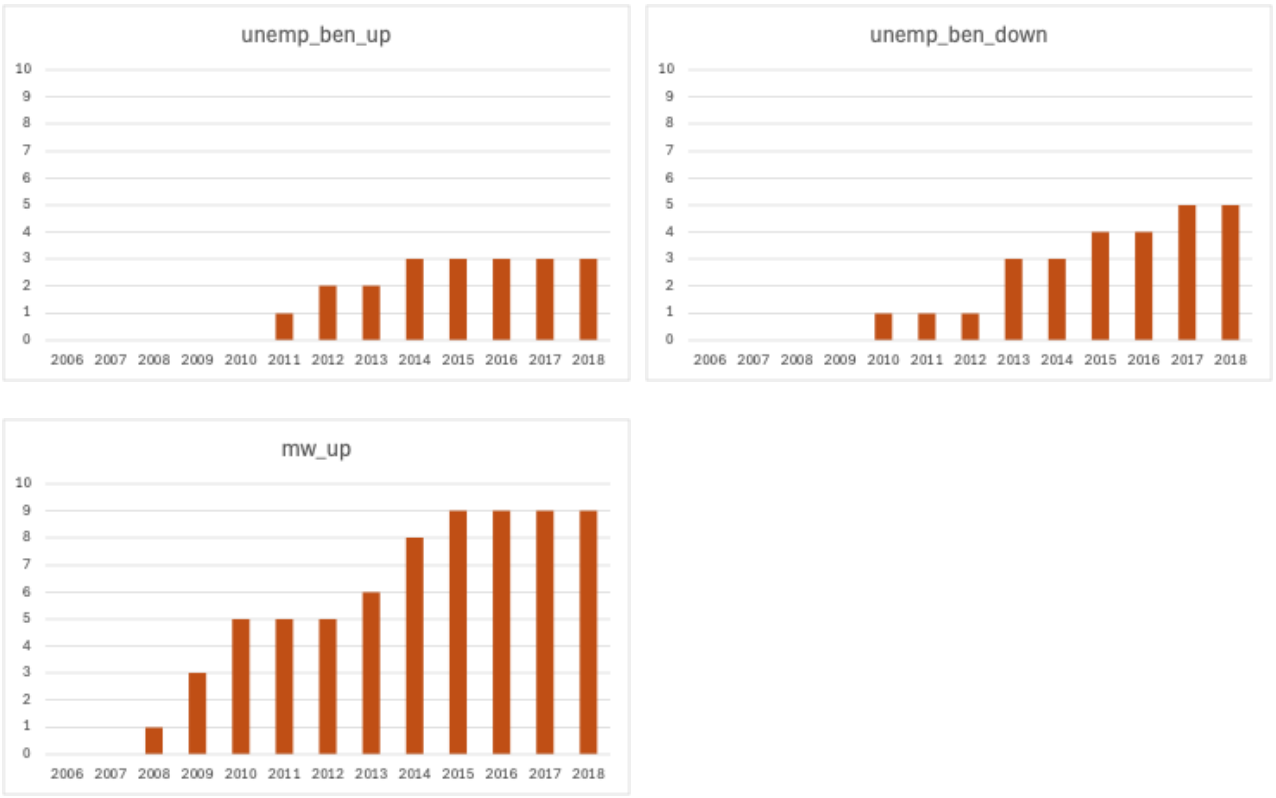
[12] The scores of 'cblevel' correspond to the following types of collective bargaining: 5 = central or cross-industry level; 4 = intermediates or alternates between the central and industry level; 3 = sector or industry level; 2 = intermediates or alternates between the sector and enterprise level; 1 = company or enterprise level.

The scores of 'cbcoord' correspond to the following levels of wage-setting coordination: 5 = Binding norms (centralized bargaining); 4 = Non-binding norms and/or guidelines (recommendations on maximum or minimum wage rates or wage increases); 3 = Procedural negotiation guidelines (recommendations on wage formula relating to productivity or inflation); 2 = Coordination of wage setting based on pattern setting by major companies, sectors, government wage policies in the public sector; 1 = Fragmented wage bargaining, confined largely to individual firms or plants, no coordination.

[13] Database accessible at: www.sofi.su.se/spin (last accessed for the purpose of the analysis in October 2024). See also Nelson et al. (2020) for detailed information.

sector)[14]. Reforms aimed at increasing the level of minimum wage were adopted by 9 EU countries in the period 2006-2018 (Figure 26).

Figure 26. Number of countries with a labour market institutional change (unemployment benefits and minimum wage), by year (cumulative)



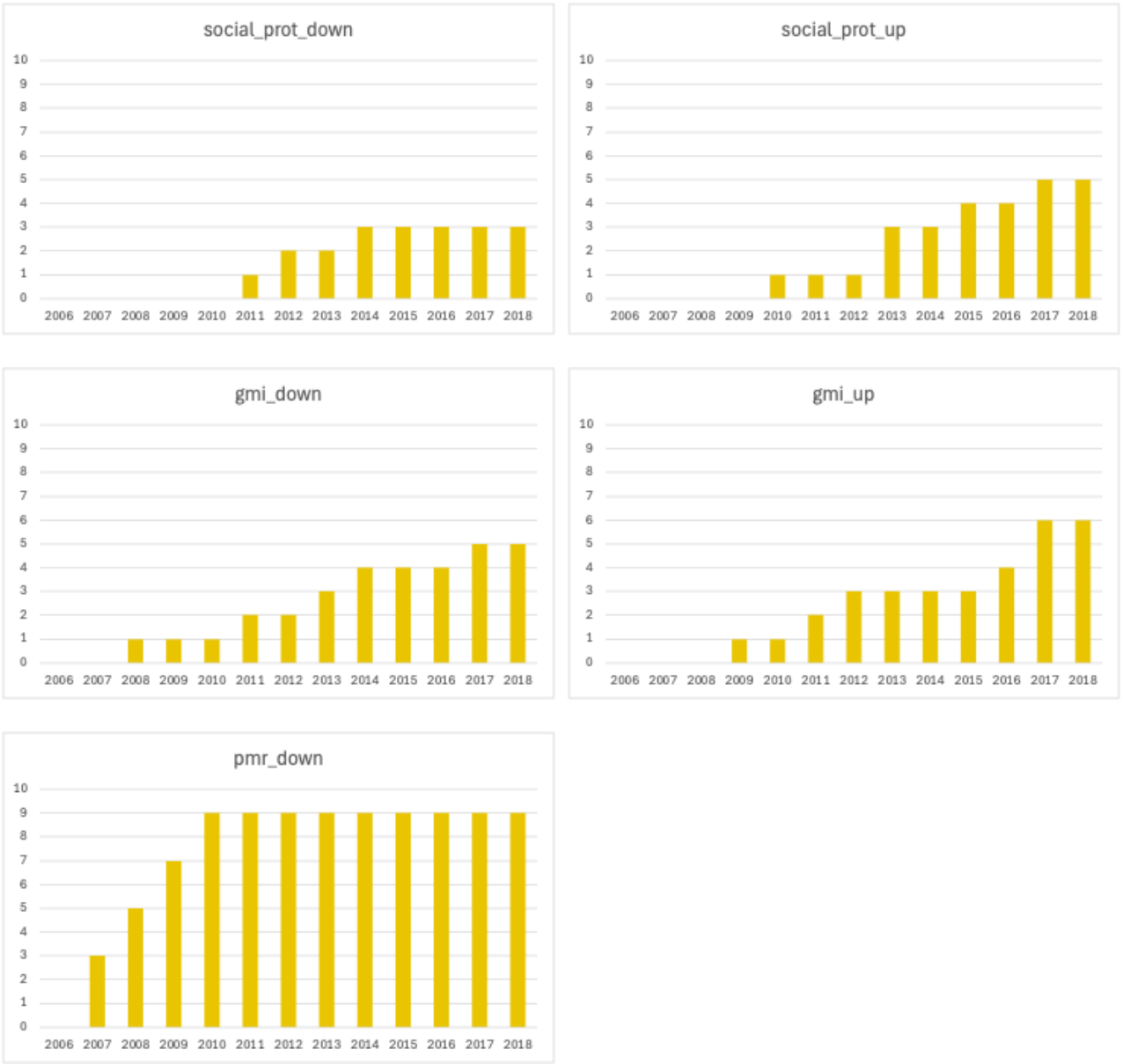
Source: Own elaborations on LABREF (Labour Market Reform) data
Notes: For the variables' definition, see Appendix B

The third group of reform variables refers to social protection systems and competition policy reforms. As regards the first domain (social protection), we again resorted to the SPIN dataset for an overall measure of out-of-work benefits, including unemployment benefits, social assistance and other minimum income benefits, and housing benefits (*'social_prot'*). As in the case of the unemployment benefits, the original

[14] Database accessible at: https://ec.europa.eu/eurostat/databrowser/product/view/earn_mw_avgr2?category=labour.earn.earn_minw (last accessed for the purpose of the analysis in October 2024).

variable is defined as a replacement rate calculated for model families earning from 33 to 200 percent of an average wage (*'rr_ush_33'*). Reforms decreasing and increasing the levels of social protection were implemented in the period 2006-2018 by 3 and 5 EU countries, respectively (Figure 27).

Figure 27. Number of countries with social protection and competition policy change, by year (cumulative)



Source: Own elaborations on LABREF (Labour Market Reform) data
Notes: For the variables' definition, see Appendix B

The second social protection system reform regards guaranteed minimum income policies (*'gmi'*); the reform variable is based on the OECD indicator defined as the net income of GMI benefit recipients, in % of the median disposable income, of a jobless person without children[15]. Reforms to increase or decrease guaranteed minimum income were implemented by 5 and 6 EU countries, respectively. Lastly, the reform variable on competition policy *('pmr_down')* is based on the OECD Product market regulation network sectors indicator, which covers cover eight sectors: electricity, natural gas, air transport, rail transport, road transport, water transport, and fixed and mobile e-communications. Each indicator contains information on how entry and conduct in the relevant sector are regulated and on the level of public ownership[16]. As highlighted by Figure 26, reforms to deregulate the product markets were implemented in 9 EU countries, all in the first years of the period considered.

3.2. Methods

To analyse the effects of policy and institutional reforms on the in-work poverty rate at the demographic group level for the 25 EU countries of our sample, we follow the strategy suggested by Batut et al. (2023) and estimate the following model:

$$IWP_{g,c,t} = \alpha_{g,c} + \beta \left(Exposure_{g,c}\, X\, Post_{c,t}\right) + IC'_{g,c,t} + HC'_{g,c,t} + LMC'_{g,c,t} + \Theta_{c,t} + \Lambda_{g,t} + \varepsilon_{g,c,t} \quad (3.1)$$

where subscripts g, c and t, are respectively: *g=1,...30* the demographic groups defined by gender, age and education; *c=1,..25* the countries of our sample; and *t=2006,…2018 the years considered*. $IWP_{g,c,t}$ is the in-work poverty rate. $\left(Exposure_{g,c}\, X\, Post_{c,t}\right)$ is the interaction term between: (i) the staggered implementation of policies across countries and over years ($Post_{c,t}$) that take the value one once the reform is introduced, zero in the pre-reform years[17]; and (ii) a set of continuous variables ($Exposure_{g,c}$),

[15] Database accessible at: https://www.oecd.org/en/data/indicators/adequacy-of-minimum-income-benefits.html. (last accessed for the purpose of the analysis in October 2024).

[16] Database accessible at: https://www.oecd.org/en/topics/product-market-regulation.html (last accessed for the purpose of the analysis in October 2024).

[17] In the non-reforming countries, it is zero throughout the entire period of 2006-2018.

calculated at the demographic group/country level at the beginning of the period (2006), and used to capture the heterogeneity of effects of country-level reforms across demographic groups. Details on the set of policy reforms and on the specific variables describing the exposure to each reform have already been discussed on the data section (3.1.1). $IC'_{g,c,t}$, $HC'_{g,c,t}$, and $LMC'_{g,c,t}$ are the vectors of time-changing covariates at demographic group/country level described in Section 3.1.1 and refer to individual, household and labour market characteristics, respectively. Lastly, $\alpha_{g,c}$ are the demographic group/country fixed effects; $\Theta_{c,t}$ are country/year fixed effects allowing us only to exploit within-country variation of policy reforms; and $\Lambda_{g,t}$ are demographic group/year fixed effects capturing the common evolution of specific demographic groups across countries; $\varepsilon_{g,c,t}$ is the error term.

We first run a baseline version of equation 3.1 by omitting the interaction $\left(Exposure_{g,c}\, X\, Post_{c,t}\right)$ to check that the model is well specified and that individual, household and labour market characteristics show effects on in-work poverty consistent with what is reported in the literature.

Equation 3.1 is therefore an augmented version of this baseline equation, including the effects of policy and institutional reforms. The coefficient of interest β identifies the evolution, in the years after the reform, of *more-affected* demographic groups relative to *less-affected* demographic groups when the reform is implementation. More in detail, since $Exposure_{g,c}$ is the share of target individuals (continuous variable), β captures the percentage point variation in the in-work poverty rate for every percentage point increase in the share of target individuals of those demographic groups experiencing policy or institutional changes. It is worth noting that adding the country/year fixed effects and controlling at the demographic group level for both common shocks over time and a set of time-changing variables, makes the common trend assumption less problematic. It should also make the selection in treatment problem less severe, for instance, for reforms introduced during the 2008-2009 recession. In other words, it is not a strong assumption to consider that the difference in in-work poverty between the more-affected and the less-affected groups would have evolved in the same way in the absence of policy reforms.

The estimation strategy has also other limitations, that we try to attenuate in various ways. First, our analysis is carried out at the demographic group level and variables are constructed using cross-section individual data; hence, each demographic group obviously does not include the same individuals over time. This means that a decline in in-work poverty might be the result of people leaving employment; in our case, this could lead to some identification issues, as the share of individuals in in-work poverty might decrease after the introduction of a reform simply because the surveyed demographic groups over the post-reform years do not include any more people who have lost their jobs. To address this issue, we

complement the analysis of in-work poverty with the study of changes driven by the reform on the extensive/intensive margin of employment and labour earnings, i.e., the channels through which positive exist from in-work poverty could materialise (see Diagram 1 and equation 3.2 below).

Second, the coefficient of interest in equation 3.1 only shows a relative effect: within-country variation of in-work poverty in *more-affected* relative to *less-affected* demographic groups for countries implementing policy or institutional reforms (Batut et al., 2023). The countries where nothing changed (i.e., where $Post_{c,t}$ is always zero) play a role only as demographic group/country fixed effects. Third, the heterogeneity we introduce by allowing a continuous treatment produces a collection of single difference-in-difference effects, of which we calculate a simple average instead of a weighted average (Callaway et al., 2024). Despite these last two drawbacks, we believe that introducing a continuous measure of the exposure of demographic groups to the same reform allows us to exploit more complete information and makes the interpretation of the effect, net of the caveats mentioned above, more plausible. For instance, it is reasonable to assume that the higher the share of individuals living in households with one or more children at the demographic group level, the more binding the effect of country-level family policy reform will be. Similarly, reforms in the employment protection legislation for temporary or permanent workers will affect more those demographic groups with a higher share of temporary or permanent workers, respectively. The same logic has been applied to the other policy reforms and the corresponding exposure variables.

As anticipated above, in addition to the direct effects of policy reforms on the in-work poverty rate, we also investigated the potential channels through which these effects occur. In other words, we studied the impact of reforms on work intensity and labour earnings.

These two channels have been explored through the following equation:

$$Y_{g,c,t} = \alpha_{g,c} + \beta \left(Exposure_{g,c}\, X\, Post_{c,t}\right) + IC'_{g,c,t} + HC'_{g,c,t} + LMC'_{g,c,t} + \Theta_{c,t} + \Lambda_{g,t} + \varepsilon_{g,c,t} \quad (3.2)$$

where all terms are identical to those illustrated for equation 3.1 except for the dependent variable and a few regressors that we differentiate between the work-intensity and the labour returns estimates. In particular, in the work-intensity equations we exclude the share of employment in medium and large companies (*'firm_med_large'*), which is normally a driver of labour remunerations; in the earning equation we exclude the total number of months spent by the household member in domestic/caregiving tasks *('n_care_hh')* which is instead mainly seen as a constraint to labour supply. To investigate the effects of reforms on work-intensity we use alternatively, as a dependent variable ($Y_{g,c,t}$): the employment rate (*'employed_r'*), the part-time employment rate (*'part-time_r'*), the temporary employment rate (*'temp_r'*,

already defined as an exposure variable), the self-employment rate ('self_emp_r'), and the total number of hours worked per year (*'tot_hours_year'*). Alternatively, when $Y_{g,c,t}$ stands for labour earnings, the dependent variables are real hourly wage (*'h_wage_r'*) and real hourly earnings (*'h_earn_r'*, i.e., the average of hourly wage and hourly earnings from self-employment).

3.3. Results

In this section, we first illustrate the results of the econometric estimation for the effects of reforms on in-work poverty (Section 3.3.1); then, we present and discuss, in the light of the existing literature, the possible underlying mechanisms (work intensity and labour returns) for each group of reforms (Sections 3.3.2-3.2.4).

The empirical model described in Section 3.2 (equations 3.1 and 3.2) relies on a panel empirical approach which includes demographic group fixed effects. As the demographic groups are defined by gender, age and education, the effects of those individual attributes will not appear in the tables. Only for descriptive purposes, before showing and commenting on the estimated impacts of policy reforms, we shortly illustrate the results of a pooled OLS regression of in-work poverty run using as regressors the variables defining the demographic groups, besides country and year dummies. Results, reported in Appendix Table A9, show that, as expected, in-work poverty is higher for men, for younger individuals and for low levels of education. Similarly, the regression runs using work intensity and labour earnings as the dependent variables (i.e., the channels though which in-work policy develops – see Diagram 1 and section 3.3.2) provide evidence consistent with the existing knowledge and ex-ante expectations. Women have a lower employment rate, hours worked and earnings, but higher part-time and temporary employment rates. Low-quality jobs are also associated to younger age and low and intermediate levels of education, as expected.

3.3.1. Reforms and in-work poverty

Table 8 reports the results of the estimation of equation 3.1 (baseline and effects of family policy reforms), including as regressors the individual, household and labour market characteristics of the demographic group. All estimates include, in addition to the variables shown in the Table, the shares of ISCO 08 major groups occupations in the dg, the shares of macro industries employment (primary, secondary, tertiary) in the dg; country/year fixed effects; dg/year fixed effects. In all estimates, we use the population share of the

demographic group in the country/year as weights; standard errors are clustered at the demographic group (dg) level.

In the first column of Table 8, the baseline model, all regressors highlight the expected signs, as higher levels of in-work poverty are associated to a higher share of non-resident in the country in the demographic group, a higher average number of children and a higher self-employment rate. In-work poverty is instead negatively associated with a higher percentage of individuals leaving with a partner/spouse, a higher share of tertiary educated individuals in the household and a higher share of individuals in the demographic group employed in medium and large companies. The remaining regressors (health status, share of retired individuals in the household and the family workload in caregiving activities) are also of the expected sign, but not statistically significant.

Table 8. Family policy reforms and in-work poverty

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Health	0.006	0.004	0.008	0.002	0.005	0.006	0.005	0.006	0.006
	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Migrant	0.107***	0.103***	0.109***	0.080***	0.109***	0.107***	0.106***	0.107***	0.107***
	(0.018)	(0.019)	(0.019)	(0.020)	(0.019)	(0.018)	(0.018)	(0.018)	(0.018)
n_care_hh	0.002	0.002	0.002	0.004**	0.002	0.002	0.002	0.002	0.002
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
nchildren_h	0.024***	0.022**	0.024***	0.019*	0.023**	0.024***	0.024***	0.024***	0.024***
	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)
n_retired_h	-0.017	-0.014	-0.020	-0.025	-0.011	-0.017	-0.017	-0.017	-0.017
	(0.017)	(0.017)	(0.017)	(0.019)	(0.018)	(0.017)	(0.018)	(0.017)	(0.017)
partner_house	-0.018**	-0.016*	-0.018**	-0.016	-0.009	-0.018**	-0.012	-0.018**	-0.018**
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
sh_work_hedu_h	-0.045**	-0.042*	-0.046**	-0.044*	-0.030	-0.045**	-0.038*	-0.045**	-0.045**
	(0.022)	(0.023)	(0.023)	(0.026)	(0.023)	(0.022)	(0.022)	(0.022)	(0.022)
self_empl_r	0.092***	0.091***	0.090***	0.078***	0.078***	0.092***	0.085***	0.092***	0.092***
	(0.026)	(0.026)	(0.026)	(0.028)	(0.029)	(0.026)	(0.028)	(0.026)	(0.026)
firm_med_large	-0.084***	-0.085***	-0.085***	-0.087***	-0.083***	-0.084***	-0.083***	-0.084***	-0.084***
	(0.013)	(0.013)	(0.013)	(0.018)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)
vuln_fam_up		-1.644***							
		(0.492)							
childcare_up			0.114						
			(0.106)						
child_ben_up				-0.602**					
				(0.252)					
mat_leave_up					-0.807***				
					(0.262)				
pat_leave _up						-2.784***			
						(0.826)			
par_leave _up							-2.552***		

							(0.832)		
flex_w_arr_up								-1.642***	
								(0.489)	
early_return_up									0.169
									(1.525)
Constant	-89.585***	-88.462***	-105.153***	-63.276**	-87.939***	-89.075***	-82.000***	-89.320***	-89.624***
	(27.106)	(27.089)	(26.239)	(28.073)	(30.053)	(26.955)	(27.314)	(27.028)	(27.121)
Observations	8,122	7,744	7,747	6,076	7,449	8,122	7,797	8,122	8,122
R-squared	0.885	0.890	0.889	0.898	0.850	0.885	0.846	0.885	0.885

Source: Own elaborations on EU-SILC data
Notes: Weighted panel FE estimates (weights: population share of the demographic group in the country/year); Robust SE clustered at demographic group (dg) level in parentheses; all regressions include: shares of ISCO 08 major groups occupations in the dg, shares of macro industries employment (primary, secondary, tertiary) in the dg; country/year fixed effects; dg/year fixed effects *** p<0.01, ** p<0.05, * p<0.1. The number of countries included in each model varies due to the number of treated and control countries for each reform (see Appendix A).

As regards the reform variables, outcomes indicate a significant and pervasive impact of reforms of family policies on in-work poverty. With the exception of expanding access to childcare and introducing measures to facilitate the early return into the labour market of parents, all reforms in other policy fields are considered to reduce in-work poverty rates. It is also very interesting to notice that the most substantial effect is produced by reforms of paternity and non-gender-specific leave; in particular, they have a magnitude that is approximately 3 times higher than the one emerging for maternity leave. This suggests that a more balanced division of the workload due to the birth and early years of children is key in promoting not only gender equality but is also beneficial to the overall household well-being. This is confirmed by the negative and significant effect of reforms aimed at facilitating work-life reconciliation by allowing flexible work organisation.

At this stage, we are still unable to discuss the mechanisms through which such reforms reduce in-work poverty. It might be through both a positive effect on work intensity and hourly wages, or, alternatively, to effects of different signs (higher work intensity and lower wage, or *vice versa*) but with the positive effect offsetting the negative one. Similarly, the non-significance of *'childcare_up'* and of *'early_return_up'* in affecting in-work poverty, does not necessarily mean that these reforms do not have any effect on work intensity or wage. It might be that the impacts offset each other (if they are of the opposite sign) or that the impacts are not sufficient to exist in-work poverty (i.e., the increase in wage of the employed individuals is not enough to pull the household out of in-work poverty). We will try to shed light on the complexity of such mechanisms in Sections 3.3.2 and 3.3.3, in which we analyse the effects of the reforms on work intensity and wages and we discuss them in the light of the existing literature.

As for the results showing the association between in-work poverty and labour market reforms (Table 9) and social protection and competition policies (Table 10), we only report the estimated coefficients of interest (β in equation 3.1) to improve the tables' clarity. Complete results, including all covariates shown in Table 8, are available upon request. Overall, the results for the 25 EU countries under analysis indicate that most of the labour market and social protection/competition reforms do not show a statistically significant association with in-work poverty. One possibility is that most of such reforms are simply ineffective; however, another possibility is that this kind of policy reforms do not work everywhere and that the effects of institutional change on in-work poverty depend on country-specific circumstances (Marx et al., 2012; Eurofound, 2017). The interpretation we offer here for the few statistically significant reforms refers to the case in which reforms show a generalised and valid effect across all EU countries.

Increasing restrictions on employing temporary workers *('eplt_up'*, column 1, Table 9) are significantly associated with a reduction in in-work poverty. This is the most noticeable result we can observe in Tables

9 and 10. More specifically, after a reform significantly restricting the number of valid cases for the use of fixed-term contracts and reducing the maximum number of successive contracts or their cumulative duration, the in-work poverty rate shrinks significantly.

Table 9. Labour market reforms and in-work poverty

	(1)	(2)	(3)	(4)	(5)
	eplt_up	eplt_down	eplr_down	cbcoord_up	cbcoord_down
	[...]	[...]	[...]	[...]	[...]
treat*reform	-0.208***	0.018	-0.010	-0.012	0.038*
	(0.045)	(0.040)	(0.009)	(0.016)	(0.020)
	[...]	[...]	[...]	[...]	[...]
Observations	5,321	5,052	7,101	6,375	6,568
R-squared	0.821	0.851	0.846	0.859	0.847

	(6)	(7)	(8)	(9)
	cblevel_down	unemp_ben_up	unempl_ben_down	mw_up
	[...]	[...]	[...]	[...]
treat*reform	0.010	-0.028	-0.133	-0.002
	(0.012)	(0.058)	(0.108)	(0.009)
	[...]	[...]	[...]	[...]
Observations	7,101	7,120	6,431	7,546
R-squared	0.846	0.844	0.901	0.881

Source: Own elaborations on EU-SILC data
Notes: Weighted panel FE estimates (weights: population share of the demographic group in the country/year); Robust SE clustered at demographic group (dg) level in parentheses; all regressions include: shares of ISCO 08 major groups occupations in the dg, shares of macro industries employment (primary, secondary, tertiary) in the dg; country/year fixed effects; dg/year fixed effects *** p<0.01, ** p<0.05, * p<0.1. The number of countries included in each model varies due to the number of treated and control countries for each reform (see Appendix A). Complete results available upon request.

Another noteworthy result emerges from column 5 of Table 9 *('cbcoord_down')*. Those few countries (two out of 22[18], see Appendix B) that transitioned from some form of coordinated wage setting with binding norms or procedural guidelines at the national or sector-wide level to a fragmented (company level) wage bargaining regime experienced an increase in the in-work poverty rate. Although the statistical

[18] Ireland and Romania are the two countries that have experienced the transition to a fragmented wage bargaining regime (company-level only).

significance is weaker (ten per cent level) and the magnitude of the β coefficient is smaller (0.038) than in the case of employment protection, this result suggests that leaving wage setting solely in the hand of employers without any forms of coordination aggravates the living standards of workers. On the other hand, this result aligns with the study of Garnero (2021), in which collective bargaining and wage coordination specifically favour better labour market outcomes of vulnerable groups; that is, a higher employment rate and lower wage inequality for low-skilled, female, and young workers.

Table 10 shows that reducing social protection via lower levels of Guaranteed Minimum Income *('gmi_down'*, column 4) decreases the in-work poverty rate. This form of social protection is likely more susceptible to explanation through its effects mediated by labour earnings or work intensity, as discussed in Section 3.3.3. It is plausible to expect that, on the one hand, a more generous GMI *('gmi_up')* allows individuals to take more time to find well-matched jobs; this should help increase living standards. On the other hand, reducing guaranteed income *('gmi_down')* may prompt individuals to work more; this may be a condition to avoid or exit in-work poverty status.

Table 10. Social protection / competition policy reforms and in-work poverty

	(1)	(2)	(3)	(4)	(5)
	social_prot_up	social_prot_down	gmi_up	gmi_down	prmr_down
	[...]	[...]	[...]	[...]	[...]
treat*reform	-0.028	-0.133	-0.034	-0.080**	0.008
	(0.058)	(0.108)	(0.043)	(0.038)	(0.011)
	[...]	[...]	[...]	[...]	[...]
Observations	7,120	6,431	5,169	4,843	5,982
R-squared	0.844	0.901	0.840	0.914	0.852

Source: Own elaborations on EU-SILC data
Notes: Weighted panel FE estimates (weights: population share of the demographic group in the country/year); Robust SE clustered at demographic group (dg) level in parentheses; all regressions include: shares of ISCO 08 major groups occupations in the dg, shares of macro industries employment (primary, secondary, tertiary) in the dg; country/year fixed effects; dg/year fixed effects *** p<0.01, ** p<0.05, * p<0.1. The number of countries included in each model varies due to the number of treated and control countries for each reform (see Appendix A). Complete results available upon request.

In the following sections, we investigate the channels through which the reforms considered affect in-work intensity. Consistent with the conceptual framework schematised in Diagram 1, we distinguish the effects produced on the work intensity and the labour returns, and we illustrate them separately for each reform group (Section 3.2.2, family policies; 3.2.3, labour market; 3.2.4, social protection and competition).

3.3.2. Channels (i): Family policy reforms, work intensity/quality and labour returns

To investigate the way in which reforms affect in-work poverty through the channel of work intensity, we selected the following set of metrics to be used as dependent variables in the estimation of equation 3.2 (of course, at the demographic group level): employment rate, part-time employment rate, temporary employment rate, number of hours worked in a year. The investigation of the effects on labour returns relies on the impacts of hourly wages and hourly earnings (from dependent and self-employment). We will proceed to analyse the various reforms one by one, starting from the effect that emerged in Table 8 and mapping out the channels through which it materialises.

The first reform is the increase in support granted to single/vulnerable parents, disabled children, and vulnerable families (*'vuln_fam_up'*); column (2) of Table 8 informed us that the introduction of this reform was able to reduce in-work poverty. Results in Column (1) of Table 11 explain how such an effect develops. In the first place, more generous support to vulnerable families with children impacts work intensity by declining the part-time employment rate and by increasing the number of hours worked. This means that the increase in economic resources accruing to such families enables an increase of labour supply at the intensive margin via resorting to the market for care needs of the household. However, they are seemingly not sufficient to trigger flows from not-in-work into work (i.e., to increase the employment rate); probably, the workload imposed by family characteristics only allows adjustments at the intensive margin. A second channel though which such reforms enable exiting from in-work poverty is the increase in labour returns (panels (e) and (f) of Table 11). One possible explanation is that this is a consequence of the increase of full-time positions and longer working hours (usually associated to higher returns per hours), due a stronger attachment to the job and better gains in specific skills, higher investment in training by the employer and, ultimately, higher productivity (Belot et al., 2007; Booth et al., 2002; Bosio, 2014; Perugini and Pompei, 2016 and 2017).

The second reform considered, expanding access to childcare services (*'childcare_up'*), is part of the more general sphere of policies aimed at facilitating life-work balance, along with parental leave provisions and flexible work arrangements, that we also consider in the analysis (*'mat_leave'*, *'pat_leave'*, *'par_leave'* and *'flex_w_arr'*). The existing evidence supports the idea that such policies facilitate higher levels of (female) employment, by creating the necessary conditions to address the demands of work and family. Comparative studies focusing on the link between work–family policies and women's participation in the labour market have revealed a positive link between the two. Countries with more generous work–family policies have attendant higher levels of women's labour market participation (Gornick and Meyers, 2003; Gornick et al., 1998). Research has also found a higher likelihood of continuous employment (Stier et al.,

2001) for mothers with young children, compared to the countries that give less support to working mothers. Nishimura (2022) finds for Japan that positive effects are found only for the segment of regular workers, less likely to leave their job after the childbirth; hence there is a risk to exacerbate labour market dualities.

Table 11. Reforms in family policies, work intensity and labour returns

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) employment rate								
	vuln_fam_up	childcare_up	child_ben_up	mat_leave_up	pat_leave_up	par_leave_up	flex_w_arr_up	early_return_up
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.078	-0.170***	2.582***	3.219***	-0.746	1.752***	3.223***	0.113
	(0.313)	(0.053)	(0.474)	(0.665)	(0.505)	(0.446)	(0.648)	(0.272)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(b) part-time employment rate								
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.307***	-0.086***	-1.572***	-2.198***	-0.574***	-2.047***	-2.191***	-0.949***
	(0.095)	(0.024)	(0.071)	(0.126)	(0.173)	(0.072)	(0.111)	(0.088)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(c) temporary employment rate								
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.134	0.151***	0.789***	0.620	0.078	0.792***	0.664*	-0.036
	(0.124)	(0.045)	(0.258)	(0.376)	(0.206)	(0.241)	(0.360)	(0.115)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(d) hours worked yearly								
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	2.649***	0.446***	1.264***	1.450***	6.827***	6.684***	12.513***	2.194***
	(0.681)	(0.099)	(0.437)	(0.397)	(1.491)	(1.470)	(2.708)	(0.702)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(e) hourly wage (ln)								
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	3.858*	-0.631***	1.851**	2.697**	7.272*	7.564*	4.592**	-0.869
	(2.074)	(0.128)	(0.763)	(0.997)	(3.785)	(4.060)	(2.129)	(1.145)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(f) hourly earnings								
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	5.195*	-0.512**	3.071**	3.716***	9.376*	10.006*	6.103*	-2.436***
	(2.900)	(0.197)	(1.141)	(1.201)	(5.057)	(5.114)	(3.011)	(0.455)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]

Source: Own elaborations on EU-SILC data
Notes: Weighted panel FE estimates (weights: population share of the demographic group in the country/year); Robust SE clustered at demographic group (dg) level in parentheses; all regressions include: shares of ISCO 08 major groups occupations in the dg, shares of macro industries employment (primary, secondary, tertiary) in the dg; country/year fixed effects; dg/year fixed effects *** p<0.01, ** p<0.05, * p<0.1. The number of countries included in each model varies due to the number of treated and control countries for each reform (see Appendix A). Complete results available upon request.

In our case, results show that expanding childcare services was not able to produce any significant effect on in-work poverty (column 3 of Table 8). This is consistent with the existing evidence and has been explained by the fact that not necessarily such measures reach the target groups to combat in-work poverty (those with lower levels of work intensity and lower earnings) (see van Lancker and Horemans, 2018). Formal childcare is indeed normally used more extensively by families with high work intensity, and ensuring its provision for free does not guarantee a high take-up rate by lower income levels (NAO; 2016; Eurostat, 2023) due to a more negative attitude towards formal childcare (Hegewisch and Gornick, 2011*)*. Our analysis of the effects of the reform on work intensity and labour earnings (column 2 of Table 11) suggests a partially different story and that the non-significant impact of the reform is the result of various effects offsetting each other. On one side, consistent with the findings of Breunig et al. (2011 and 2014) and Doiron and Kalb (2005), the reform increases the labour supply intensive margin (lower part-time rate and longer working hours), probably because working parents can work more. On the other hand, it reduces overall employment rate, increases temporary employment and decreases labour returns. While the effects on wages are difficult to explain, one possible explanation of the detrimental effect at the extensive margin, is that the decline of household expenditures due to a better availability of childcare services provided by the public sphere, decreases the attachment to employment by marginal members of the household.

An increase in the generosity of child-related tax/transfer system (*'child_ben_up'*) produces a decrease in in-work poverty (column 4 of Table 8). Outcomes reported in column 3 of Table 11 suggest that this is due to several effects pushing to the same direction: increase of labour supply at the extensive and at the intensive margin, higher labour returns. The outcomes on the increase in labour supply are in contrast with a simple conceptual framework that predicts that an increase in child benefits decreases labour participation as it encourages higher fertility and, at the same time, generates income effects (due to the higher transfer). The marginal utility of income decreases, and this translates into a lower level of labour supply. Although these predictions have received support (González, 2013; Tamm, 2010; Jensen and Blundell, 2024), there is also evidence consistent with our results, especially in the case, like ours, of conditional child/family benefits (e.g., Francesconi and van der Klaauw, 2007; Kuka and Shenhav, 2020; Meyer and Rosenbaum, 2000; Schanzenbach and Strain, 2021). One possible explanation of our results is that such measures, when of a given magnitude, enable better participation in the labour market by providing the economic resources needed to substitute child caring work by family members with childcare services external to the family; this, on turn, is likely to be conducive to employment positions with better returns (more full-time jobs, higher attachment to the job, less absenteeism, better

accumulation of human capital). The increase in temporary employment rates associated with the reform signals that, probably, part of the substantial increase in employment happens through fixed-term contracts, which characterised a significant share of the flows into employment in the years considered, especially after the Great Recession (see OECD, 2016). This effect is indeed emerging for other reforms that produce a strong pro-employment effect (besides child tax/allowances, extension of parental leave and flexible work arrangement measures).

The next three reforms regard the increase in the length and in the allowance of parental leave (maternity, paternity and non-gender-specific). Given the mixed evidence provided by the extensive empirical literature, making predictions is a daunting task. Parental leave policies positively impact women's employment continuity and careers only when they guarantee job security (Hegewisch and Gornick, 2011) and when the leave is paid (De Henau et al., 2007). The length of parental leave should also be appropriate: an excessive duration keeps mothers out of employment for too long (Pettit and Hook, 2009; Jaumotte, 2003; Thévenon and Solaz, 2013); in contrast, if it is too short, leave increases the risk of women dropping out of the labour market altogether (Keck and Saraceno, 2013). Cross-country comparisons show that paid maternity and family leave provisions of up to one year increase the likelihood of employment shortly after childbirth and have either positive or zero impacts on women's medium- and long-run employment and earnings (Rossin-Slater, 2018). Longer paid leave entitlements can negatively affect women's wages in the long term (Blau and Kahn, 2013) and for all skill levels (Olivetti and Petrongolo, 2017). Asymmetries in parental leave and childcare provisions across genders still permeate virtually all societies. Even when fathers have leave opportunities similar to those of mothers, as in northern Europe, the gender gap in the take-up rate remains remarkable (see Thorsdottir, 2013, and Hegewisch and Gornick, 2011). Mandatory paternal leave is instead found to reduce gender imbalances in household tasks, with persistent effects after the leave period (Patnaik, 2019).

In our analysis, enhancing the generosity of maternal leave is found to decrease in-work poverty (column 5 of Table 8); column 4 of Table 11 highlights that this is the result of two effects. On one side, the increase in employment at the extensive (employment rate) and at the intensive margin (lower part-time rate and more extended hours worked). This is probably because more generous maternal leave systems encourage women to participate in employment and to accept full-time positions, as the event of childbirth is signalled by the welfare system and perceived by parents as compatible with engagement in the labour market. On the other side, the outcomes highlight also beneficial effects on wages and earnings; one possible explanation is that more generous maternity leave provisions decrease employment discontinuities and job turnover (i.e., the need to resign or to interrupt employment in the months around

the childbirth and in the following period, and to look for a new job afterwards), and this helps keeping wages at a higher level.

The case of paternity leave policies provides interesting complementary evidence. As shown in Table 8 (column 6) an increase in the length and generosity of paternity leave is one of the most powerful drivers of a decrease in in-work poverty. Table 11 (column 5) reveals that this is clearly due to an increase in labour participation at the intensive margin and in wages, but not in employment rates. It seems likely that such measures, aimed at encouraging a more balanced sharing of childcare duties between parents, are sufficient to enable women to increase the intensity of their participation into employment (less part-time, longer hours) and, consequently, their wage levels. However, the magnitude of such reforms is probably not enough to produce an increase in employment; in many cases, such paternity leave measures are indeed structured as optional (not mandatory) or introduce paternity leave options that are more limited (especially in length) compared to maternity leave.

Lastly, an increase in parental leave not targeted specifically to fathers or mothers seems to produce all beneficial effects on the mechanism underlying a decrease in in-work poverty (column 6 of Table 11): increase of employment participation at the extensive and at the intensive margin, higher labour remunerations. This suggests that the flexibility of gender-neutral measures produce the same beneficial effects of maternity/paternity-specific measures, but also favour a better organisation of the family and enable improvements on all fronts of work intensity and labour remunerations. As in the case of maternity leave, the significant increase in employment triggered by parent leave policies, goes through the channel of fixed-term contract; however, this does not materialise in a disadvantage in terms of hourly remunerations.

We now focus our attention on the introduction of measures aimed at facilitating the reconciliation between work and family duties by introducing flexible work arrangements – workplace practices that permit employees to have some control over work hours, pattern or location ((i.e. flexitime or flexiplace, also known as telework or remote work) (Fair Work Ombudsman, 2021; French and Shockley, 2020; Hokke et al., 2021). Flexible work practices and policies have become widespread as organisations recognise the benefits of supporting work–life balance, for both employees and employers (Workplace Gender Equality Agency, 2019). Despite this emphasis on workplace flexibility, empirical evidence to support its use for parents is mixed (Allen et al., 2013) and work–family outcomes have received little empirical attention in terms of policy evaluation.

Our analysis shows that the reforms that encourage flexible and alternative work arrangements to balance family policies are able to activate several virtuous mechanisms at the same time: a remarkable increase in employment participation at the extensive margin and at the intensive margin, a significant growth of labour remunerations. This confirms the crucial role of such policy reforms in closing gender gaps and, as one of their consequences, in increasing the well-being of individuals in worse off positions.

Lastly, we examine the effects of policies aiming at favouring early re-entry into employment of parents. An extensive literature has described the adverse effects of the interruption of employment due to a childbirth on labour market participation and outcomes (likelihood to return to work, career progression and pay) and on its gender asymmetries (Fitzenberger et al., 2016; Lalive et al., 2014; Twamley and Schober, 2019; Lundborg and Rasmussen, 2017). One crucial factor shaping the magnitude of the so-called motherhood-penalty (Kleven et al. 2019a and 2019b) has been identified in the duration of the employment break, with longer interruptions being more detrimental to the probability of re-entering employment and attaining high-quality jobs (Kureishi et al., 2021; Rossin-Slater, 2018; Ruhm, 1998; Baum, 2003). The expectation is therefore that reforms that encourage an early return to employment after childbirth produce positive labour market effects. As highlighted in Table 8 (column 9) *'early_return'* is one of the few family reforms with no significant effects on in-work poverty. However, this does not necessarily mean that the reform is neutral on work intensity and labour remunerations, as results in Table 11 (column 8) suggest. The reform is indeed triggering an increase of labour supply at the intensive margin, but this is effect is probably too weak to draw a significant number of households and individuals outside in-work poverty conditions; another possibility is that this effect is offset by the decrease in labour earnings, but the statistical significance of the effect is limited to the pay metric including returns from self-employment and, for this reason, should be interpreted with caution.

3.3.3. Channels (ii): Labour market reforms, work intensity/quality and labour returns

From Table 12, we cannot say much about the channels (work intensity and labour earnings) through which we can explain the results illustrated in Table 9 on the association between labour market reforms and in-work poverty. Some of the non-significant coefficients observed for the association between labour market reforms and work intensity/labour earnings are consistent with the expectations based on previous studies. For instance, an extensive body of literature has discussed the effects of employment protection legislation on employment and labour earnings; a recent comprehensive review is included in the OECD (2020). As for the employment protection of permanent workers, most theoretical and empirical

investigations have demonstrated that stricter protection levels simultaneously hinder job destruction and job creation, producing negligible effects on employment (OECD, 2018; Boeri, 2011; Martin and Scarpetta, 2012; OECD, 2013). It is, therefore, not surprising in our case that reducing protection levels for permanent workers does not affect the employment rate (Table 12, column 3, *'eplr_down'*). The fact that the same reform significantly lowers the intensive margin of labour by shrinking the number of hours worked yearly (-0.11 at a five per cent significance level) is likely to occur because, once the reform is implemented, dismissed workers may be re-employed on part-time or fixed-term contracts, or may even turn to self-employment status. All these new conditions might contribute to reducing the number of hours worked yearly. On the other hand, according to the literature, reduced workers' flows and labour reallocation driven by a higher level of restrictions on worker dismissals may negatively affect productivity and wages (Bassanini et al., 2009). However, from Table 7, no signs of a positive association between labour market deregulation and wages emerge. This likely means that should positive effects on productivity exist (which we do not observe because investigating productivity is out of the scope of our study), the rent-sharing mechanism that redistributes part of the company's gains to employees is not functioning.

In parallel, the labour market dualism literature highlights how reforms liberalising temporary contracts induce only a temporary increase in employment; this phenomenon is defined as the *honeymoon effect* by Boeri and Garibaldi (2007; 2024). In the long run, when temporary workers replace a considerable part of the employment stock, the overall employment rate becomes more elastic to the business cycle; as a result, the average employment rate during good and bad times remains quite similar to that of the pre-reform level. This prediction is likely reflected in the non-significant effects of 'eplt' on the employment rate (Table 12, columns 1 and 2). Interestingly, increasing restrictions on using fixed-term contracts (Table 12, column 1, 'eplt_up') somewhat reduces the rate of part-time contracts (-0.072 at a ten per cent significance level), likely contributing to increased work intensity among individuals. This apparent complementarity between fixed-term and part-time contracts mirrors mini-jobs deployment in some EU countries over the last two decades (Palier and Thelen, 2012). The deregulation of temporary jobs may also induce some firms to design routine and low-productivity jobs that facilitate the employment of temporary workers (Blanchard and Landier, 2002). This type of reform has frequently been associated with lower capital/labour ratios, reduced investments (Cappellari, Dell'Aringa, and Leonardi, 2012), and a discouragement of the accumulation of firm-specific human capital within firms (Belot et al., 2007; Damiani et al., 2016). However, we cannot confirm these predictions in our results, as reforms of

employment protection for temporary workers, in any direction, do not affect wages (Table 12, columns 1 and 2).

Table 12. Labour market reforms, work intensity and labour returns

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8)
(a) employment rate									
	eplt _up	eplt _down	eplr _down	cbcoord _up	cbcoord _down	cblevel _down	unemp_ben _up	unemp_ben _down	mw _up
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.008	-0.053	-0.010	-0.037**	-0.045	-0.021	-0.032	0.289	-0.015
	(0.097)	(0.136)	(0.024)	(0.015)	(0.046)	(0.030)	(0.089)	(0.203)	(0.019)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(b) part-time employment rate									
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.072*	0.060	0.004	0.009	-0.005	-0.007	-0.003	0.026	0.004
	(0.038)	(0.044)	(0.006)	(0.009)	(0.027)	(0.012)	(0.025)	(0.119)	(0.006)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(c) temporary employment rate									
				[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	-	-	-	-0.010	-0.006	-0.006	0.024	0.136	-0.003
				(0.012)	(0.014)	(0.013)	(0.055)	(0.179)	(0.009)
				[…]	[…]	[…]	[…]	[…]	[…]
(d) hours worked yearly									
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	0.129	-0.190	-0.110**	-	0.122	0.060	-0.109	-0.491	-0.023
	(0.198)	(0.494)	(0.044)	-	(0.073)	(0.039)	(0.208)	(0.521)	(0.033)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(e) hourly wage (ln)									
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	0.104	0.479	0.058	-0.115	-0.106	0.015	0.178	0.479	-0.103
	(0.642)	(0.334)	(0.089)	(0.068)	(0.136)	(0.133)	(0.286)	(0.683)	(0.091)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
(f) hourly earnings									
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.047	0.617	0.070	-0.202**	-0.157	-0.003	0.259	0.056	-0.094
	(0.354)	(0.384)	(0.071)	(0.093)	(0.179)	(0.129)	(0.284)	(0.858)	(0.085)
	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]

Source: Own elaborations on EU-SILC data
Notes: Weighted panel FE estimates (weights: population share of the demographic group in the country/year); Robust SE clustered at demographic group (dg) level in parentheses; all regressions include: shares of ISCO 08 major groups occupations in the dg, shares of macro industries employment (primary, secondary, tertiary) in the dg; country/year fixed effects; dg/year fixed effects *** p<0.01, ** p<0.05, * p<0.1. The number of countries included in each model varies due to the number of treated and control countries for each reform (see Appendix A). Regression on the effects of employment protection reforms (columns 1-3) on the temporary employment rate are not reported, as 'temp_r' is used as the exposure variable for those reforms. Complete results available upon request.

As for changes in bargaining levels and wage coordination regimes, results from Table 12 indicate that, overall, work intensity and labour earnings do not appear to be associated with these institutional reforms. It is well known in the literature that the relationship between the level of centralisation of bargaining and employment or labour earnings may conceal non-linearities that make this association difficult to

identify (Garnero, 2021; Calmfors and Driffill, 1988). This prediction is likely reflected in the non-significant findings for the level of bargaining centralisation (Table 12, column 6, *'cblevel_down'*). Instead, the results for reforms improving wage coordination (Table 12, column 4, *'cb_coord_up'*) apparently contradict the literature's findings of the positive effects of increasing wage coordination on labour market outcomes (Garnero, 2021; Braakmann and Brandl, 2016). Further research is needed to clarify the role played by the heterogeneity of demographic groups, as we are studying the relationship across all demographic groups here. In contrast, when we analyse the direct association between in-work poverty and wage coordination reforms (Table 9, column 5), we better isolate the most vulnerable groups, as underscored in the literature above.

Reforms that increase or decrease the fraction of current or potential income that the social system provides to jobless individuals (net replacement rate) represent another institutional change of interest here. The job search theory suggests that unemployment benefits affect people's job-seeking behaviour by reducing the opportunity cost of remaining unemployed (Mortensen, 1977; Mortensen and Pissarides, 1994). This leads to an increase in the reservation wage, which consequently decreases the number of job opportunities considered acceptable, ultimately raising the likelihood of prolonged unemployment (Nickell, 1979; for a comprehensive review, see Lopes, 2022). In our analysis, we find neither an association between unemployment benefits and in-work poverty (Table 9, columns 7 and 8) nor can we identify the specific effects of these reforms on employment and labour earnings (Table 12, columns 7 and 8). A tentative explanation for these non-significant results is that non-standard forms of employment, particularly temporary jobs, part-time work, and solo self-employment, are considered ineligible for unemployment benefits. This situation arises even though these categories have become increasingly widespread in advanced economies over the past two decades and face more significant challenges, such as wage penalties, frequent unemployment spells, and a higher risk of falling into in-work poverty status (Tamayo and Tumino, 2021). Specifically, an empirical analysis conducted by Matsaganis et al. (2016) highlights gaps of more than 30 percentage points between the share of permanent full-time employees and that of temporary employees (both full-time and part-time) entitled to unemployment benefits in the event of unemployment. The gap increases to 55 percentage points when comparing permanent full-time employees with the self-employed. Our results, therefore, confirm that unemployment benefits do not influence the conditions for vulnerable groups of workers at all.

Lastly, results for non-significant effects of a minimum wage increase on labour market outcomes (Table 12, column 8, *'mw_up'*) are not completely misaligned with the bulk of the evidence found in the literature. From a theoretical point of view, it is well known that the minimum wage may increase unemployment

and reduce the employment rate due to the upward shift in the wage floor, which boosts the quantity of labour supplied while decreasing the quantity demanded. However, in imperfect product markets, firms may adjust the product price upwards in response to a minimum wage increase. This *pass-through effect*, whereby the costs associated with the minimum wage are transmitted from the firm to its consumers, neutralises the adverse effects of the minimum wage and produces negligible impacts on the employment rate or on hours worked (Clemens, 2021). Empirical results for EU countries that corroborate the hypothesis that an increase in the minimum wage negatively affects labour market outcomes are quite rare. Christl et al. (2018) find non-linearities: only in countries like France and Belgium do high minimum wage rates negatively affect employment, while in other EU countries the effect of a small level (or increase) in the minimum wage on employment is almost neutral or even slightly positive. Little evidence for substantial dis-employment impacts of the minimum wage in the EU has also been found by Sturn (2017) and Marimpi and Koning (2018). Our results from Table 12 (column 8) substantially confirm those previous findings.

3.3.4. Channels (iii): Social protection and competition reforms, work intensity/quality and labour returns

Table 13 shows the effects of three additional blocks of institutional changes related to social protection and competition policies for products markets. The reform indicator for social protection combines different social protection policies (unemployment benefits, other forms of social protection, minimum income benefits, and housing benefits) and quantifies them as a cumulative net replacement rate; that is, the fraction of current or potential income the social system provides to individuals eligible for social protection plans. As in the case of unemployment benefits as a single provision discussed in the previous section, our analysis does not identify any significant effects of these combined social protection policies. This is evident even when extending the investigation from in-work poverty (Table 10, columns 1 and 2, *'social_prot_up'* and *'social_prot_down'*) to its potential channels: work intensity or labour earnings (Table 13, columns 1 and 2, *'social_prot_up'* and *'social_prot_down'*). Mainstream economic theory predicts a possible disincentive effect of minimum income and housing benefits (Gregoir and Maury, 2018). Like unemployment benefits, minimum income benefits may induce job seekers to refuse offers with wages that are considered too low. A depreciation of human capital due to lack of use while unemployed might also explain the lower probability of finding a job in the future and, therefore, the persistence of long-term unemployment. On the other hand, those unemployed who benefit from housing subsidies are more resistant to geographical mobility. This negatively affects their likelihood of accepting a non-local job offer

(Munch et al., 2006). Empirical studies on this matter have been conducted mainly in the US, where most investigations find adverse effects of these social plans on labour outcomes (Gregoir and Maury, 2018; Carlson et al., 2012; Olsen et al., 2005). However, our analysis neither confirms these predictions nor highlights effects of those social plans on employment and labour earnings. A plausible motivation for our findings may be attributed to the country-specific characteristics and effects of the combination of social protection plans across the EU countries analysed (van Vliet and Wang, 2019), which prevent the identification of an overall significant effect.

If we look at the guaranteed minimum income as a stand-alone provision, we observe that the decline in in-work poverty associated to reduction in its generosity ('gmi_down') (see Table 10, column 4) is the result of opposite effects on work intensity and labour earnings (Table 13, column 4). In more detail, lowering the generosity of this form of social protection reduces the employment rate while significantly increasing labour earnings. On the one hand, we cannot exclude that the negative association between the reduction in the guaranteed minimum income and the employment rate may result from more complex and unobserved factors, where a lower employment rate is caused by higher unemployment, in turn, creating budgetary pressures on EU governments and imposing reductions in the level of the guaranteed minimum income (Frazer and Marlier, 2016; van Vliet and Wang, 2019). On the other hand, lowering the minimum income could lessen long-term reliance on this scheme for specific groups in various EU nations (Frazer and Marlier, 2016) while enhancing labour earnings. One might consider a within-household composition effect, where an employed member, confronted with challenges due to unemployed family members and a decrease in their minimum guaranteed income, works harder to secure higher earnings or is incentivised to look for a job with better returns.

Lastly, from Table 13 (column 5, *'pmr_down'*), a significant and positive association emerges between the deregulation of product markets and wages. This result is relatively consistent with what we find in the literature, according to which anti-competitive markets (especially in energy, communications, transport and professional services) give rise to monopolistic and monopsonistic behaviour by large companies (Bassanini and Duval, 2006; Conway and Nicoletti, 2006). This means these companies reduce wages below the reservation wage and limit employment opportunities for specific groups "at the margin" of the labour market (Bassanini and Duval, 2006; Amable et al., 2011). A similar behaviour may be observed in companies operating in downstream industries: depending on the intensity of the input-output relations with non-competitive market services, these companies are affected by knock-on effects (Conway and Nicoletti, 2006). Due to the increase in input prices, such as energy and professional services, companies may implement a wage markdown. However, this overall positive effect on hourly wages from reducing

the regulation in the product markets is insufficient to alleviate the working poor's conditions, as already mentioned in section 3.3.3 (Table 10, column 5). This is likely because vulnerable groups such as young, female, and low-skilled workers are not employed by those companies benefiting most from the reduction in input prices.

Table 13. Social protection and competition reforms, work intensity and labour returns

	(1)	(2)	(3)	(4)	(5)
(a) employment rate					
	social_prot _up	social_prot _down	gmi _up	gmi _down	Prmr _down
	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.008	-0.053	-0.010	-0.037**	-0.045
	(0.097)	(0.136)	(0.024)	(0.015)	(0.046)
	[…]	[…]	[…]	[…]	[…]
(b) part-time employment rate					
	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.003	0.026	-0.016	-0.016	-0.017
	(0.025)	(0.119)	(0.034)	(0.024)	(0.015)
	[…]	[…]	[…]	[…]	[…]
(c) temporary employment rate					
	[…]	[…]	[…]	[…]	[…]
treat*reform	0.024	0.136	-0.009	0.050	0.007
	(0.055)	(0.179)	(0.037)	(0.053)	(0.010)
	[…]	[…]	[…]	[…]	[…]
(d) hours worked yearly					
	[…]	[…]	[…]	[…]	[…]
treat*reform	-0.109	-0.491	0.085	0.007	-0.091
	(0.208)	(0.521)	(0.141)	(0.093)	(0.094)
	[…]	[…]	[…]	[…]	[…]
(e) hourly wage (ln)					
	[…]	[…]	[…]	[…]	[…]
treat*reform	0.178	0.479	-0.132	0.590***	0.149**
	(0.286)	(0.683)	(0.392)	(0.198)	(0.058)
	[…]	[…]	[…]	[…]	[…]
(f) hourly earnings					
	[…]	[…]	[…]	[…]	[…]
treat*reform	0.259	0.056	-0.166	0.420**	0.094
	(0.284)	(0.858)	(0.415)	(0.162)	(0.090)
	[…]	[…]	[…]	[…]	[…]

Source: Own elaborations on EU-SILC data

Notes: Weighted panel FE estimates (weights: population share of the demographic group in the country/year); Robust SE clustered at demographic group (dg) level in parentheses; all regressions include: shares of ISCO 08 major groups occupations in the dg, shares of macro industries employment (primary, secondary, tertiary) in the dg; country/year fixed effects; dg/year fixed effects *** p<0.01, ** p<0.05, * p<0.1. The number of countries included in each model varies due to the number of treated and control countries for each reform (see Appendix A). Complete results available upon request.

4. Summary and concluding remarks

The dual nature of the IWP indicator complicates the comprehension of in-work poverty, especially in a dynamic and cross-national analysis. Because of IWP's dual nature, similar indicator levels may conceal different underlying dynamics.

The first part of this paper (Section 2) maps the individual and household-level characteristics associated with in-work poverty and the probabilities of transitions in and out of in-work poverty. This section builds on the literature on IWP dynamics but adopts a comprehensive perspective 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. We analyse 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. 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 include a small share of individuals but is of strong political interest, showing that in one in two cases, re-entering the workforce does not always equate to escaping poverty.

We observe that the estimated risk of poverty during each transition is very heterogeneous between 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 material deprivation, where the huge diversity in risk between countries becomes much less pronounced when compared to the overall material deprivation context. However, some countries perform notably better than others at protecting workers in specific trajectories, even when accounting for the broader poverty/deprivation context. This underscores the importance of considering the institutional and policy context in the analysis, as these factors can significantly influence outcomes for workers.

Regarding the identification of vulnerable social groups, the findings suggest that demographic characteristics, such as gender or broad age categories, have a limited influence on workers' poverty risk. Conversely, higher education levels reduce the likelihood of income poverty and material deprivation in

the three trajectories of interest, as they might provide individuals with better opportunities to secure stable and well-paying jobs, enhancing their overall resilience. Additionally, the economic involvement of other household members proves to be the most influential factor in determining in-work poverty and material deprivation. Changes in household size or composition, particularly those affecting labour market attachment, have a substantial effect on workers' entry into or exit from poverty. This highlights the critical role of household dynamics on the labour market in shaping poverty outcomes of workers.

Our results show that the impact of personal and household characteristics and changes may differ between countries, demonstrating that similar characteristics or conditions lead to different vulnerability level, depending on the general context and the specific institutional settings. These aspects are investigated in Section 3, in which we analyse the impact on in-work poverty of a large array of reforms implemented in EU countries in the domains of family policy, labour market institutions, social protection and product market competition. The analysis is based on EU-SILC cross-section data, used to assemble a longitudinal dataset at the demographic group level (defined by gender, age, education and country) for 25 EU countries and the period 2006-2018. We use a staggered diff-in-diff approach to investigate, in the first place, the effects of such reforms on in-work poverty rate of the demographic group; in the second stage of the empirical analysis, we attempt to identify the channels through which the effects unfold (either changes in work intensity, or in labour returns, or both).

Our results clearly suggest that family policies should be prioritised as instruments to tackle in-work poverty in the EU. With the exception of expanding access to childcare and introducing measures to facilitate the early return into the labour market of parents, all reforms in the other family policy fields considered reduce in-work poverty rates. Interestingly, the strongest effects are associated to reforms of paternity and non-gender-specific leave (significantly higher than the one emerging for maternity leave). This suggests that a more balanced division of the workload due to childbirth and the early years of children is key in promoting not only gender equality, but it is also beneficial to the overall household wellbeing. This is confirmed by the significant in-work poverty reducing effect of reforms aimed at facilitating work-life reconciliation by allowing flexible work organisation. The analysis of the channels through which reforms reduce in-work poverty highlights that all of them trigger an increase in employment at the intensive margin (i.e., growth of hours worked and decline in part-time employment rates). Once again, the effects of more generous paternity and non-gender-specific parent leave are of a significantly high relative magnitude. However, the beneficial effects of family policy reforms materialise also at the extensive employment margin (employment rate), for measure increasing the generosity of child tax/benefit systems, maternity leave and flexible work arrangements. Most of the family policy

reforms considered also exert a positive effect on labour earnings. An interesting exception is represented by reforms aimed at enhancing access to childcare. The analysis of the channels reveals that the non-significant impact of the reform on in-work poverty is the result of various effects offsetting each other. On one side, the reform increases the labour supply intensive margin (lower part-time rate and longer working hours), probably because working parents can work more. On the other hand, it reduces overall employment rate, increases temporary employment and decreases labour returns. While the impact on wages is difficult to interpret and deserves further research efforts, one possible explanation of the detrimental effect at the extensive margin is that the decline of household expenditures due to a better availability of childcare services provided by the public sphere, decreases the attachment to employment by marginal members of the household.

As for reforms of labour market institutions, two statistically significant results are noteworthy. First, reducing the restrictions on hiring workers under fixed-term contracts increases the share of in-work poverty individuals. This outcome is plausible and in line with the "hold-up problem" literature concerning the complementarity between technology and human capital investments within companies. The deregulation of temporary jobs likely induces firms to design routine and low-productivity jobs requiring low levels of investment in technology. While the neutral effect of labour market deregulation on work intensity and the employment channel is consistent with the "honeymoon effect" literature, the non-significance of the channel through which deregulation reduces labour earnings calls for further research to investigate whether cross-country heterogeneity plays a role. Second, dismissing any form of coordination in wage bargaining increases in-work poverty. However, we cannot ascertain whether a downward wage adjustment is the primary driver of the effect as the impact of reforms that shape a fragmented (firm-level) wage bargaining is not statistically significant.

Concerning social protection, a decrease in the level of guaranteed minimum income has been found to alleviate in-work poverty. The supplementary analysis suggests that increasing labour earnings is the likely driver through which this occurs. One might consider a within-household composition effect, where an employed member, confronted with challenges due to unemployed family members and a decrease in their minimum guaranteed income, works harder to secure higher earnings or is incentivised to seek a job with better returns.

Policy instruments adopted by countries to mitigate in-work poverty should be consistent with the nature of the phenomenon. Their design should be aimed both at supporting the working poor and at preventing the working non-poor, who are part of vulnerable groups, from falling into poverty. The different poverty

risk trajectories we observe in the countries under analysis suggest that these instruments should be defined according to the characteristics that the in-work poverty assumes in the country. In particular, our results indicate that for poor individuals remaining or entering into employment does not guarantee escaping poverty/deprivation. However, heterogeneity across Europe is remarkable and, therefore, the circumstances under which you enter employment matter. If by keeping the job or entering employment individuals do not escape poverty, this means that either: (i) they stay/enter into employment with a low-quality job which does not trigger a significant increase in the household income; (ii) they stay/enter employment with a good job, but still this does not enable them to offset the household level drivers of in-work poverty (low employment participation of other household members or low labour incomes from their jobs). Our main result of the analysis of the impact of reforms indicates that more generous family policies (related to the presence of children) alleviate in-work poverty; their effects mainly materialise through an increase in employment at the intensive and extensive margin (and in labour returns). One possible overarching interpretation of our results is that higher participation in employment drags people out of poverty only when it is driven by policies that weaken (or address) household-level constraints related, in particular, to workload imposed by the presence of children.

References

Aksoy, C. G., Özcan, B., Philipp, J. (2021). Robots and the gender pay gap in Europe. *European Economic Review*, *134*, 103693.

Albinowski, M., Lewandowski, P. (2024). The impact of ICT and robots on labour market outcomes of demographic groups in Europe. *Labour Economics*, *87*, 102481.

Allen TD, Johnson R.C., Kiburz K.M., Shockley, K.M. (2013). Work–family conflict and flexible work arrangements: deconstructing flexibility. *Personnel Psychology,* 66(2): 345–376.

Amable, B., Demmou, L., Gatti, D., (2011) The effect of employment protection and product market regulation on labour market performance: substitution or complementarity?, *Applied Economics*, 43(4), 449-464.

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.

Barbieri, P., Cutuli, G. (2016). Employment protection legislation, labour market dualism, and inequality in Europe. *European Sociological Review*, 32(4), 501–516.

Barbieri, P., Cutuli, G., Scherer, S. (2018). In-work poverty in Southern Europe: The case of Italy. *Handbook on In-Work Poverty,* Edward Elgar Publishing, 312-327.

Bardone, L., Guio, A.-C. (2005). In-work poverty: New commonly agreed indicators at the EU level (Statistics in Focus: Population and Social Conditions 05/2005; Population and Living Conditions). Publications Office of the European Union.

Bassanini, A., Duval, R. (2006). Employment patterns in OECD countries: Reassessing the role of policies and Institutions. *OECD Economics Department Working Papers* No. 486. OECD Publishing (NJ1).

Bassanini, A., L. Nunziata, Venn, D. (2009). Job protection legislation and productivity growth in OECD countries, *Economic Policy*, Vol. 24/58, 349-402.

Batut, C., Garnero, A., Tondini, A. (2023). The employment effects of working time reductions: Sector-level evidence from European reforms. *Industrial Relations: A Journal of Economy and Society*, *62*(3), 217-232.

Baum, C. L. (2003). The effects of maternity leave legislation on mothers' labor supply after childbirth. *Southern Economic Journal*, 69(694), 772–799.

Belot, M., Boone, J., van Ours, J. C. (2007). Welfare-improving employment protection. *Economica*, 74(8), 381–396.

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.

Blanchard, O., and Landier, A. (2002). The perverse effects of partial labour market reform: Fixed term contracts in France. *Economic Journal*, 112: F214–44.

Blau, F. D., Kahn, L. M. (2013). Female labor supply: why is the United States falling behind? *American Economic Review*, 103(3), 251–56.

Boeri, T. (2011). Institutional reforms and dualism in European labor markets, *Handbook of Labor Economics*. In Card, D. and O. Ashenfelter (eds.), North Holland, Amsterdam (vol. 4, 1173-1236)

Boeri, T., Garibaldi, P. (2024). Temporary employment in markets with frictions. *Journal of Economic Literature*, 62(3), 1143-1185.

Boeri, T., Garibaldi, P. (2007). Two tier reforms of employment protection: a honeymoon effect? *Economic Journal*, 117 (521), F357–85.

Booth, A. L., Francesconi, M., Frank, J. (2002). Labour as a buffer: Do temporary workers suffer?, *IZA Discussion Papers,* 673. Bonn: IZA.

Bosio, G. (2014). The implications of temporary jobs on the distribution of wages in Italy: An unconditional IVQTE approach. *Labour*, 28(1), 64–86.

Braakmann, N. Brandl, B. (2016). The efficacy of hybrid collective bargaining systems: An analysis of the impact of collective bargaining on company performance in Europe. *MPRA Paper* no. 70025. Munich: MPRA.

Breunig, R., Gong, X., Trott, D. (2014). The new national quality framework: Quantifying some of the effects on labour supply, child care demand and household finances for two-parent households. *The Economic Record*, 90(288), 1–16.

Breunig, R., Weiss, A., Yamauchi, C., Gong, X., Mercante, J. (2011). Child care availability, quality and affordability: Are local problems related to labour supply? *The Economic Record*, 87(276), 109–124.

Broström, L., Jansson, B. (2023). Who are the In-Work Poor? A Study of the Profile and Income Mobility Among the In-Work Poor in Sweden from 1987 to 2016. *Social Indicators Research*, 165(2), 495–517.

Callaway, B., Goodman-Bacon, A., Sant'Anna, P. H. (2024). Difference-in-differences with a continuous treatment (No. w32117). National Bureau of Economic Research.

Calmfors, L., Driffill. J. (1988) Bargaining structure, corporatism and macroeconomic performance. *Economic Policy,* 3(6): 13-61.

Cappellari, L., Jenkins, S. P. (2004). Modelling low-income transitions. *Journal of Applied Econometrics*, 19(5), 593–610.

Cappellari, L., Dell'Aringa, C. Leonardi, M. (2012). Temporary employment, job flows and productivity: a tale of two reforms. *Economic Journal*, 122 (562), 188–215.

Carlson, D., Haveman, R., Kaplan, T., Wolfe, B. (2012). Long-term earnings and employment effects of housing voucher receipt. *Journal of Urban Economics*, 71(1), 128-150.

Christl, M., Koppl-Turyna, M., Kucsera, D. (2018). Revisiting the employment effects of minimum wages in Europe. *German Economic Review* 19, 426–465.

Clemens, J. (2021). How do firms respond to minimum wage increases? Understanding the relevance of non-employment margins. *Journal of Economic Perspectives*, 35(1), 51-72.

Conway, P., Nicoletti, G. (2006). Product market regulation in the non-manufacturing sectors of OECD countries: measurement and highlights. *OECD WP* No.530; OECD Publishing, Paris.

Crettaz, E. (2013). A state-of-the-art review of working poverty in advanced economies: Theoretical models, measurement issues and risk groups. *Journal of European Social Policy*, 23 (4), 347–362.

Crettaz, E. (2015). Poverty and material deprivation among European workers in times of crisis. *International Journal of Social Welfare*, 24(4), 312–323.

Damiani, M., Pompei, F., Ricci, A. (2016). Temporary employment protection and productivity growth in EU economies. *International Labour Review*, 155(4), 587-622.

De Henau, J., Meulders, D., O'Dorchai, S., Del Boca, D., Wetzels, C. 2007. Parents' care and career: Comparing parental leave policies, in Del Boca, D., Wetzels, C. (eds.) *Social policies, labour markets, and motherhood* (Cambridge University Press), 63–106.

Doiron, D., Kalb, G. (2005). Demands for childcare and household labour supply in Australia. *The Economic Record*, 81(254), 215–236.

Doorley, K., Gromadzki, J., Lewandowski P., Tuda D., van Kerm, P. (2023) Automation and income inequality in Europe. *IZA Discussion Paper*, No. 16499, IZA, Bonn.

Dube, A. (2019). Minimum Wages and the Distribution of Family Incomes. *American Economic Journal: Applied Economics*, 11 (4): 268–304.

Eurofound (2017). *In-work poverty in the EU*, Publications Office of the European Union, Luxembourg.

Eurostat (2023). New indicators on childcare participation and intensity. *News Articles*, 7 December 2023 (https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20231207-1)

Fair Work Ombudsman (2021) *Flexible working arrangements. Best practice guide*. Available at: https://www.fairwork.gov.au/tools-and-resources/best-practice-guides/flexible-working-arrangements.

Fields, G. S., Kanbur, R. (2007). Minimum wages and poverty with income-sharing. *The Journal of Economic Inequality*, 5(2), 135–147.

Fitzenberger, B., Steffes, S., Strittmatter, A. (2016) Return-to-job during and after parental leave. *International Journal of Human Resources Management,* 27(8):803–831

Francesconi, M., van der Klaauw, W., (2007). The socioeconomic consequences of "In-Work" benefit reform for British lone mothers. *Journal of Human Resources,* 42 (1), 1-31.

Frazer, H., Marlier, E. (2016). Minimum income schemes in Europe. A study of national policies, *European Social Policy Network* (ESPN).

French, K.A., Shockley, K.M. (2020) Formal and informal supports for managing work and family. *Current Directions in Psychological Science,* 29(2): 207–216.

Garnero, A. (2021). The impact of collective bargaining on employment and wage inequality: Evidence from a new taxonomy of bargaining systems. *European Journal of Industrial Relations*, 27(2), 185-202.

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.

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.

González, L., 2013. The effect of a universal child benefit on conceptions, abortions, and early maternal labor supply. *American Economic Journal: Economic Policy*, *5*(3), 160-188.

Gornick, J. C., Meyers, M. K. (2003). *Families that work: Policies for reconciling parenthood and employment*. New York: Russell Sage Foundation.

Gornick, J. C., Meyers, M. K., Ross, K. E. (1998). Public policies and the employment of mothers: A cross-national study. *Social Science Quarterly*, 79(1), 33–54.

Gregoir, S., Maury, T. P. (2018). The negative and persistent impact of social housing on employment. *Annals of Economics and Statistics/Annales d'Économie et de Statistique*, (130), 133-166.

Guio, A.C., Marguerit, D., Salagean, I. (2021). In-work poverty and deprivation dynamics in Europe. In A.C. Guio, E. Marlier, B. Nolan (Eds.), *Improving the understanding of poverty and social exclusion in Europe*. (Eurostat Statistical Working Papers). Publications Office of the European Union, 251-274.

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*. Palgrave Macmillan UK, 175-201.

Hagedorn, M., Karahan, F., Manovskii, I., Mitman, K. (2013). Unemployment benefits and unemployment in the great recession: the role of macro effects (No. w19499). National Bureau of Economic Research.

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.

Hegewisch, A., Gornick, J. C. (2011). The impact of work—family policies on women's employment: a review of research from OECD countries. *Community, Work and Family*, 14(2), 119–138.

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.

Hick, R., Marx, I. (2023). Poor workers in advanced democracies: on the nature of in-work poverty and its relationship to labour market policies. In *Handbook of Labour Market Policy in Advanced Democracies*, Edward Elgar Publishing, 495-507.

Hokke, S., Bennetts, S.K., Crawford, S. et al. (2021) Does flexible work 'work' in Australia? A survey of employed mothers' and fathers' work, family and health. *Community, Work and Family*, 24: 488–506.

Hokke, S., Mason, S., Crawford, S. B., Cooklin, A. R., Giallo, R., Bennetts, S. K. (2024). Flexible work patterns and experiences of the work-family interface among Australian parents. *Journal of Industrial Relations*, 66(2), 161-185.

Horemans, J. (2018). Atypical employment and in-work poverty. *Handbook on In-Work Poverty*, Edward Elgar Publishing, 146-170.

Jara Tamayo, H. X., Tumino, A. (2021). Atypical work and unemployment protection in Europe. JCMS. *Journal of Common Market Studies*, 59(3), 535-555.

Jaumotte, F. (2003). Female labour force participation: past trends and main determinants in OECD countries. *OECD Economics Department Working Papers*. pp. 376 Paris: OECD.

Jenkins, S.P. (2011). *Changing Fortunes*. Oxford University Press.

Jensen, M. F., Blundell, J. (2024). Income effects and labour supply: Evidence from a child benefits reform. *Journal of Public Economics*, 230, 105049.

Keck, W., Saraceno, C. (2013). The impact of different social-policy frameworks on social inequalities among women in the European Union: the labour-market participation of mothers. *Social Politics: International Studies in Gender, State and Society*, 20(3), 297–328.

Kleven, H., Landais, C., Søgaard, J. E. (2019a). Children and gender inequality: evidence from Denmark. *American Economic Journal: Applied Economics*, 11(4), 181–209.

Kleven, H., Landais, C., Posch, J., Steinhauer, A., Zweimüller, J. (2019b) Child penalties across countries: evidence and explanations. *AEA Papers and Proceedings*, 109(May), 122-–126.

Kuka, E., Shenhav, N., (2020). Long-run effects of incentivizing work after childbirth. In: *NBER Working Paper*, Vol. 27444.

Kureishi, W., McKenzie, C., Sakata, K., Wakabayashi, M. (2021). Does a mother's early return to work after childbirth improve her future employment status?. *Asian Economic Journal*, *35*(3), 215-245.

Lalive, R., Schlosser, A., Steinhauer, A., Zweimüller, J. (2014) Parental leave and mothers' careers: the relative importance of Job Protection and Cash benefits. *Review of Economic Studies*, 81(1):219–265.

Lewandowski, P., Perugini, C., Pompei, F., Thil, L., Tverdostup, M., Szymczak, W. (2024). Fertility, household models and labour market outcomes in EU countries, *Welar Deliverable D3.2*, 2024 (https://projectwelar.eu/)

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.

Lohmann, H. (2018). The concept and measurement of in-work poverty. Handbook on In-Work Poverty, Edward Elgar Publishing, 7-25.

Lohmann, H. Marx, I. (2008). The different faces of in-work poverty across welfare state regimes, in Andre., H.-J. and Lohmann, H. (eds.), *The working poor in Europe: Employment, poverty and globalization*, Edward Elgar Publishing, Cheltenham, UK, 17–46.

Lopes, M. C. (2022). A review on the elasticity of unemployment duration to the potential duration of unemployment benefits. *Journal of Economic Surveys*, 36(4), 1212-1224

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

Lundborg, P., Plug, E., Rasmussen, A.W. (2017) Can women have children and a career? IV evidence from IVF treatments. *American Economic Review*, 107(6):1611–1637

Maître, B., Nolan, B., Whelan, C. T. (2018). Low pay, in-work poverty and economic vulnerability. In *Handbook on In-Work Poverty*, Edward Elgar Publishing, 124-145.

Marchal, S., Marx, I. Verbist, G. (2017). Income support policies for the working poor. *IZA Discussion Paper*, No. 10665, Hans-Beckler-Foundation, Düsseldorf.

Marimpi, M.; Koning, P. (2018), Youth minimum wages and youth employment, *Journal of Labour Policy,* 7, 1–18.

Martin, J., Scarpetta, S. (2012). Setting it right: Employment protection, labour reallocation and productivity, *De Economist*, 160/2, 89-116.

Marx, I., Vanhille, J., Verbist, G. (2012). Combating in-work poverty in continental Europe: An investigation using the Belgian case. *Journal of Social Policy*, 41(1), 19–41.

Matsaganis, M., Ozdemir, E., Ward, T. and Zvakou, A. (2016) Non-standard employment and access to social security benefits. *Social Situation Monitor Research*, note 8/2015, European Commission.

Meyer, B.D., Rosenbaum, D.T. (2000). Making single mothers work: Recent tax and welfare policy and its effects. *National Taxation Journal,* 53 (4 PART 2), 1027–1059.

Mortensen, D. T. (1977). Unemployment insurance and job search decisions. *ILR Review*, 30(4), 505–517. https://doi.org/10.2307/2523111

Mortensen, D.T., Pissarides, C. (1994). Job creation and job destruction in the theory of unemployment. *Review of Economic Studies*, 61, 397-415.

Munch, J.R., M. Rosholm, Svarer, M. (2006). Are home owners really more unemployed?. *The Economic Journal*, 116(514),991–1013.

NAO (National Audit Office) (2016). *Entitlement to free early education and childcare*, HC 853 Session 2015–16, London.

Nelson, K., Fredriksson, D., Korpi, T., Korpi, W., Palme, J., Sjöberg, O. (2020). The Social Policy Indicators (SPIN) database. *International Journal of Social Welfare*, 29(3), 285-289.

Nickell, S. (1979). Estimating the probability of leaving unemployment. *Econometrica*, 47(5), 1249–1266. https://doi.org/10.2307/1911961

Nishimura, J. (2022). Work–family policies and women's job mobility: emerging divides in female workforce in Japan. *Contemporary Social Science*, 17(4), 353-367.

OECD (2013). *OECD Employment Outlook 2013*, OECD Publishing, Paris, https://doi.org/10.1787/empl_outlook-2013-en.

OECD (2016). Recent labour market developments and the short-term outlook. *Employment Outlook 2016*, OECD: Paris

OECD (2018). *OECD Employment Outlook 2018*, OECD Publishing, Paris, https://doi.org/10.1787/empl_outlook-2018-en.

OECD (2020), OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis, OECD Publishing, Paris, https://doi.org/10.1787/1686c758-en.

Olivetti, C., Petrongolo, B. (2017). The economic consequences of family policies: lessons from a century of legislation in high-income countries. *Journal of Economic Perspectives*, 31(1), 205–30.

Olsen, E. O., Tyler, C. A., King, J. W., Carrillo, P. E. (2005). The effects of different types of housing assistance on earnings and employment. *Cityscape*, 163-187.

Palier, B., Thelen, K. (2012). Dualization and institutional complementarities. Industrial relations, labor market, and welfare state changes in France and Germany. In P.[Hrsg.. Emmenegger (Ed.), *The age of dualization*, 201-225.

Patnaik, A. (2019). Reserving time for daddy: the consequences of fathers' quotas. *Journal of Labor Economics*, 37(4), 1009–1059.

Peña-Casas, R., Ghailani, D. (2021). A European minimum wage framework: the solution to the ongoing increase in in-work poverty in Europe?. in Vanhercke B., Spasova S. and Fronteddu B. (eds.), *Social policy in the European Union: state of play,* 133-153.

Peña-Casas R., Ghailani D., Spasova S. and Vanhercke B. (2019). *In-work poverty in Europe. A study of national policies*. European Social Policy Network (ESPN), Brussels: European Commission.

Perugini, C., Pompei, F. (2016), Employment protection and wage inequality within education groups in Europe, *Journal of Policy Modeling*, 38, 810-836.

Perugini, C., Pompei, F. (2017) Temporary jobs, institutions and wage inequality within education groups in Central-Eastern Europe, *World Development*, 92, 40-59.

Pettit, B., Hook, J. (2009). *Institutionalizing inequality: Gender, family, and economic inequality in comparative perspective*. New York, NY: Russell Sage.

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.

Ponthieux, S. (2010). An analysis of in-work poverty risk in the EU. *Eurostat methodologies and working papers*, Eurostat, Luxembourg.

Ratti, L. (Ed.). (2022). *In-Work Poverty in Europe: Vulnerable and Under-Represented Persons in a Comparative Perspective* (Vol. 111). Kluwer Law International BV.

Rossin-Slater, M. (2018). Maternity and family leave policy. In S. L. Averett, L. M. Argys, S. D. Hoffman (Eds.) *The Oxford Handbook of Women and the Economy*. New York, NY: Oxford University Press.

Rovny, A. E. (2014). The capacity of social policies to combat poverty among new social risk groups. *Journal of European Social Policy*, 24(5), 405–423.

Ruhm, C. J. (1998). The economic consequences of parental leave mandates: lessons from Europe. *Quarterly Journal of Economics*, 113(1), 285–317.

Salverda, W., Checchi, D. (2015). Labor market institutions and the dispersion of wage earnings. In *Handbook of income distribution* (Vol. 2, pp. 1535-1727). Elsevier.

Salverda, W. (2018). Low earnings and their drivers in relation to in-work poverty. In *Handbook on in-work poverty*, Edward Elgar Publishing, 22-49.

Schanzenbach, D.W., Strain, M.R., (2021). Employment effects of the earned income tax credit: Taking the long view. *Tax Policy and the Economy,* 35 (1), 87–129.

Scherer, S. (2004). Stepping-stones or traps? The consequences of labour market entry positions on future careers in West Germany, Great Britain and Italy. *Work, Employment and Society*, 18(2), 369-394.

Seikel, D., Spannagel, D. (2018). Activation and in-work poverty. In Handbook on in-work poverty. Edward Elgar Publishing, 245-260.

Stier, H., Lewin-Epstein, N., Braun, M. (2001). Welfare regimes, family-supportive policies, and women's employment along the life-course. *American Journal of Sociology*, 106(6), 1731–1760.

Sturn, S. (2017). Do minimum wages lead to job loses? Evidence from OECD countries on low-skilled and youth employment. *ILR Review*, 71, 647–675.

Jara Tamayo, H. X., and Tumino, A. (2021). Atypical work and unemployment protection in Europe. JCMS: Journal of Common Market Studies, 59(3), 535-555.

Tamm, M. (2010). Child benefit reform and labor market participation. *Jahrbücher für Nationalökonomie und Statistik*, *230*(3), 313-327.

Thévenon, O., Solaz, A. (2013). Labour market effects of parental leave policies in OECD countries. *OECD Social, Employment and Migration Working Papers*, No. 141, OECD Publishing.

Thorsdottir, T. K. (2013). Iceland in Crisis: Gender equality and social equity 1. In *Women and austerity* (pp. 102-122). Routledge.

Twamley, K., Schober, P.I.A. (2019). Shared parental leave: Exploring variations in attitudes, eligibility, knowledge and take-up intentions of expectant mothers in London. *Journal of Social Policy*, *48*(2), 387-407.

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.

Van Lancker, W., Horemans, J. (2018). Childcare policies and in-work poverty. In *Handbook on in-work poverty*, Edward Elgar Publishing, 261-276.

Van Vliet, O., Wang, J. (2019). The political economy of social assistance and minimum income benefits: a comparative analysis across 26 OECD countries. *Comparative European Politics*, 17, 49-71.

Vandecasteele, L. (2010). Poverty trajectories after risky life course events in different European welfare regimes. *European Societies*, 12(2), 257–278.

Vandecasteele, L., Giesselmann, M. (2018). The dynamics of in-work poverty. In Handbook on In-Work Poverty Edward Elgar Publishing, 193-210.

Workplace Gender Equality Agency (2019) Flexible working is good for business. The Business Case. *Report, Workplace Gender Equality Agency*, Sydney, Australia.

Appendix A – Additional tables and figures

Tables

Table A1. Sample characteristics. Poverty definition: At-risk of poverty

	EU-17	AT	BE	BG	CY	CZ	EE	EL	ES	FR	HR	HU	IT	LT	LU	LV	PL
Observations	297,060	14,870	14,768	12,855	13,704	25,260	15,043	22,247	30,070	12,466	10,494	21,306	37,987	11,976	9,213	13,570	31,231
Poverty rate	14.9	10.6	11.7	16.2	9.7	6.1	13.9	20.5	18.2	10.6	16.2	12.6	17.3	15.2	13.8	15.4	13.3
Employment rate	71.0	81.2	72.4	77.4	74.8	83.2	81.2	56.6	66.1	81.1	70.6	80.4	65.0	78.1	78.7	78.7	71.8
Female	54.0	51.4	51.8	51.5	54.8	52.2	54.6	56.1	53.7	53.9	52.8	52.2	56.1	53.2	52.7	55.3	53.8
Aged 25-34	19.2	20.7	18.8	19.7	20.2	20.4	20.2	22.9	19.4	16.6	20.9	19.7	17.2	19.4	18.6	21.2	21.5
Aged 35-44	30.6	30.2	30.0	29.7	28.6	31.6	28.1	33.3	30.7	31.4	30.3	31.6	30.7	27.4	31.3	27.8	29.2
Aged 45-54	30.2	33.4	31.1	29.1	28.4	28.3	27.9	27.3	29.8	31.0	28.8	29.2	32.0	30.1	33.0	29.5	27.8
Aged 55-65	20.1	15.7	20.1	21.4	22.8	19.6	23.8	16.4	20.1	20.9	20.0	19.6	20.0	23.0	17.1	21.5	21.5
Low Educ. level	25.5	10.4	17.2	20.0	23.0	6.9	9.4	24.4	39.4	17.1	14.9	14.8	40.1	6.9	32.6	9.6	9.5
Mid. Educ. level	45.6	56.8	39.1	55.3	40.6	72.7	50.6	43.3	22.7	45.3	62.7	60.6	42.5	56.6	36.2	57.0	64.6
High Educ. level	28.8	32.8	43.7	24.7	36.4	20.3	39.9	32.3	37.8	37.6	22.5	24.6	17.4	36.4	31.2	33.4	25.9
Single person hh.	10.5	15.5	17.1	5.2	8.0	8.8	13.8	6.5	8.7	15.9	5.2	10.0	11.3	11.9	15.3	11.4	6.9
Single parent hh.	2.1	2.8	3.7	1.1	1.6	2.4	2.9	0.9	1.6	4.3	0.8	2.2	1.9	2.9	2.4	2.9	1.3
2 adults without children	20.6	23.7	24.4	18.5	19.2	23.2	26.4	17.4	21.3	22.8	16.0	22.2	18.2	23.9	20.9	22.4	19.3
2 adults with children	30.0	32.4	30.4	17.2	28.9	29.1	27.1	33.2	31.0	36.9	23.3	26.6	30.6	25.0	35.1	24.2	26.0
3+ adults without children	24.5	16.5	16.0	31.9	26.3	26.1	18.1	33.0	26.5	11.8	33.6	24.6	27.7	22.4	15.9	22.1	26.1
3+ adults with children	12.3	9.0	8.5	26.1	16.0	10.4	11.7	9.0	10.9	8.3	21.0	14.4	10.3	14.0	10.5	17.0	20.4
Over 65 hh. Member	11.4	5.8	4.8	19.0	8.1	8.0	11.0	17.0	12.8	4.5	18.0	10.5	13.0	10.4	5.0	13.8	13.7
Low hh. work intensity	27.4	17.5	31.0	21.6	21.7	12.1	15.5	39.8	32.1	20.0	29.3	19.2	33.8	20.7	22.5	18.1	24.0
Middle hh. work intensity	42.4	52.0	41.0	47.2	45.3	44.2	42.5	38.8	40.2	41.6	45.7	43.2	42.8	37.4	46.2	43.6	42.5
High hh. work intensity	30.2	30.6	28.0	31.2	33.0	43.7	42.0	21.5	27.7	38.4	25.0	37.6	23.5	41.9	31.3	38.4	33.5
2007	1.1	6.1	7.5	0.0	0.0	0.0	5.3	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	5.7	6.3	7.8	0.0	6.2	6.5	5.3	0.0	4.6	3.8	0.0	6.4	8.1	5.8	0.0	7.3	5.6
2009	6.3	6.2	7.6	12.1	6.5	6.7	5.2	7.3	4.9	3.1	0.0	6.4	8.0	5.4	0.0	7.5	6.4
2010	6.9	6.5	8.3	12.6	6.3	6.7	6.4	7.5	6.5	3.2	0.0	6.3	8.3	5.9	0.0	7.6	7.1
2011	7.0	6.4	8.3	13.2	6.4	7.0	6.0	7.6	6.5	2.6	0.0	6.6	7.9	6.7	0.0	8.0	8.5
2012	7.0	6.5	8.4	13.9	6.2	7.3	6.5	7.6	6.4	2.7	0.0	7.0	7.6	8.0	11.2	7.1	8.7
2013	7.5	6.7	8.2	13.9	6.9	7.3	6.2	6.9	6.5	3.8	10.6	7.3	8.3	8.0	12.2	6.8	9.1
2014	7.4	6.5	8.2	0.0	7.6	7.4	6.4	7.4	8.0	3.9	10.9	7.3	7.9	7.8	12.4	7.0	9.0
2015	7.3	6.6	8.3	0.0	7.4	7.3	6.4	7.5	8.2	3.4	11.1	7.2	7.6	6.3	12.2	7.3	9.0
2016	7.9	6.6	8.3	4.3	7.5	7.2	7.9	8.3	8.1	3.5	11.3	7.4	9.2	8.4	11.5	6.8	8.8
2017	8.0	6.7	8.0	4.3	7.5	7.4	7.7	8.0	8.3	4.0	12.0	7.7	9.0	8.2	12.0	6.7	9.3
2018	7.3	7.0	0.0	4.0	8.1	7.5	7.8	8.7	8.3	3.3	11.1	7.6	9.1	6.4	12.2	7.0	8.1
2019	5.5	7.4	0.0	4.4	7.8	7.1	7.7	7.9	8.1	20.2	11.1	7.7	0.0	6.7	0.0	7.2	0.0
2020	6.0	7.1	2.7	4.1	7.6	7.4	7.6	7.5	8.0	19.9	11.2	7.5	0.0	8.0	8.5	7.3	3.1
2021	9.2	7.4	8.4	13.2	7.9	7.2	7.5	7.9	7.7	18.8	10.6	7.7	9.1	8.4	7.9	6.4	7.1

Source: Elaboration of the authors on EU-SILC data

Table A2. Sample characteristics. Poverty definition: Material deprivation

	EU-17	AT	BE	BG	CY	CZ	EE	EL	ES	FR	HR	HU	IT	LT	LU	LV	PL
Observations	226,155	10,894	10,581	11,305	11,103	14,603	11,540	20,316	24,166	9,542	10,334	13,067	24,158	9,910	9,120	10,952	24,564
Material deprivation	17.2	6.9	11.2	43.5	25.8	10.0	13.0	35.1	13.5	9.2	26.7	28.2	19.5	23.1	4.5	24.6	17.8
Workers	70.9	81.6	72.7	76.8	74.2	83.2	82.0	55.4	65.7	81.4	71.1	80.0	64.9	78.1	78.8	77.9	71.9
Female	54.1	51.2	51.9	51.3	54.7	52.4	54.3	55.9	53.9	53.9	53.0	51.2	56.2	53.4	52.6	55.4	54.1
Aged 25-34	18.2	20.5	18.9	18.4	19.9	18.6	20.1	22.5	17.5	16.1	20.9	17.0	16.2	19.7	18.6	20.3	20.8
Aged 35-44	30.2	28.4	29.2	29.4	28.6	32.3	27.9	33.5	31.0	31.1	30.2	31.0	29.3	26.8	31.3	27.5	29.3
Aged 45-54	30.3	34.1	30.8	29.4	28.2	28.4	27.4	27.6	30.6	30.9	28.9	29.2	32.6	29.7	33.1	29.3	26.9
Aged 55-65	21.4	16.9	21.2	22.9	23.2	20.8	24.6	16.5	20.9	21.9	20.1	22.7	21.9	23.7	17.0	22.9	23.0
Low Educ. level	24.6	10.5	17.1	19.2	21.9	6.3	9.3	22.6	39.0	15.8	14.6	15.8	38.0	6.8	32.3	9.8	9.1
Medium Educ. level	44.9	54.3	38.2	55.2	40.5	70.9	48.8	44.1	22.9	45.2	62.7	59.7	43.3	55.5	36.2	54.9	63.7
High Educ. level	30.5	35.2	44.7	25.7	37.6	22.8	42.0	33.4	38.1	39.1	22.7	24.5	18.7	37.7	31.4	35.4	27.2
Single person household	10.8	15.9	17.4	5.7	8.4	9.4	14.5	6.5	9.0	16.0	4.9	11.5	11.8	12.5	15.2	11.5	7.1
Single parent household	2.1	2.5	3.8	1.1	1.6	2.4	2.7	0.9	1.8	4.2	0.8	2.0	1.8	2.9	2.3	2.8	1.3
Two adults without children	21.0	24.5	23.5	20.0	19.9	24.2	26.0	17.7	21.4	22.9	16.1	24.6	18.6	24.6	20.9	24.5	19.8
Two adults with children	29.9	31.9	31.0	16.9	28.6	29.3	28.0	32.9	31.5	37.1	23.4	25.0	30.2	24.9	35.2	24.3	25.4
More than two adults without children	24.1	16.3	16.2	31.7	25.9	24.6	17.1	32.6	25.8	11.4	34.0	23.8	27.6	21.9	15.9	21.2	26.0
More than two adults with children	12.1	8.8	8.1	24.6	15.6	10.0	11.6	9.4	10.6	8.4	20.9	13.0	9.9	13.3	10.5	15.7	20.4
Over 65 hh. Members	11.6	5.6	5.0	18.6	8.0	8.6	10.6	17.5	12.6	4.6	18.2	10.5	13.2	10.1	4.9	13.4	14.2
Low household work intensity	27.7	17.6	31.4	22.1	22.4	11.9	14.7	41.5	32.7	19.7	28.7	19.2	34.2	20.2	22.4	18.3	23.7
Middle household work intensity	41.8	52.2	40.3	47.2	44.5	42.7	41.6	38.0	39.7	41.5	46.1	40.4	42.7	36.7	46.1	42.9	41.8
High household work intensity	30.5	30.1	28.3	30.7	33.0	45.4	43.6	20.5	27.6	38.8	25.2	40.4	23.1	43.1	31.5	38.8	34.5
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	5.7	8.6	12.0	17.4	8.0	0.0	7.8	9.0	7.8	3.0	0.0	0.0	0.0	8.1	0.0	10.2	10.5
2012	8.2	8.6	12.3	18.5	7.7	0.0	8.3	8.9	7.5	3.1	0.0	0.0	11.3	9.6	11.1	8.9	10.9
2013	9.8	8.9	12.0	18.4	8.5	11.0	8.0	8.2	7.7	4.4	10.6	10.3	12.2	9.7	12.2	8.8	11.3
2014	9.7	8.7	11.8	0.0	9.4	11.3	8.2	8.7	9.5	4.5	10.8	11.1	11.6	9.3	12.4	9.0	11.3
2015	9.6	8.8	12.1	0.0	9.1	11.1	8.3	8.8	9.8	4.0	11.0	10.6	11.2	7.6	12.2	9.5	11.2
2016	10.3	8.8	12.1	5.7	9.2	10.9	10.1	9.7	9.6	4.1	11.4	11.2	13.6	10.2	11.5	8.9	11.0
2017	10.4	9.0	11.5	5.7	9.3	11.3	9.8	9.4	9.8	4.7	12.0	11.4	13.2	10.0	12.1	8.7	11.5
2018	9.6	9.3	0.0	5.3	9.9	11.4	10.1	10.2	9.9	3.8	11.1	11.4	13.5	7.7	12.3	9.0	9.9
2019	7.1	9.9	0.0	5.9	9.7	10.8	9.9	9.2	9.6	23.5	11.2	11.6	0.0	8.0	0.0	9.2	0.0
2020	7.8	9.4	3.9	5.4	9.4	11.2	9.9	8.7	9.6	23.0	11.2	10.9	0.0	9.8	8.5	9.4	3.8
2021	11.9	9.9	12.3	17.6	9.8	11.0	9.6	9.3	9.2	21.9	10.7	11.5	13.4	10.0	7.8	8.4	8.5

Source: Elaboration of the authors on EU-SILC data

Table A3. At-risk of poverty: Probit models

	EU-16	AT	BE	BG	CY	CZ	EE	EL	ES	FR	HR	HU	IT	LT	LU	LV	PL
Worker	-0.049***	-0.028***	-0.038***	-0.049***	-0.023***	-0.033***	-0.050***	-0.111***	-0.047***	-0.008	-0.074***	-0.047***	-0.057***	-0.044***	-0.039**	-0.053***	-0.063***
Poor (t-1)	0.166***	0.134***	0.121***	0.158***	0.144***	0.091***	0.156***	0.212***	0.187***	0.124***	0.141***	0.130***	0.183***	0.163***	0.169***	0.150***	0.167***
Worker (t-1)	0.013***	-0.007	0.001	0.017*	-0.003	0.011**	0.012	0.047***	0.004	-0.003	0.032***	0.019***	0.019***	0.024**	0.001	-0.002	0.023***
Female	-0.003**	-0.016***	-0.000	-0.004	0.004	0.005**	0.010**	-0.013***	-0.001	0.006	-0.021***	-0.003	-0.003	0.003	-0.002	0.007	-0.009***
Aged 35-22	-0.005*	-0.007	-0.018**	-0.002	-0.006	-0.000	0.010	0.001	-0.005	0.004	-0.009	0.006	-0.003	0.001	0.012	0.006	-0.020***
Aged 45 - 54	-0.010***	-0.011	-0.033***	0.006	-0.014*	0.004	-0.001	-0.014*	-0.013*	-0.003	-0.005	0.009	-0.013*	-0.012	-0.002	0.007	-0.015**
Aged 55 - 65	-0.023***	-0.013	-0.035***	-0.015*	-0.021***	-0.010***	0.002	-0.015*	-0.044***	-0.008	-0.013*	-0.002	-0.018***	-0.006	-0.016	-0.006	-0.033***
Middle educ. level	-0.022***	-0.034***	0.001	-0.031***	-0.009	-0.014***	-0.005	-0.031***	-0.022***	-0.015*	-0.012*	-0.045***	-0.023***	-0.013	-0.054***	-0.033***	-0.032***
High educ. level	-0.047***	-0.052***	-0.016**	-0.076***	-0.034***	-0.030***	-0.039***	-0.060***	-0.046***	-0.035***	-0.058***	-0.101***	-0.047***	-0.051***	-0.060***	-0.084***	-0.066***
Single parent household	0.061***	0.114*	0.010	-0.050	0.168*	-0.084*	-0.031	-0.078	0.120*	0.096*	-0.086	-0.025	0.138***	0.029	0.235**	0.023	-0.101*
2 adults without ch.	-0.077***	0.022	-0.051**	-0.097*	0.006	-0.119***	-0.092**	-0.156***	-0.116***	-0.075***	-0.181**	-0.105***	-0.056**	-0.075	-0.061	-0.112***	-0.102**
2 adults with ch.	-0.067***	-0.019	-0.050*	-0.106*	-0.042	-0.147***	-0.146***	-0.123**	-0.079**	0.002	-0.253**	-0.178***	-0.043	-0.154**	-0.006	-0.115**	-0.121**
3+ adults without ch.	-0.111***	-0.077***	-0.065**	-0.149**	-0.067*	-0.158***	-0.157***	-0.201***	-0.146***	-0.036	-0.257***	-0.160***	-0.093***	-0.159***	-0.092*	-0.191***	-0.165***
3+ adults with ch.	-0.090***	-0.065*	-0.048	-0.122**	-0.062	-0.147***	-0.162***	-0.183***	-0.113***	-0.014	-0.260***	-0.197***	-0.057*	-0.127**	-0.021	-0.142***	-0.160***
Over 65 hh. Member	-0.035***	-0.024*	-0.023**	-0.032***	-0.000	-0.024***	-0.032***	-0.059***	-0.041***	-0.019	-0.018**	-0.058***	-0.036***	-0.019*	-0.023	-0.037***	-0.030***
Medium hh. work intensity	-0.110***	-0.113***	-0.099***	-0.195***	-0.150***	-0.106***	-0.109***	-0.247***	-0.093***	-0.085***	-0.105***	-0.123***	-0.101***	-0.125***	-0.084***	-0.173***	-0.124***
High hh. work intensity	-0.148***	-0.132***	-0.142***	-0.239***	-0.199***	-0.128***	-0.144***	-0.322***	-0.120***	-0.104***	-0.197***	-0.163***	-0.146***	-0.184***	-0.145***	-0.213***	-0.186***
Initial poverty condition	0.077***	0.062***	0.058***	0.053***	0.049***	0.037***	0.061***	0.096***	0.089***	0.062***	0.057***	0.073***	0.086***	0.062***	0.107***	0.076***	0.066***
Initial working condition	0.007***	-0.003	-0.004	0.005	0.022***	0.008**	0.000	0.018**	0.009	-0.009	0.005	0.005	0.010*	0.004	0.028**	0.012	0.013**
Dummies years	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies countries	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Observations	297,060	14,870	14,768	12,855	13,704	25,260	15,043	22,247	30,070	12,466	10,494	21,306	37,987	11,976	9,213	13,570	31,231
Pseudo R-squared	0.499	0.471	0.554	0.533	0.538	0.570	0.497	0.485	0.494	0.464	0.628	0.431	0.524	0.542	0.437	0.505	0.475
Log Likelihood	-2.170e+08	-8.333e+06	-8.755e+06	-4.528e+06	-682214	-5.431e+06	-1.355e+06	-1.080e+07	-5.160e+07	-1.780e+07	-2.302e+06	-1.070e+07	-5.580e+07	-2.827e+06	-411059	-2.259e+06	-2.970e+07

Notes: Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. * p < 0.1; ** p < 0.05; *** p < 0.01.

Other control variables: dummy for country and years. "Aged 25-34" is the reference category for age class. "Low education level" is the reference category for education. "Single Person household" is the reference category for household types. Source: Elaboration of the authors on EU-SILC data.

Table A4. Material deprivation: Probit models

	EU-17	AT	BE	BG	CY	CZ	EE	EL	ES	FR	HR	HU	IT	LT	LU	LV	PL
Worker	-0.023***	-0.017**	-0.006	-0.017	-0.028*	-0.006	-0.043***	-0.051***	-0.016**	-0.021*	-0.033*	-0.043***	-0.035***	-0.028	0.006	-0.014	-0.015*
MD (t-1)	0.237***	0.122***	0.162***	0.358***	0.284***	0.182***	0.207***	0.366***	0.196***	0.159***	0.303***	0.300***	0.243***	0.302***	0.105***	0.262***	0.260***
Worker (t-1)	0.001	0.001	-0.018	0.011	0.012	-0.008	0.019	0.014	-0.009	-0.003	0.003	0.020	0.006	0.006	-0.014	0.003	0.001
Female	-0.003	-0.012**	-0.004	0.007	0.010*	-0.001	0.015***	-0.022***	0.005	0.002	-0.012**	0.001	-0.014***	0.004	0.004	0.025***	0.001
Aged 35-22	-0.008**	-0.009	-0.011	0.001	-0.026*	-0.001	-0.005	-0.004	-0.001	-0.005	-0.048***	-0.005	-0.019**	0.003	0.003	0.001	-0.007
Aged 45 - 54	-0.013***	-0.012	-0.020*	0.013	-0.045***	-0.006	-0.004	-0.012	-0.018**	0.000	-0.037***	-0.002	-0.038***	-0.005	0.005	0.019	0.001
Aged 55 - 65	-0.025***	-0.018*	-0.029**	-0.009	-0.083***	-0.001	-0.000	-0.034***	-0.034***	-0.015	-0.051***	-0.019	-0.046***	-0.015	0.006	0.020	-0.012
Middle educ. level	-0.031***	-0.025***	-0.011	-0.074***	-0.047***	-0.027***	-0.015	-0.034***	-0.031***	-0.004	-0.047***	-0.085***	-0.043***	-0.031**	-0.011*	-0.028**	-0.031***
High educ. level	-0.075***	-0.042***	-0.031***	-0.149***	-0.132***	-0.062***	-0.053***	-0.091***	-0.069***	-0.041***	-0.156***	-0.164***	-0.098***	-0.079***	-0.027***	-0.104***	-0.081***
Single parent household	-0.021	0.024	-0.043	-0.024	0.069	0.040	0.016	-0.045	-0.013	-0.062*	0.005	0.092	0.027	0.044	-0.008	0.062	-0.094**
2 adults without ch.	-0.058***	-0.007	-0.053**	0.019	-0.128***	-0.016	-0.026	-0.098**	-0.062**	-0.036	-0.074	-0.039	-0.042	-0.082**	-0.007	-0.057*	-0.068**
2 adults with ch.	-0.058***	-0.017	-0.040	-0.020	-0.137**	-0.019	-0.011	-0.056	-0.053*	-0.080**	-0.121*	0.002	-0.037	-0.039	-0.023	-0.024	-0.071**
3+ adults without ch.	-0.073***	-0.006	-0.070***	-0.071	-0.165***	-0.036	-0.020	-0.135**	-0.045	-0.057*	-0.080	-0.031	-0.074**	-0.091**	-0.034	-0.036	-0.104***
3+ adults with ch.	-0.077***	0.014	-0.074**	-0.075	-0.151***	-0.062**	-0.003	-0.120**	-0.064**	-0.066*	-0.121*	-0.042	-0.063*	-0.092*	-0.018	-0.014	-0.104***
Over 65 hh. Member	-0.024***	-0.022	0.010	-0.003	-0.066***	-0.006	-0.009	-0.028**	-0.038***	-0.006	-0.034**	-0.023*	-0.039***	-0.011	-0.007	-0.027**	0.003
Medium hh. work intensity	-0.033***	-0.035***	-0.020	-0.029	-0.083***	-0.009	-0.027*	-0.058***	-0.036***	-0.038**	-0.039*	0.001	-0.026*	-0.033	0.002	-0.063***	-0.025**
High hh. work intensity	-0.062***	-0.020	-0.038*	-0.053*	-0.105***	-0.033*	-0.044**	-0.179***	-0.079***	-0.033	-0.073**	-0.019	-0.089***	-0.071**	-0.006	-0.073***	-0.034**
Initial MD condition	0.056***	0.017**	0.053***	0.060***	0.080***	0.041***	0.036***	0.087***	0.058***	0.025**	0.073***	0.059***	0.080***	0.047***	0.037***	0.050***	0.037***
Initial working condition	0.005	-0.015**	-0.011	-0.001	0.026*	-0.001	0.008	0.030**	0.014**	-0.007	0.019	-0.008	0.006	0.011	0.008	0.003	0.005
Dummies years	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies countries	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Observations	226,155	10,894	10,581	11,305	11,103	14,603	11,540	20,316	24,166	9,542	10,334	13,067	24,158	9,910	9,120	10,952	24,564
Pseudo R-squared	0.384	0.434	0.483	0.543	0.269	0.480	0.348	0.404	0.295	0.401	0.348	0.455	0.289	0.431	0.386	0.339	0.470
Log Likelihood	-2.220e+08	-4.958e+06	-6.698e+06	-5.140e+06	-1.552e+06	-6.094e+06	-1.296e+06	-1.360e+07	-5.000e+07	-1.510e+07	-5.212e+06	-1.030e+07	-6.040e+07	-3.613e+06	-201811	-2.979e+06	-2.860e+07

Notes: Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. * p < 0.1; ** p < 0.05; *** p < 0.01.

Other control variables: dummy for country and years. "Aged 25-34" is the reference category for age class. "Low education level" is the reference category for education. "Single Person household" is the reference category for household types. Source: Elaboration of the authors on EU-SILC data.

Table A5. Poverty entry rate conditioned to employment status (Wt = 1 and Wt-1 = 1) and trigger events.

		Entry rate	Confidence interval		Obs.		Entry rate	Confidence interval		Obs.
All	EU	2.5	2.4	2.6	193,195	FR	2.7	2.3	3.0	9,339
Increase in hh. size	EU	3.9	3.4	4.3	7,184	FR	5.1	2.8	7.4	362
Increase in hh. size*	EU	4.4	3.8	5.0	4,905	FR	6.4	3.4	9.3	268
Fall in n. of workers	EU	6.2	5.8	6.6	13,609	FR	9.7	7.2	12.2	541
Fall in n. of FT workers	EU	5.5	5.1	5.8	16,940	FR	7.9	5.8	10.0	652
Fall in n. of workers**	EU	5.9	5.4	6.3	9,631	FR	8.6	5.6	11.6	344
Fall in n. of FT workers**	EU	5.0	4.6	5.3	13,060	FR	6.2	4.0	8.4	467
All	AT	2.3	2.0	2.6	11,337	HR	1.6	1.3	1.9	6,550
Increase in hh. size	AT	5.6	3.6	7.6	506	HR	0.6	-0.5	1.7	195
Increase in hh. size*	AT	7.1	4.1	10.2	272	HR	0.2	-0.6	1.1	146
Fall in n. of workers	AT	5.4	3.8	6.9	815	HR	5.5	3.5	7.6	468
Fall in n. of FT workers	AT	3.8	2.7	4.8	1,178	HR	5.6	3.6	7.6	497
Fall in n. of workers**	AT	4.5	2.7	6.3	506	HR	5.2	2.9	7.5	351
Fall in n. of FT workers**	AT	2.6	1.5	3.7	875	HR	5.4	3.1	7.7	379
All	BE	1.2	1.0	1.4	10,155	HU	3.8	3.5	4.1	14,534
Increase in hh. size	BE	2.2	1.0	3.3	608	HU	3.7	1.9	5.4	438
Increase in hh. size*	BE	2.8	1.2	4.3	435	HU	4.8	1.9	7.7	217
Fall in n. of workers	BE	2.7	1.4	4.0	607	HU	8.4	6.8	10.1	1,102
Fall in n. of FT workers	BE	2.1	1.2	2.9	1,162	HU	8.8	7.2	10.4	1,259
Fall in n. of workers**	BE	2.2	0.7	3.7	356	HU	8.1	6.1	10.0	772
Fall in n. of FT workers**	BE	1.9	1.0	2.8	908	HU	8.9	7.0	10.7	937
All	BG	2.7	2.4	3.1	8,478	IT	2.6	2.4	2.8	22,707
Increase in hh. size	BG	3.6	1.2	5.9	242	IT	4.7	3.1	6.3	674
Increase in hh. size*	BG	3.4	0.2	6.6	125	IT	6.0	3.9	8.2	487
Fall in n. of workers	BG	6.7	5.0	8.5	763	IT	4.6	3.4	5.7	1,335
Fall in n. of FT workers	BG	6.2	4.6	7.9	840	IT	5.2	4.2	6.3	1,831
Fall in n. of workers**	BG	6.8	4.8	8.9	584	IT	4.9	3.6	6.3	990
Fall in n. of FT workers**	BG	6.0	4.2	7.8	665	IT	5.4	4.3	6.5	1,498
All	CY	1.5	1.2	1.7	9,199	LT	2.6	2.2	2.9	8,297
Increase in hh. size	CY	1.4	0.3	2.6	399	LT	2.7	-0.2	5.6	127
Increase in hh. size*	CY	1.0	-0.2	2.1	280	LT	3.2	-0.3	6.7	98
Fall in n. of workers	CY	5.0	3.4	6.6	700	LT	6.1	4.1	8.2	519
Fall in n. of FT workers	CY	4.9	3.3	6.4	751	LT	5.8	4.0	7.6	645
Fall in n. of workers**	CY	5.2	3.2	7.2	478	LT	5.2	2.8	7.6	341
Fall in n. of FT workers**	CY	5.1	3.2	6.9	539	LT	5.0	3.0	7.1	458
All	CZ	1.0	0.9	1.2	20,193	LU	4.0	3.5	4.5	6,043
Increase in hh. size	CZ	2.4	1.1	3.7	541	LU	8.7	5.6	11.7	338
Increase in hh. size*	CZ	2.2	0.8	3.7	408	LU	8.2	4.8	11.6	257
Fall in n. of workers	CZ	2.7	1.7	3.6	1,085	LU	11.6	8.4	14.9	373
Fall in n. of FT workers	CZ	2.6	1.7	3.6	1,151	LU	8.4	6.0	10.9	507
Fall in n. of workers**	CZ	1.5	0.6	2.4	732	LU	12.6	8.5	16.8	248
Fall in n. of FT workers**	CZ	1.5	0.7	2.4	810	LU	7.8	5.1	10.5	390
All	EE	2.9	2.5	3.2	10,655	LV	3.4	3.0	3.8	8,951
Increase in hh. size	EE	3.5	1.8	5.2	434	LV	3.9	2.0	5.7	423
Increase in hh. size*	EE	3.8	1.4	6.1	256	LV	4.4	1.9	6.9	260
Fall in n. of workers	EE	5.8	4.3	7.4	869	LV	7.4	5.7	9.0	950
Fall in n. of FT workers	EE	6.1	4.6	7.6	973	LV	5.8	4.5	7.2	1,163
Fall in n. of workers**	EE	5.2	3.4	7.0	612	LV	6.6	4.7	8.5	663
Fall in n. of FT workers**	EE	6.2	4.4	7.9	731	LV	5.1	3.6	6.5	884
All	EL	2.9	2.6	3.2	10,646	PL	2.4	2.2	2.6	19,518
Increase in hh. size	EL	6.1	3.6	8.5	364	PL	2.6	1.4	3.7	756
Increase in hh. size*	EL	5.5	2.8	8.3	267	PL	2.1	0.9	3.2	577
Fall in n. of workers	EL	11.5	9.1	14.0	667	PL	5.9	4.7	7.1	1,385
Fall in n. of FT workers	EL	9.7	7.7	11.8	824	PL	6.6	5.3	7.8	1,550
Fall in n. of workers**	EL	11.8	9.1	14.6	536	PL	5.8	4.4	7.2	1,087
Fall in n. of FT workers**	EL	9.5	7.3	11.7	696	PL	6.4	5.0	7.8	1,246
All	ES	3.0	2.7	3.2	16,593					
Increase in hh. size	ES	3.7	2.4	5.1	777					
Increase in hh. size*	ES	4.3	2.6	6.0	552					

Fall in n. of workers	ES	6.9	5.6	8.2	1,430
Fall in n. of FT workers	ES	4.7	3.8	5.6	1,957
Fall in n. of workers**	ES	6.1	4.6	7.5	1,031
Fall in n. of FT workers**	ES	3.8	2.9	4.8	1,577

*Number of workers unchanged. **Household structure unchanged. Confidence intervals at 95% level presented.

Source: Elaboration of the authors on EU-SILC data.

Table A6. Poverty exit rate conditioned to employment status (Wt = 1 and Wt-1 = 1) and trigger events

		Exit rate	Confidence Interval		Obs.		Exit rate	Confidence Interval		Obs.
Uncond.	EU	42.6	41.7	43.5	12,195	FR	48.7	44.0	53.5	426
Decrease in hh. size	EU	49.5	45.9	53.2	723	FR	70.0	51.9	88.1	28
Decrease in hh. size*	EU	50.3	46.0	54.5	545	FR	71.5	52.0	91.0	24
Rise in n. of workers	EU	57.4	56.0	58.9	4,393	FR	63.6	55.8	71.4	148
Rise in n. of FT workers	EU	61.4	59.1	63.7	1,706	FR	74.8	62.5	87.0	52
Rise in n. of workers**	EU	57.0	55.4	58.5	3,861	FR	61.8	53.0	70.6	121
Rise in n. of FT workers**	EU	59.7	57.1	62.2	1,435	FR	71.2	55.7	86.8	36
Uncond.	AT	50.4	46.0	54.7	504	HR	43.2	37.8	48.5	330
Decrease in hh. size	AT	45.2	24.2	66.2	25	HR	67.3	41.5	93.2	16
Decrease in hh. size*	AT	42.6	9.8	75.4	12	HR	65.9	38.7	93.1	15
Rise in n. of workers	AT	63.4	56.5	70.2	194	HR	72.2	62.6	81.8	87
Rise in n. of FT workers	AT	66.6	55.5	77.7	73	HR	83.4	72.2	94.6	46
Rise in n. of workers**	AT	66.1	58.8	73.4	165	HR	71.7	61.4	81.9	78
Rise in n. of FT workers**	AT	68.2	56.2	80.2	61	HR	86.2	74.7	97.7	38
Uncond.	BE	52.4	46.3	58.5	265	HU	56.5	53.4	59.6	997
Decrease in hh. size	BE	54.8	30.9	78.7	20	HU	50.3	35.2	65.3	46
Decrease in hh. size*	BE	59.9	32.9	86.9	16	HU	49.6	32.2	67.0	35
Rise in n. of workers	BE	80.0	69.2	90.7	57	HU	75.6	71.3	79.9	391
Rise in n. of FT workers	BE	88.3	75.3	101.2	27	HU	71.5	64.8	78.1	180
Rise in n. of workers**	BE	79.3	67.6	91.1	49	HU	74.1	69.5	78.7	352
Rise in n. of FT workers**	BE	87.9	72.6	103.1	21	HU	72.7	65.7	79.7	159
Uncond.	BG	41.6	38.2	45.0	801	IT	38.0	35.5	40.4	1,486
Decrease in hh. size	BG	56.9	45.4	68.4	75	IT	46.1	31.8	60.5	50
Decrease in hh. size*	BG	51.7	38.6	64.9	59	IT	50.9	34.0	67.8	37
Rise in n. of workers	BG	50.3	45.4	55.2	401	IT	56.7	51.2	62.2	317
Rise in n. of FT workers	BG	57.5	47.9	67.1	105	IT	59.0	51.5	66.6	166
Rise in n. of workers**	BG	48.7	43.4	53.9	352	IT	55.1	49.3	60.9	287
Rise in n. of FT workers**	BG	54.7	44.4	65.0	93	IT	57.0	48.8	65.2	145
Uncond.	CY	36.1	31.9	40.3	507	LT	43.8	39.9	47.8	607
Decrease in hh. size	CY	24.0	2.8	45.1	19	LT	44.0	30.8	57.2	58
Decrease in hh. size*	CY	32.8	3.2	62.3	13	LT	45.3	31.4	59.1	53
Rise in n. of workers	CY	59.7	51.8	67.5	152	LT	64.6	58.0	71.1	208
Rise in n. of FT workers	CY	85.3	75.1	95.5	50	LT	72.2	60.6	83.7	61
Rise in n. of workers**	CY	56.9	48.7	65.1	143	LT	65.4	58.3	72.4	177
Rise in n. of FT workers**	CY	82.2	70.1	94.3	42	LT	70.3	57.8	82.8	55
Uncond.	CZ	49.5	45.2	53.8	531	LU	43.3	39.6	47.1	672
Decrease in hh. size	CZ	56.3	34.9	77.7	24	LU	51.9	35.9	67.9	41
Decrease in hh. size*	CZ	60.3	36.8	83.8	20	LU	56.2	35.8	76.7	26
Rise in n. of workers	CZ	67.5	60.3	74.7	165	LU	55.5	50.0	61.1	311
Rise in n. of FT workers	CZ	66.5	55.0	78.1	67	LU	75.6	66.8	84.5	94
Rise in n. of workers**	CZ	62.8	54.7	71.0	138	LU	52.6	46.7	58.5	277
Rise in n. of FT workers**	CZ	60.3	46.6	74.1	52	LU	73.7	63.9	83.6	80
Uncond.	EE	45.6	42.3	49.0	871	LV	49.1	45.5	52.6	776
Decrease in hh. size	EE	39.5	27.4	51.6	66	LV	51.8	39.2	64.5	63
Decrease in hh. size*	EE	40.7	25.8	55.6	45	LV	52.7	37.3	68.1	44
Rise in n. of workers	EE	55.1	50.2	60.0	403	LV	64.4	58.3	70.4	245
Rise in n. of FT workers	EE	63.0	54.8	71.2	137	LV	74.4	66.9	81.9	134
Rise in n. of workers**	EE	55.2	50.0	60.4	355	LV	64.7	57.9	71.4	198
Rise in n. of FT workers**	EE	65.4	56.4	74.4	111	LV	74.7	66.4	83.0	109
Uncond.	EL	38.3	34.7	41.8	722	PL	45.7	43.1	48.3	1,432
Decrease in hh. size	EL	66.4	48.8	84.0	31	PL	46.2	35.6	56.9	87
Decrease in hh. size*	EL	64.9	44.7	85.0	25	PL	48.5	36.3	60.7	68
Rise in n. of workers	EL	57.5	50.3	64.6	187	PL	57.9	53.9	61.8	594

Rise in n. of FT workers	EL	74.0	65.4	82.5	105	PL	72.1	65.9	78.2	208
Rise in n. of workers**	EL	54.7	47.2	62.2	172	PL	58.4	54.2	62.6	529
Rise in n. of FT workers**	EL	68.1	58.1	78.0	88	PL	70.9	64.2	77.6	181
Uncond.	ES	37.9	35.2	40.6	1,268					
Decrease in hh. size	ES	41.8	30.3	53.4	74					
Decrease in hh. size*	ES	35.5	22.2	48.8	53					
Rise in n. of workers	ES	49.3	45.0	53.6	533					
Rise in n. of FT workers	ES	45.4	38.5	52.4	201					
Rise in n. of workers**	ES	49.9	45.3	54.4	468					
Rise in n. of FT workers**	ES	43.9	36.2	51.6	164					

*Number of workers unchanged. **Household structure unchanged. Confidence intervals at 95% level presented.

Source: Elaboration of the authors on EU-SILC data.

Table A7. Material deprivation entry rate conditioned to employment status (Wt = 1 and Wt-1 = 1) and trigger events

		Entry rate	Confidence Interval		Obs.		Entry rate	Confidence Interval		Obs.
All	EU	4.1	4.0	4.2	133,780	FR	2.2	1.9	2.6	7,116
Increase in hh. size	EU	3.8	3.3	4.4	4,952	FR	1.5	0.0	3.0	250
Increase in hh. size*	EU	3.5	2.9	4.2	3,433	FR	1.1	-0.4	2.7	181
Fall in n. of workers	EU	5.7	5.2	6.2	8,770	FR	4.2	2.2	6.2	390
Fall in n. of FT workers	EU	6.4	6.0	6.9	11,220	FR	3.2	1.6	4.7	480
Fall in n. of workers**	EU	5.8	5.2	6.4	6,190	FR	3.6	1.3	6.0	249
Fall in n. of FT workers**	EU	6.3	5.8	6.8	8,702	FR	2.6	0.9	4.3	345
All	AT	1.4	1.2	1.7	8,471	HR	8.4	7.6	9.1	5,557
Increase in hh. size	AT	1.7	0.4	3.0	381	HR	10.7	5.9	15.5	161
Increase in hh. size*	AT	1.4	-0.2	3.0	209	HR	7.0	2.4	11.5	125
Fall in n. of workers	AT	0.9	0.2	1.7	579	HR	13.8	10.3	17.3	379
Fall in n. of FT workers	AT	1.1	0.4	1.8	882	HR	13.3	9.9	16.6	403
Fall in n. of workers**	AT	0.0	0.0	0.0	358	HR	13.1	9.2	17.0	289
Fall in n. of FT workers**	AT	0.8	0.1	1.5	664	HR	12.6	8.8	16.3	309
All	BE	1.4	1.1	1.7	7,207	HU	6.1	5.5	6.6	6,544
Increase in hh. size	BE	2.3	0.9	3.7	442	HU	8.9	4.8	12.9	192
Increase in hh. size*	BE	1.4	0.1	2.7	326	HU	8.6	2.9	14.3	96
Fall in n. of workers	BE	2.5	1.0	4.0	429	HU	7.9	5.3	10.4	436
Fall in n. of FT workers	BE	1.4	0.6	2.2	822	HU	8.1	5.8	10.5	512
Fall in n. of workers**	BE	1.3	-0.1	2.7	263	HU	5.5	2.9	8.1	294
Fall in n. of FT workers**	BE	0.6	0.0	1.1	656	HU	5.5	3.1	7.8	370
All	BG	8.9	8.1	9.6	5,439	IT	6.1	5.7	6.5	13,831
Increase in hh. size	BG	17.7	11.4	24.0	143	IT	4.2	2.1	6.3	344
Increase in hh. size*	BG	15.2	6.0	24.5	61	IT	4.3	1.8	6.9	252
Fall in n. of workers	BG	16.5	13.2	19.7	508	IT	8.0	6.0	10.0	718
Fall in n. of FT workers	BG	15.2	12.3	18.2	563	IT	10.2	8.3	12.0	1,001
Fall in n. of workers**	BG	14.9	11.3	18.5	377	IT	8.4	6.1	10.8	544
Fall in n. of FT workers**	BG	13.8	10.5	17.0	436	IT	10.8	8.7	12.9	843
All	CY	10.7	9.9	11.5	6,250	LT	5.7	5.1	6.2	6,155
Increase in hh. size	CY	10.7	6.8	14.6	248	LT	9.8	3.6	16.0	93
Increase in hh. size*	CY	11.4	6.7	16.1	178	LT	11.5	4.0	18.9	74
Fall in n. of workers	CY	15.9	12.4	19.4	424	LT	10.0	7.0	13.1	374
Fall in n. of FT workers	CY	16.3	12.9	19.7	457	LT	9.0	6.4	11.7	450
Fall in n. of workers**	CY	17.2	12.8	21.5	295	LT	11.6	7.4	15.8	230
Fall in n. of FT workers**	CY	15.8	11.8	19.7	334	LT	9.8	6.4	13.2	302
All	CZ	2.2	1.9	2.4	11,090	LU	1.7	1.4	2.0	6,499
Increase in hh. size	CZ	2.6	0.8	4.5	294	LU	1.6	0.3	2.9	357
Increase in hh. size*	CZ	2.7	0.6	4.9	224	LU	2.1	0.4	3.9	267
Fall in n. of workers	CZ	2.8	1.4	4.1	573	LU	3.8	1.9	5.8	391
Fall in n. of FT workers	CZ	3.3	1.9	4.7	635	LU	2.5	1.1	3.8	519
Fall in n. of workers**	CZ	2.5	0.9	4.1	372	LU	5.7	2.9	8.5	262
Fall in n. of FT workers**	CZ	3.4	1.7	5.1	442	LU	3.2	1.5	4.9	397
All	EE	4.2	3.7	4.6	8,059	LV	8.0	7.3	8.7	5,914
Increase in hh. size	EE	4.8	2.5	7.2	334	LV	6.4	3.6	9.3	292
Increase in hh. size*	EE	6.0	2.6	9.4	191	LV	7.8	3.8	11.8	176
Fall in n. of workers	EE	4.4	2.8	6.0	612	LV	10.1	7.7	12.6	579
Fall in n. of FT workers	EE	3.3	2.0	4.7	674	LV	9.6	7.5	11.7	741
Fall in n. of workers**	EE	4.9	2.8	6.9	432	LV	10.7	7.7	13.7	408
Fall in n. of FT workers**	EE	3.5	1.9	5.1	508	LV	9.6	7.2	12.1	570
All	EL	7.9	7.3	8.5	7,933	PL	3.3	3.0	3.6	14,478
Increase in hh. size	EL	11.5	7.7	15.3	275	PL	2.2	0.9	3.4	557

Increase in hh. size*	EL	7.8	4.1	11.6	198	PL	2.4	1.0	3.9	445
Fall in n. of workers	EL	16.0	12.7	19.4	460	PL	3.4	2.2	4.5	930
Fall in n. of FT workers	EL	16.2	13.2	19.3	570	PL	3.8	2.7	5.0	1,064
Fall in n. of workers**	EL	14.9	11.3	18.5	378	PL	3.5	2.2	4.9	723
Fall in n. of FT workers**	EL	15.0	11.8	18.2	488	PL	3.9	2.6	5.2	856
All	ES	4.0	3.7	4.3	13,237					
Increase in hh. size	ES	4.1	2.5	5.7	589					
Increase in hh. size*	ES	4.2	2.3	6.1	430					
Fall in n. of workers	ES	4.8	3.5	6.2	988					
Fall in n. of FT workers	ES	7.2	5.9	8.5	1,447					
Fall in n. of workers**	ES	5.5	3.8	7.2	716					
Fall in n. of FT workers**	ES	6.9	5.5	8.4	1,182					

*Number of workers unchanged. **Household structure unchanged. Confidence intervals at 95% level presented.

Source: Elaboration of the authors on EU-SILC data.

Table A8. Material deprivation entry rate conditioned to employment status (Wt = 1 and Wt-1 = 1) and trigger events

		Exit rate	Confidence Interval		N		Exit rate	Confidence Interval		N
Uncond.	EU	41.5	40.9	42.2	21,430	FR	54.7	49.9	59.5	421
Decrease in hh. size	EU	38.8	36.3	41.3	1,416	FR	39.0	19.7	58.2	28
Decrease in hh. size*	EU	39.6	36.4	42.8	899	FR	52.3	24.9	79.8	16
Rise in n. of workers	EU	45.5	44.6	46.5	10,758	FR	68.2	60.9	75.5	159
Rise in n. of FT workers	EU	48.6	46.5	50.7	2,196	FR	45.1	28.1	62.2	36
Rise in n. of workers**	EU	45.9	44.9	46.8	9,694	FR	69.1	61.1	77.1	132
Rise in n. of FT workers**	EU	49.1	46.8	51.4	1,885	FR	38.2	19.0	57.4	28
Uncond.	AT	52.4	46.5	58.4	276	HR	39.2	36.5	41.9	1,272
Decrease in hh. size	AT	71.2	53.3	89.1	28	HR	39.9	27.3	52.4	62
Decrease in hh. size*	AT	72.0	43.8	100.3	13	HR	36.4	18.4	54.3	31
Rise in n. of workers	AT	57.3	47.8	66.7	108	HR	43.7	40.0	47.4	702
Rise in n. of FT workers	AT	66.7	52.0	81.4	43	HR	44.0	35.0	53.1	119
Rise in n. of workers**	AT	58.8	48.0	69.7	83	HR	44.5	40.7	48.4	647
Rise in n. of FT workers**	AT	74.4	57.8	91.0	30	HR	43.1	33.5	52.8	104
Uncond.	BE	45.5	39.6	51.4	276	HU	32.5	30.7	34.2	2,814
Decrease in hh. size	BE	21.8	1.3	42.2	19	HU	30.5	24.0	37.1	192
Decrease in hh. size*	BE	4.4	-11.1	20.0	10	HU	31.4	22.9	39.9	118
Rise in n. of workers	BE	55.4	44.1	66.8	77	HU	35.7	33.3	38.2	1,514
Rise in n. of FT workers	BE	19.1	3.6	34.7	28	HU	34.3	29.2	39.5	326
Rise in n. of workers**	BE	52.5	39.2	65.9	57	HU	35.8	33.2	38.3	1,363
Rise in n. of FT workers**	BE	15.7	-2.9	34.3	18	HU	31.5	26.1	36.9	289
Uncond.	BG	18.7	17.2	20.2	2,716	IT	49.5	47.1	51.8	1,807
Decrease in hh. size	BG	13.5	8.6	18.5	190	IT	59.1	47.8	70.3	77
Decrease in hh. size*	BG	12.3	6.4	18.2	122	IT	60.7	46.7	74.8	50
Rise in n. of workers	BG	22.8	20.8	24.8	1,627	IT	56.3	52.7	60.0	717
Rise in n. of FT workers	BG	18.6	13.5	23.7	229	IT	63.3	55.1	71.5	136
Rise in n. of workers**	BG	23.3	21.1	25.4	1,474	IT	56.8	53.0	60.6	654
Rise in n. of FT workers**	BG	19.4	13.8	24.9	197	IT	66.7	58.1	75.3	118
Uncond.	CY	42.3	39.8	44.8	1,526	LT	35.9	33.2	38.6	1,204
Decrease in hh. size	CY	26.6	17.4	35.8	92	LT	29.2	20.4	38.0	106
Decrease in hh. size*	CY	28.2	14.7	41.7	46	LT	24.7	15.2	34.1	83
Rise in n. of workers	CY	46.0	42.8	49.2	951	LT	40.5	36.6	44.5	600
Rise in n. of FT workers	CY	40.3	33.0	47.6	176	LT	32.5	23.2	41.8	101
Rise in n. of workers**	CY	46.2	42.9	49.5	859	LT	40.4	36.3	44.6	549
Rise in n. of FT workers**	CY	39.8	32.0	47.7	153	LT	32.2	22.5	41.9	92
Uncond.	CZ	39.1	35.7	42.4	823	LU	57.2	49.4	64.9	160
Decrease in hh. size	CZ	38.1	23.1	53.0	44	LU	63.5	24.3	102.8	9
Decrease in hh. size*	CZ	41.3	22.9	59.6	31	LU	29.7	-33.7	93.1	5
Rise in n. of workers	CZ	41.1	36.4	45.7	428	LU	62.3	50.2	74.4	65
Rise in n. of FT workers	CZ	42.0	29.7	54.2	66	LU	51.3	16.1	86.5	11
Rise in n. of workers**	CZ	41.7	36.7	46.6	381	LU	58.4	45.6	71.1	61
Rise in n. of FT workers**	CZ	44.8	31.5	58.1	57	LU	42.0	4.8	79.2	10
Uncond.	EE	49.9	46.6	53.3	868	LV	44.2	42.0	46.5	1,869
Decrease in hh. size	EE	49.0	36.3	61.7	63	LV	38.6	31.3	45.8	177
Decrease in hh. size*	EE	47.3	31.2	63.5	40	LV	38.1	29.1	47.2	114
Rise in n. of workers	EE	57.6	53.2	62.0	492	LV	48.1	44.8	51.4	886
Rise in n. of FT workers	EE	58.5	48.6	68.4	99	LV	48.8	42.3	55.3	232
Rise in n. of workers**	EE	57.5	52.8	62.1	438	LV	47.2	43.8	50.7	789
Rise in n. of FT workers**	EE	59.0	47.8	70.1	78	LV	49.1	41.8	56.4	185
Uncond.	EL	26.9	25.1	28.7	2,317	PL	35.4	33.4	37.5	2,097
Decrease in hh. size	EL	35.0	25.7	44.2	106	PL	30.4	22.9	37.9	147
Decrease in hh. size*	EL	25.9	15.7	36.0	75	PL	29.6	20.6	38.6	102
Rise in n. of workers	EL	32.5	29.6	35.5	973	PL	40.9	37.9	44.0	998

Rise in n. of FT workers	EL	43.1	36.9	49.3	251	PL	39.3	32.0	46.7	172
Rise in n. of workers**	EL	32.3	29.2	35.3	896	PL	41.1	37.9	44.3	907
Rise in n. of FT workers**	EL	46.1	39.6	52.6	230	PL	39.8	31.8	47.8	147
Uncond.	ES	52.8	49.7	55.9	984					
Decrease in hh. size	ES	44.9	33.5	56.4	76					
Decrease in hh. size*	ES	55.3	39.8	70.8	43					
Rise in n. of workers	ES	56.3	51.8	60.9	461					
Rise in n. of FT workers	ES	60.9	53.6	68.3	171					
Rise in n. of workers**	ES	58.0	53.1	62.8	404					
Rise in n. of FT workers**	ES	62.1	54.3	70.0	149					

*Number of workers unchanged. **Household structure unchanged. Confidence intervals at 95% level presented.

Source: Elaboration of the authors on EU-SILC data.

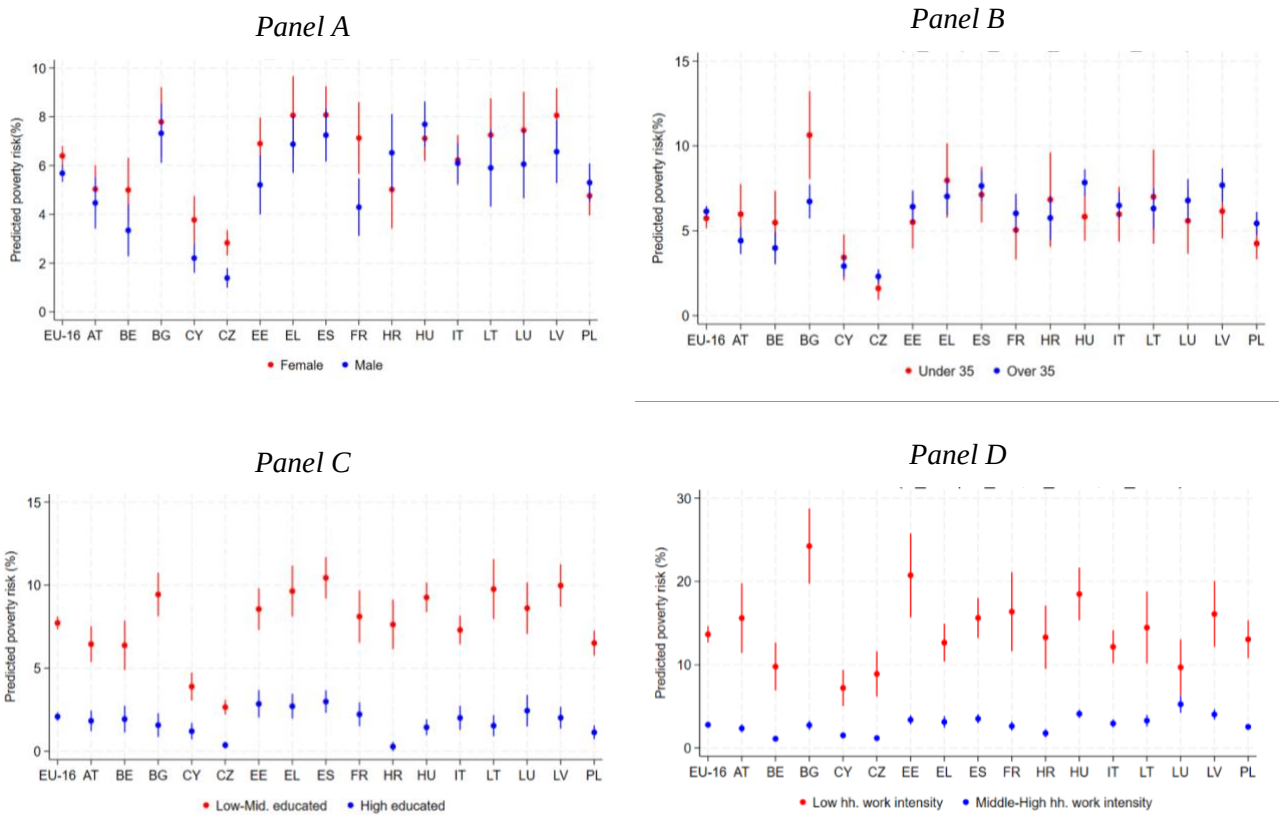
Table A9. Baseline estimates (pooled OLS, with the variables defining the demographic groups as regressors)

	(1) in_work_poor	(2) employed_r	(3) part_time_r	(4) temp_r	(5) lhours_year	(6) lhwage	(7) lhearn
female	-0.007***	-0.102***	0.069***	0.014***	-0.166***	-0.206***	-0.194***
	(0.001)	(0.002)	(0.004)	(0.001)	(0.007)	(0.005)	(0.006)
age30_39	-0.005**	0.247***	0.021***	-0.051***	0.087***	0.173***	0.166***
	(0.002)	(0.004)	(0.002)	(0.003)	(0.003)	(0.005)	(0.005)
age40_49	0.003	0.278***	0.031***	-0.087***	0.120***	0.282***	0.266***
	(0.002)	(0.004)	(0.003)	(0.004)	(0.004)	(0.009)	(0.009)
age50_59	-0.022***	0.188***	0.023***	-0.104***	0.105***	0.326***	0.303***
	(0.002)	(0.005)	(0.003)	(0.004)	(0.004)	(0.013)	(0.012)
age60_	-0.029***	-0.365***	-0.042***	-0.138***	-0.097***	0.340***	0.286***
	(0.003)	(0.005)	(0.002)	(0.005)	(0.008)	(0.015)	(0.016)
sec_educ	-0.103***	0.087***	0.012***	-0.003*	0.071***	0.256***	0.318***
	(0.005)	(0.004)	(0.002)	(0.002)	(0.010)	(0.012)	(0.016)
ter_educ	-0.160***	0.199***	0.005**	-0.021***	0.145***	0.677***	0.749***
	(0.006)	(0.005)	(0.002)	(0.002)	(0.011)	(0.014)	(0.018)
Constant	0.211***	0.480***	0.063***	0.141***	7.277***	2.518***	2.492***
	(0.007)	(0.008)	(0.006)	(0.005)	(0.014)	(0.031)	(0.033)
Observations	8,737	8,808	8,808	8,808	6,272	7,720	7,533
R-squared	0.536	0.935	0.555	0.672	0.663	0.960	0.952

Source: Own elaborations on EU-SILC data
Notes: Weighted OLS estimates (weights: population share of the demographic group in the country/year); Robust SE clustered at country/year in parentheses; all regressions include country/year fixed effects. *** p<0.01, ** p<0.05, * p<0.1

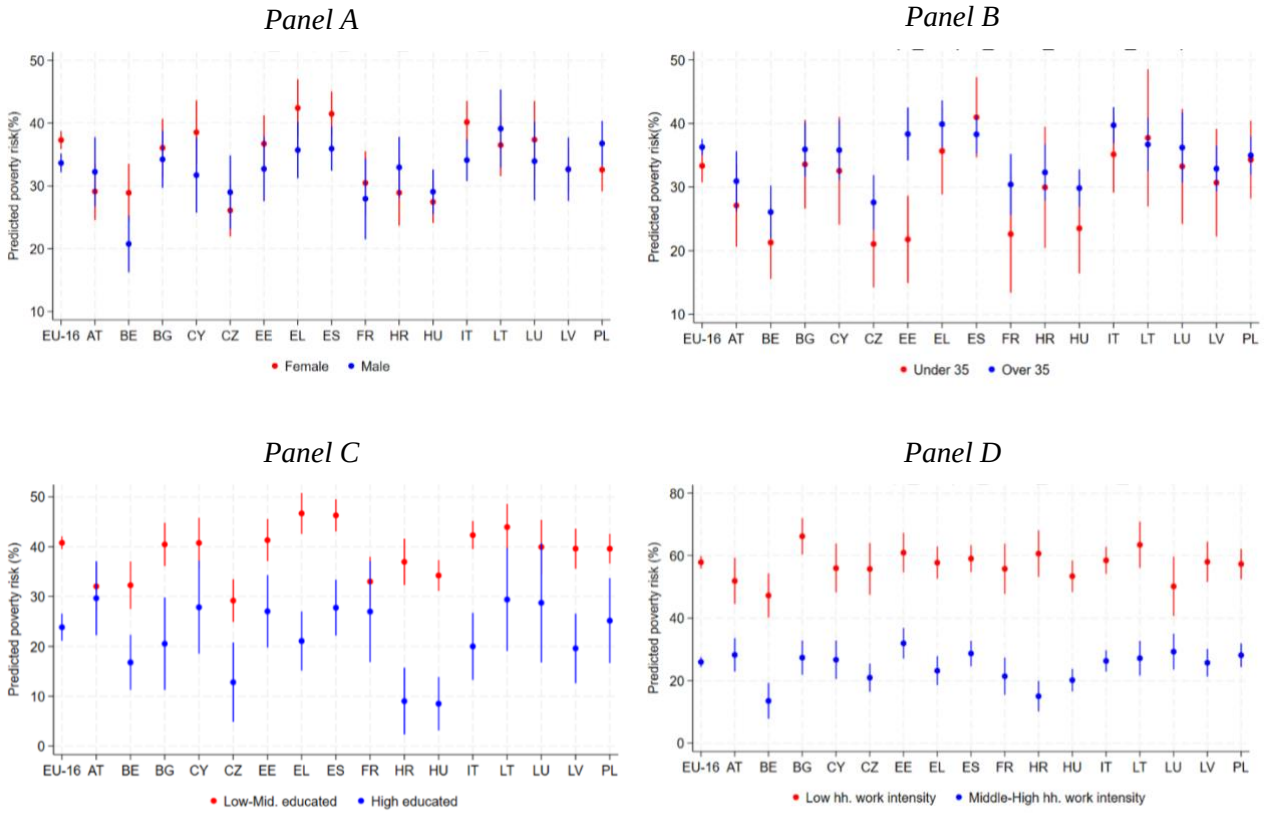
Figures

Figure A1. Predicted poverty risk by demographic and socio-economic groups. Trajectory: Pr(Pt = 1 | Wt = 1; Pt-1 = 0; Wt-1 = 1). European and country level



Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level presented. Source: Elaboration of the authors on EU-SILC data.

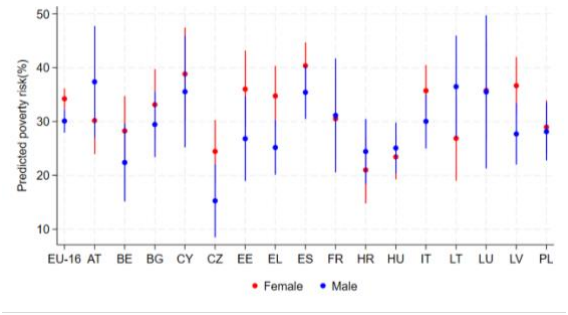
Figure A2. Predicted poverty risk by demographic and socio-economic groups. Trajectory: Pr(Pt = 1 | Wt = 1; Pt-1 = 1; Wt-1 = 1). European and country level



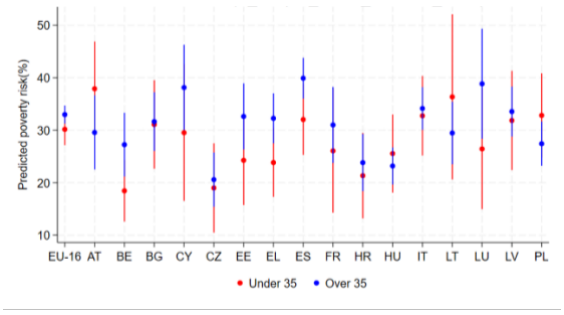
Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level presented. Source: Elaboration of the authors on EU-SILC data.

Figure A3. Predicted poverty risk by demographic and socio-economic groups. Trajectory: Pr(Pt = 1 | Wt = 1; Pt-1 = 1; Wt-1 = 0). European and country level

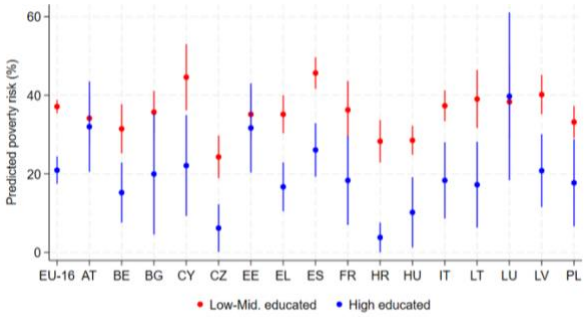
Panel A



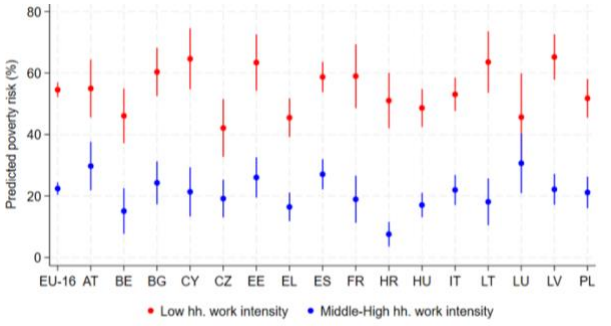
Panel B



Panel C

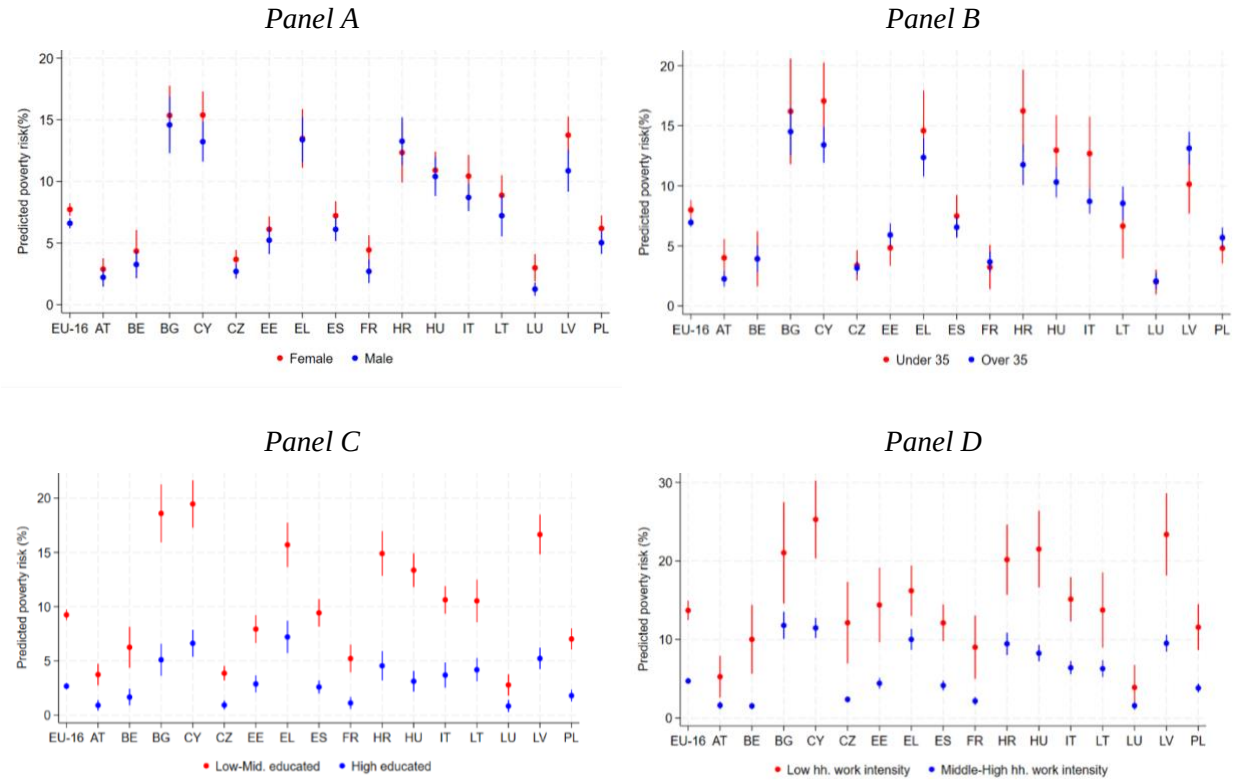


Panel D



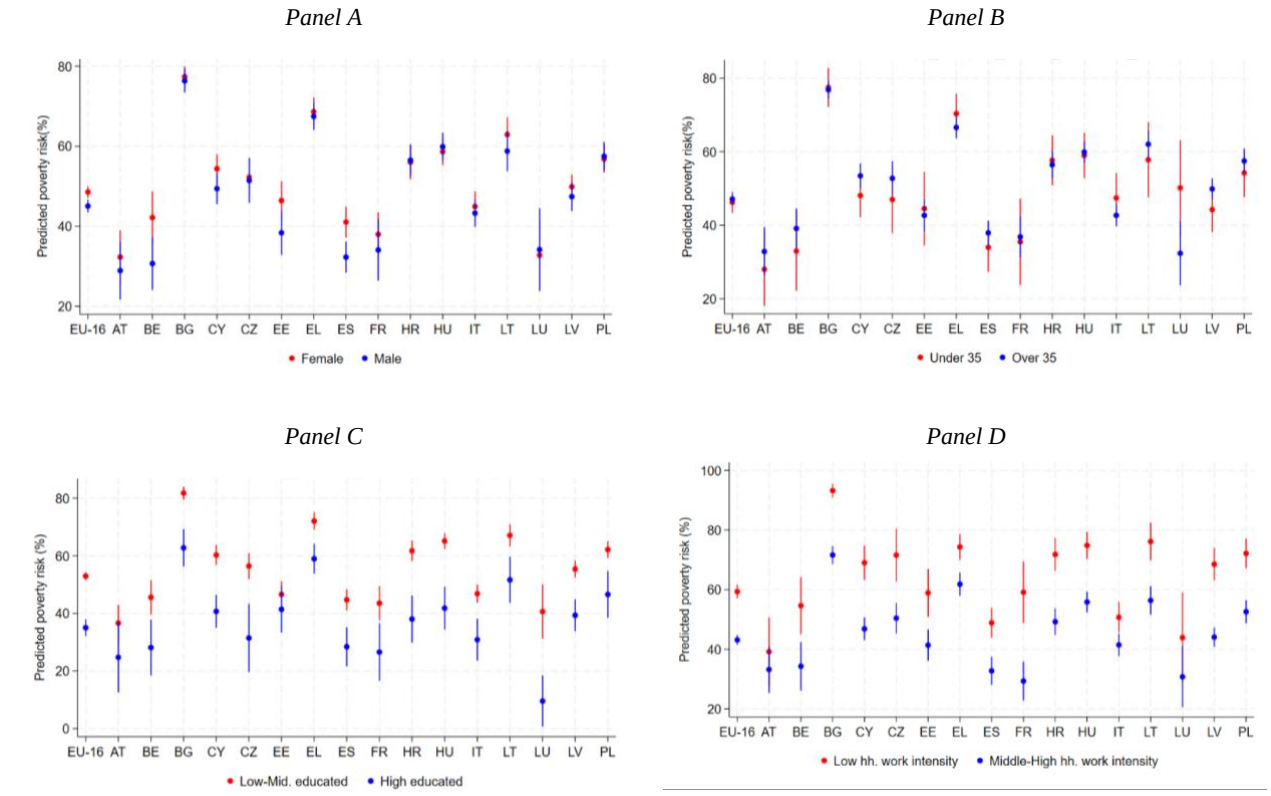
Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level presented. Source: Elaboration of the authors on EU-SILC data.

Figure A4. Predicted material deprivation risk by demographic and socio-economic groups. Trajectory: Pr(Pt = 1 | Wt = 1; Pt-1 = 0; Wt-1 = 1). European and country level



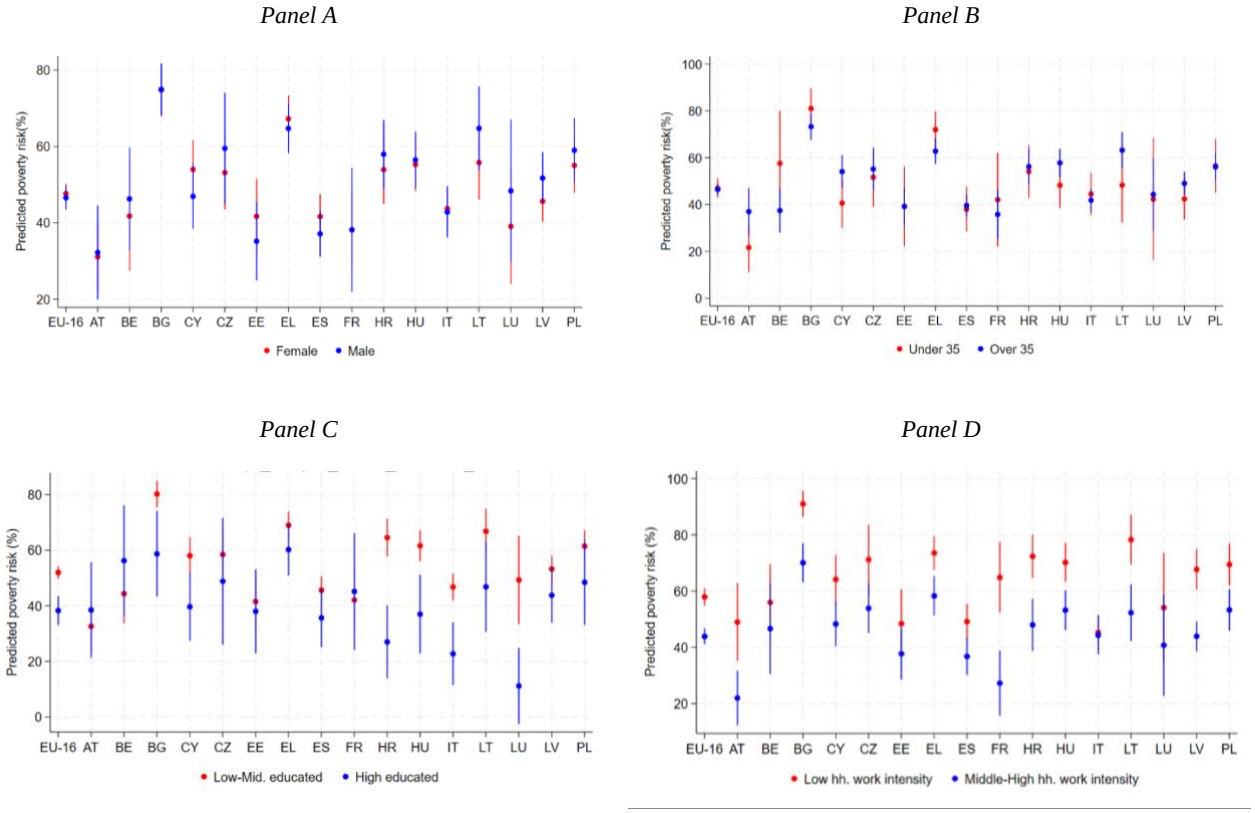
Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level presented. Source: Elaboration of the authors on EU-SILC data.

Figure A5. Predicted material deprivation risk by demographic and socio-economic groups. Trajectory: Pr(Pt = 1 | Wt = 1; Pt-1 = 1; Wt-1 = 1). European and country level



Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level presented. Source: Elaboration of the authors on EU-SILC data.

Figure A6. Predicted material deprivation risk by demographic and socio-economic groups. Trajectory: Pr(Pt = 1 | Wt = 1; Pt-1 = 1; Wt-1 = 0). European and country level



Notes: The estimated models contain all the other variables presented in Table A3 (except for the characteristic on which the model is conditioned). Standard errors are clustered at household level and estimates are computed with four-year duration longitudinal sample weights. Confidence intervals at 95% level presented. Source: Elaboration of the authors on EU-SILC data.

Appendix B – **Country level reform variables**

(i) Family Policy reforms

var_name	*var_def*	*unit*	*missing countries*	*n of treated/controls*	*source*
vuln_fam_up	Increasing support to single/vulnerable parents, disabled children, vulnerable families	0 = pre-reform 1 = post reform		Treated: 14 countries Control: 10 countries	LABREF
childcare_up	Expanding access to childcare services	0 = pre-reform 1 = post reform		Treated: 12 countries Control: 12 countries	LABREF
child_ ben_up	Increasing the generosity of child-related tax/benefit	0 = pre-reform 1 = post reform		Treated: 10 countries Control: 9 countries	LABREF
mat_leave_up	Expanding maternity leave allowance/length	0 = pre-reform 1 = post reform		Treated: 7 countries Control: 16 countries	LABREF
pat_leave_up	Expanding paternity leave allowance/length	0 = pre-reform 1 = post reform		Treated: 12 countries Control: 13 countries	LABREF
par_leave_up	Expanding parental leave (non-gender-specific) allowance/length	0 = pre-reform 1 = post reform		Treated: 12 countries Control: 11 countries	LABREF
flex_w_arr_up	Facilitating work-life balance through flexible and alternative work arrangements	0 = pre-reform 1 = post reform		Treated: 9 countries Control: 16 countries	LABREF
early-return_up	Favouring early labour market return for parents	0 = pre-reform 1 = post reform		Treated: 14 countries Control: 10 countries	LABREF

Notes:

- Countries in which during the period considered had both "up" and "down" policies were excluded from the analysis (i.e., not included either in the "Treated" nor in the "Control" group);
- "down" variables not generated, as there are no countries in which the was a "down" treatment only (i.e., in the few cases in which there was a "down" treatment, it was accompanied during the period considered, by a "up" treatment and such countries are not used as controls);
- We have considered only policy measures that can have an extended impact. Hence, we have excluded measures specific to groups, such as measures specific to one industry, usually public employment; or of a specific scope (e.g. bereavement, foster parents, adoptive parents, same-sex parents). Similarly, we have considered as "reforms" policy measures that materialize in a significant impact (i.e., a marginal increase in child allowance or of the maternity leave is not considered as a "reform");
- If there is more than one policy implemented in the country during the period in the same field, the year of implementation corresponds to the most important (pervasive, general, impacting) measure;
- 'Early-return_up' includes measures explicitly designed to facilitate early return to employment after the childbirth.

(ii) Labour market reforms variables

EPL – Employment Protection Legislation (temporary and regular workers)

var_name	*var_def*	*Unit*	*missing countries*	*comments*	*source*
eplr_down	Employment Protection Legislation for Regular workers	0 = pre-reform 1 = post reform	Bulgaria, Cyprus, Romania	Treated: 8 countries Control: 14 countries	OECD
eplt_down	Employment Protection Legislation for Temporary workers	0 = pre-reform 1 = post reform	Bulgaria, Cyprus, Romania	Treated: 5 countries Control: 10 countries	OECD
eplt_up	Employment Protection Legislation for Temporary workers	0 = pre-reform 1 = post reform	Bulgaria, Cyprus, Romania	Treated: 7 countries Control: 10 countries	OECD

Notes:

- Countries in which during the period considered had both "up" and "down" policies were excluded from the analysis (i.e., not included either in the "Treated" nor in the "Control" group);
- In the variables "EPLR_ d_down", "EPLT_ d_down", and "EPLT_ d_up", a reform is identified in the year with a significant change: a more than 10% variation compared to the previous year's summary indicator typically corresponds to a considerable reform reported by LabRef.
- No "EPLR_ d_up" variable has been produced, as nowhere there was an EPLR increase during the period considered (2006-2018)
- In the EPLT case, 10 countries experienced no significant changes, while 5 (7) countries saw a significant decrease (increase) in the EPLT summary indicator.

Collective Bargaining (Level and Coordination)

var_code	*var_def*	*unit*	*missing countries*	*comments*	*source*
cblevel_down	Collective bargaining level: (The predominant level at which wage bargaining takes place)	0 = pre-reform 1 = post reform		Treated: 3 countries Control: 22 countries	OECD/AIAS ICTWSS
cbcoord_down	Coordination of wage-setting	0 = pre-reform 1 = post reform		Treated: 2 countries Control: 20 countries	OECD-AIAS-ICTWSS
cbcoord_up	Coordination of wage-setting	0 = pre-reform 1 = post reform		Treated: 2 countries Control: 20 countries	OECD-AIAS-ICTWSS

Notes:

- Collective bargaining level (cblevel) is defined in 5 levels: **5** = central or cross-industry level; **4** = intermediates or alternates between the central and industry level; **3** = sector or industry level; **2** = intermediates or alternates between the sector and enterprise level; **1** = company or enterprise level.
- In the variable " cblevel _ d_down" a reform is identified in the year with a shift from the central level (or other intermediate forms between sector and enterprise level, i.e., code 5 to 2) to a pure enterprise level (code 1).
- No "cblevel_d_up" variable has been produced, as nowhere there was a cblevel increase (from 1 to 2-5 code) during the period considered (2006-2018)
- Coordination of wage-setting (cbcoord) is defined as follows: 5 = Binding norms (centralized bargaining); **4** = Non-binding norms and/or guidelines (recommendations on maximum or minimum wage rates or wage increases); **3** = Procedural negotiation guidelines (recommendations on wage formula relating to productivity or inflation); **2** = Coordination of wage setting based on pattern setting by major companies, sectors, government wage policies in the public sector; **1** = Fragmented wage bargaining, confined largely to individual firms or plants, no coordination
- In the variable " cbcoord _ d_down" a reform is identified in the year with a shift from some form of wage coordination (code 5 to 2) to totally fragmented wage bargaining (i.e., no coordination, code 1).
- In the variable " cbcoord _ d_up," a reform is identified in the year, shifting from no coordination (code 1) to some form of wage coordination (code 5 to 2).
- In the cblevel case, 22 countries experienced no significant changes, while 3 countries saw a significant decrease from code 5-2 to code 1.
- In the cbcoord case, 20 countries experienced no significant changes, while 3 countries saw a significant decrease (cbcoord _ d_down) and other 2 countries saw a significant increase (cbcoord _ d_up) in the cbcoord code.

Unemployment benefits (replacement rate, %)

var_name	var_def	unit	missing countries	comments	source
unemp_ben_down	Overall net replacement rate Unemployment benefits Benefits calculated for model families earning from 33 to 200 percent of an average wage (rr_u_d_down33)	0 = pre-reform 1 = post reform		Treated (down): 3 countries Control: 17 countries	SPIN
unemp_ben_up	Overall net replacement rate Unemployment benefits Benefits calculated for model families earning from 33 to 200 percent of an average wage (rr_u_d_up33)	0 = pre-reform 1 = post reform		Treated (up): 5 countries Control: 17 countries	SPIN

Notes:

- Countries in which during the period considered had both "up" and "down" policies were excluded from the analysis (i.e., not included either in the "Treated" nor in the "Control" group);
- Reform is identified in the year when there is a significant change and the new level stabilizes (and the average level is significantly different than the average in the pre-reform period).

Minimum wage as a % of average earnings in the business sector (Eurostat data)

var_code	*var_def*	*Unit*	*missing countries*	*comments*	*source*
mw_up	Monthly minimum wage as a proportion of average monthly earnings (%) in the business sector	0 = pre-reform 1 = post reform		Treated: 9 countries Control: 14 countries	Eurostat

Notes:

- As for the dichotomic variables, countries in which during the period considered had both "up" and "down" policies were excluded from the analysis (i.e., not included either in the "Treated" nor in the "Control" group);
- Reform is identified in the year when there is a significant increase and the new level stabilizes at the higher level (and the average level is significantly higher than the average in the pre-reform period).
- No "mw_d_down" variable not produced, as nowhere there was a decrease in the variable during the period considered (2006-2018)

(iii) Social protection and competition reforms

Social protection (replacement rate, %)

var_code	*var_def*	*unit*	*missing countries*	*comments*	*source*
Social_prot_down	Overall net replacement rate Unemployment benefits + Social assistance and other minimum income benefits + Housing benefits Benefits calculated for model families earning from 33 to 200 percent of an average wage (rr_ush_d_down33	0 = pre-reform 1 = post reform		Treated: 3 countries Control: 17 countries	SPIN
Social_prot_up	Overall net replacement rate Unemployment benefits + Social assistance and other minimum income benefits + Housing benefits Benefits calculated for model families earning from 33 to 200 percent of an average wage (rr_ush_d_up33)	0 = pre-reform 1 = post reform		Treated: 5 countries Control: 17 countries	SPIN

Notes:

- Countries in which during the period considered had both "up" and "down" policies were excluded from the analysis (i.e., not included either in the "Treated" nor in the "Control" group);
- Reform is identified in the year when there is a significant change and the new level stabilizes (and the average level is significantly different than the average in the pre-reform period).

Guaranteed minimum income (GMI)

var_code	*var_def*	*Unit*	*missing countries*	*comments*	*source*
gmi_down	Net income of GMI benefit recipients, in % of the median disposable income	0 = pre-reform 1 = post reform	Bulgaria, Cyprus	Treated: 5 countries Control: 10 countries	OECD
gmi_up	Net income of GMI benefit recipients, in % of the median disposable income	0 = pre-reform 1 = post reform	Bulgaria, Cyprus	Treated: 6 countries Control: 10 countries	OECD

Notes:

- Countries in which during the period considered had both "up" and "down" policies were excluded from the analysis (i.e., not included either in the "Treated" nor in the "Control" group);
- In the "GMI_d_up" and "GMI_d_down" variables, a reform is identified in the year when there is a significant change and the new level stabilizes (and the average level is significantly different than the average in the pre-reform period).

PMR – Product Market Regulation

var_code	*var_def*	*Unit*	*missing countries*	*comments*	*source*
pmr_down	Product Market Regulation Network Sectors Indicator (Annual Time Series_2018 Methodology)	0 = pre-reform 1 = post reform	Bulgaria, Cyprus, Romania, Latvia, Lithuania, Estonia, Hungary	Treated: 9 countries Control: 9 countries	OECD

Notes:

- The PMR Network Sectors Indicators cover eight sectors: electricity, natural gas, air transport, rail transport, road transport, water transport, and fixed and mobile e-communications. Each indicator contains information on how entry and conduct in the relevant sector are regulated and on the level of public ownership.
- According to the OECD, no information on PMR is available for Latvia and Lithuania.

- Countries in which during the period considered had both “up” and “down” policies were excluded from the analysis (this was the case for Estonia and Hungary, not included either in the “Treated” nor in the “Control” group);
- No “pmr_ d_up” variable has been produced, as nowhere there was an PMR increase during the period considered (2006-2018)

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