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Keyword: poverty, low-pay work, feedback effects, panel data

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Abstract

This paper explores how low-pay conditions of household heads and partners affect the risk of poverty in Italy. We assume low-pay work is possibly pre-determined by past poverty status, thus allowing for feedback effects from poverty to future labour market outcomes. Our analysis, based on the 2016-2019 EU-SILC panel data, reveals that low-pay work increases the risk of poverty with respect to high-pay conditions. Notably, the effect of low-pay work on poverty with respect to non-employment (both unemployment and inactivity) differs between household heads and partners. It is greater for the former and smaller for the latter. This stresses the leading role of household heads for income formation in Italy and suggests that their earnings are scarcely competitive with non-labor income, and highlights the added-worker role of partners in the Italian households.

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1. Introduction

The last three decades have been characterized by important changes in the European labor markets. The process of flexibilization through the greater diffusion of temporary employment and the increasing use of part-time work, as well as, the reform of labor market institutions and the role of technological change contributed to shaping earnings distribution. One of the consequences of these changes was the rise of low-pay jobs. There is debate about its role in labor market prospects (Schanble 2021). Someone (e.g. Knabe and Plum 2013, Cai et al. 2018) stressed that low-pay work may be better than unemployment, as it may serve as a stepping stone toward high-pay positions and may prevent skills obsolescence. Other studies (e.g. Stewart 2007, Clark and Kanellopoulos 2013, Fok et al. 2015) emphasized the existence of sizeable persistence in low-pay work and the adverse signal it represents for potential employers.

In addition, the study of low-pay work has been associated with other economic aspects, such as earnings inequality, the role of public support, and household poverty. This latter issue has attracted a certain interest from economists, considering that income poverty represents a significant and persistent phenomenon, which recalled the design of specific contrasting measures from institutions and governments in recent years (e.g. Europe 2020 strategy and the 2030 Agenda for Sustainable Development). The widening of the working poor phenomenon has been frequently associated with the rise of low-pay work. Brandolini et al. (2002) noted household poverty is linked to the low-pay condition of the household head. Barbieri and Cutuli (2016) found that in-work poverty is around three times greater for low-wage workers than for the entire workforce. Similar associations emerged at the European level from the study by Maitre et al. (2012). While low pay conditions and household poverty are not perfectly coupled, the latter depending on the employment conditions of all household members, it is quite clear that nowadays employment does not always play an anti-poverty role. Understanding how low-pay work influences household poverty, may be important to design appropriate policies to contrast poverty, as well as to reflect on the conditions of the labor market and related policies.

This paper contributes to the literature on the association between low-pay work and household poverty in various ways. First, we explore the issue from a dynamic perspective and model both income and low-pay processes. We study how low-pay work affects household poverty, considering low-pay work

is not randomly determined, instead we allow it would be predetermined by past poverty status. With this aim, we adopt a dynamic bivariate approach which enables us to account for possible feedback effects from past poverty to current labor market status. Economically, this means the possibility of considering individuals operating their labor market choices conditional on their income conditions. For example, this possibly links our empirical approach with labor supply theory, according to which non-labor income affects reservation wages and, then, labor market participation decisions. More generally, one may consider poor individuals more prone to accept low-pay jobs to remove/mitigate their liquidity constraints and/or improve their living conditions. However, the choice of accepting low-pay jobs may also be conditioned by the utility associated with non-employment conditions. Thus, our second contribution regards the way we model low-pay work. In line with a strand of the literature (e.g. Urhendorff 2006, Fok et al. 2015), we do not limit our study to the alternative low-pay/high-pay work, but rather we extend our exploration to the entire spectrum of labor market outcomes (i.e. inactivity, unemployment, low-pay, high-pay). This allows us to compare low-pay work to other available alternatives, which is particularly interesting considering that individuals should prefer, in turn, to take up a low-pay job or to remain not employed and wait for a high-pay job in the future (e.g. Schnable 2021). This calls into question both the role of individual preferences for work and the design of unemployment benefits and social protection schemes.

Our study analyses the situation of Italy, a country crossed by major reforms of the labor market in the last decades, which involved widespread use of atypical jobs, and characterized by relatively high-income inequality and poverty rates. We investigate the relationship between low-pay work and household poverty focusing on the labor market outcomes of household heads and partners. We expect the relationship between low-pay work and household poverty may differ between individuals here analyzed, because of the different roles they play in household income formation, the different attachment to the labor market, and the different behavior in terms of labor supply.

The analysis is carried out by using the Italian section of the longitudinal 2016-2019 EU-SILC data. We exploit the longitudinal dimensions of the dataset, by assuming a dynamic structure of both phenomena, which enables us to estimate ‘genuine’ state dependence, to account for endogenous initial conditions and feedback effects.

The paper proceeds as follows. Section 2 reviews the existing literature. Section 3 describes the data used and offers a descriptive analysis. The empirical model is described in Section 4. Section 5 discusses the main findings, and Section 6 offers some concluding remarks.

2. Literature

The literature primarily focused on either the phenomena of low paid workers or household poverty, and only few studies explored the association between being a low paid workers and living in a poor household.

There is a strand of literature exploring the character of the phenomenon of low paid employment by comparing this condition to the state of unemployment and higher paid employment. In general, on the character of low paid phenomenon, the available empirical evidence on Europe is mixed, pointing to both stepping-stone to higher paid jobs effects and long-lasting detrimental effects of low-paid work (Schnabel, 2021). However, there is some evidence for state dependence and/or trap effect regarding low-paid work in many countries. This tendency was confirmed for Italy also by less recent evidence, such as Lucifora (1998), suggesting that for a significant number of workers low pay may represent a permanent rather than a transitory condition. The mentioned study by Lucifora (1998) explored as well the evolution and the determinants of low wage employment in Italy by using data from the SHIW and INPS surveys for the 1975-1993 period. The findings suggest that being male, older and high skilled reduce the likelihood of being low paid. The analysis of the dynamics of wages showed that individuals who start working as low paid are less likely to move higher up in the wage distribution, as opposed to those who start from higher positions.

On the comparison with other labour market status, the works by McCormick (1990), Stewart (2007) suggest that low-paid employment has the same detrimental effect on future employment outcomes as unemployment. In particular, employers use low-paid employment as a screening device to determine worker quality, in the same manner as they do with unemployment. Someone (e.g. Knabe and Plum 2013, Cai et al. 2018) stressed that low-pay work may be better than unemployment, as it may serve as a stepping stone toward high-pay positions and may prevent skills obsolescence

Fok et al. (2015) investigated the transitions between unemployment, low-paid employment and higher-paid employment using a dynamic approach. The results suggest state dependence in both unemployment and low-paid employment and evidence of a low pay no-pay cycle, i.e. unemployment increases the likelihood of entering low-paid employment and, in turn, low-paid employment increases the likelihood of entering unemployment with significant differences in effects across population subgroups.

Recently, the phenomenon of low-pay work has been associated with other economic aspects, such as household income poverty. This latter issue has attracted a certain interest from economists, considering that income poverty represents a significant and persistent phenomenon. The widening of the working poor phenomenon has been frequently associated with the rise of low-pay work (i.e., Brandolini et al., 2001; Barbieri and Cutuli, 2016). In addition, household living conditions play a critical role in protecting low-paid workers against poverty (Filandri and Struffolino, 2019). In fact, low paid are defined as only one among the factors contributing to household poverty (Andreß and Lohmann, 2008; Crettaz and Bonoli, 2011; Peña-Casas and Latta, 2004).

Specifically on the relationship between low paid and household poverty, a study from Brandolini et al. (2001) investigated the dispersion of earnings and the proportion of low paid employees in Italy for twenty years (from the end of 1970s to the end of 1990s). They used data from the Bank of Italy's Survey of Household Income and Wealth (SHIW) to disentangle the differential impact of low wages and employment status on households' poverty. First, their results suggest that the diffusion of the share of low pays in Italy evolved in parallel with that of earnings inequality (Lucifora et al., 2005). Second, the amount of employment in the household, particularly of members other than the head, matters more than low pay in influencing the probability of the household to be in poverty. Only the low paid status of the head of household played an increasingly important role. Finally, low paid characterizes mainly some populations subgroups, that are women, especially married and with children, living in the South-Islands, poorly educated and manual workers.

Maitre et al. (2012), instead, investigate the phenomenon of low pay and its relationship to household poverty and vulnerability in some European Countries by using EU-SILC data. Their results suggest that for employees who are not low paid, income poverty is seen to be rare. The low paid employees

face a much higher risk of being in a household below relative income poverty thresholds than those who are not low paid, and the risk varies across countries.

The likelihood of their being low paid is generally higher for women, younger and in the absence of other earners in the household, i.e. in single households with a sole-earner low-paid have very much higher poverty rates than those in multiple-earner households in all countries.

In this work, we offer some novelties with respect to the existing literature. First, we offer a dynamic analysis of the relationship between low paid workers and household poverty, which enables us to assess whether low paid is a temporary or permanent/persistent conditions, as well as its dynamics overtime. Moreover, we incorporate feedback effects from past poverty to current low-pay conditions. This allows exploring whether labor supply and, more generally, labor market outcomes are guided by income conditions. Second, we consider all labour market statuses, i.e. inactive, unemployed, low-paid worker, standard paid worker to offer the overall picture and interesting comparisons among them. Finally, we separately study the relationship for both the head of household and her/his partner.

3. Data

We investigate the period 2016–2019 by using the longitudinal sample of the European Union Statistics on Income and Living Conditions (EU-SILC) survey. The survey is conducted in most countries across the European Union by the relevant National Institutes of Statistics using harmonized questionnaires and survey methodologies.

EU-SILC is a rotating panel survey: the sample for any given year consists of four replications, which have been in the survey for 1–4 years. Any particular replication remains in the survey for four years; each year, one of the four replications from the previous year is dropped and a new one is added. Between year T and $T+1$, the sample overlap is 75%; the overlap between year T and year $T+2$ is 50%; and it is reduced to 25% from year T to year $T+3$ and to zero for longer intervals. We consider the fraction of the sample for which $T \geq 3$. Further, we explore a sample of households with a head of household aged between 20 and 59 years. We analyse data for Italy and this selection leaves us with a total of 34,174 observations.

We focus on the relationships between the phenomena of low paid workers and at-risk-of-poverty. The dependent variables used in our investigation, which includes two equations (see Section 4), are a dummy variable for (income) poverty and a categorical variable for the labour market/activity statuses of inactive, unemployed, low paid employee and standard paid employee. We exclude self-employed workers for the difficulties in correctly measuring their labour market earnings (see Brandolini et al., 2001). Low pay is conventionally measured in terms of the gross individual earnings, with a distribution of earnings lower than two-thirds of the median.

At-risk-of-poverty is defined as the fraction of people living with an equivalized income below a threshold defined to be 60% of the national median. Equivalized income is the total disposable household income (after taxes and social transfers) divided by an equivalence scale that gives a weight to each person in the household, which is the modified OECD scale.¹ Descriptive statistics of both dependent variables and covariates are reported in Table A1.

From the top of this table, we note that 15.3% of our sample of households with the head aged from 20 to 59 is at-risk-of poverty. As per the activity status, we see that around 91% of the sample is an employee: 80% with a standard pay and around 11% low paid worker. The remaining share of the sample is almost equally distributed across unemployment and inactivity (5.2% and 4%, respectively).

We now briefly describe the covariates used, keeping in mind that due to the frameworks employed we also include lagged dependent variables and initial condition, as well as the average and initial values of time-varying covariates.

Our control variables can be classified into individual and household characteristics. Individual characteristics refer to the characteristics of the head of the household, which is considered as representative of the other household members. The variables include age ranges from 20 years to 59 years of age, gender, education, and marital status. Household characteristics include controls for the number of disabled, the presence of elderly, the presence of children aged from 0 to 3 years, and from 4 to 15 years, home ownership, and the number of other (other than the head of household) not employed,

¹ Modified OECD scale: $1 + 0.5(N_A - 1) + 0.3 N_{CH}$, where N_A , N_{CH} , and N_D are the number of adults, children. The scale implies that a weight is assigned to each household member as follows: a weight of 1.0 is assigned to the first adult, 0.5 to the second and each subsequent person aged 14 and over, and 0.3 to each child under 14.

low paid, and standard paid workers in the household. Finally, as we work with panel data, we control for years.

4. The econometric approach

We explore how the low-pay work of household members affects household income poverty by modeling both processes in a dynamic way and accounting for possible feedback effects from past poverty to current low-pay conditions. This allows testing the hypothesis that labor supply and, more generally, labor market outcomes are guided by income conditions. The literature stressed the importance to compare low-pay work with alternative labor market outcomes, particularly unemployment (e.g. Schnabel 2021), to determine if an individual prefers to take up a low-paid job or to remain unemployed and wait for a better job offer in the future. For this reason, we consider the entire spectrum of labor market outcomes (i.e. inactivity, unemployment, low-pay, and high-pay work) and assume the utility associated with each alternative is not intrinsically ordered.

Given these premises we analyze how low-pay work affects household poverty by adopting a dynamic bivariate model with random effects where the poverty equation has a dichotomous outcome and the labor market equation has a multinomial one.

Let us define p_{it} as the individual poverty status of individual $i = 1 \dots n$ at time $t = 1 \dots T$. Specifically, we assume the latent poverty propensity p_{it}^* reads as:

$$p_{it}^* = \alpha_1 p_{it-1} + \alpha_2 l_{it} + \alpha_3 l_{it-1} + \alpha_4 x_{it} + \alpha_5 z_i + h_i + u_{it}, \quad (1)$$

Starting from the above unobserved latent propensity variable, we can identify a corresponding observable binary variable that identifies the poverty outcome:

$$p_{it} = \begin{cases} 1 & \text{if } p_{it}^* \geq 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

We model the observed labor market status as the result of a utility maximization process. We assume analyzed individuals evaluate each period the labor market status and choose that which guarantees the maximization of the utility in that period. We define the unobserved latent utility l_{it}^* associated to each labor market state j , as follows:

$$l_{ijt}^* = \beta_1 j l_{ijt-1} + \beta_2 p_{it-1} + \beta_3 x_{it} + \beta_4 z_i + \beta_5 r_{it} + g_i + v_{ijt}. \quad (3)$$

The observed labor market state can be derived from the following discrete choice model, where an individual i derives the utility associated to l from labor market state j at time t :

$$l_{ijt} = \begin{cases} 1 & \text{if } l_{ijt}^* \geq l_{ikt}^* \\ 0 & \text{otherwise} \end{cases} \text{ for } j, k = 0, 1, 2, 3; j \neq k; i = 1 \dots N; t = 2 \dots T \quad (4)$$

where $l_{it} = (l_{i0t}, l_{i1t}, l_{i2t}, l_{i3t})$ is a column vector which contains value 1 in correspondence to the labor market state employed by individuals at time t and zero otherwise. p_{it-1} is the lagged poverty status, l_{it-1} is the lagged labor market status variable, while x_{it} and z_i are vectors of strictly exogenous time-variant and time-invariant (respectively) individual and household characteristics; r_{it} is a vector of strictly exogenous characteristics of the household-head. α_l and β_{lj} are vectors of state dependence parameters for poverty and labor market status, respectively. The vectors of parameters α_2 and α_3 identify the effect of current and past labor market state on poverty, respectively, while the parameter β_2 identifies the presence of feedback effects from past poverty to the current labor market state. $\alpha_4, \alpha_5, \beta_3, \beta_4$ and β_5 , are sets of parameters to be estimated. The terms h_i , and g_i represent the unobserved time-invariant individual effects for the analyzed processes, while u_{it} and v_{it} , are identically and independently distributed error terms, which we assume to have been drawn from a Type 1 extreme value distribution. This implies the poverty probabilities correspond to logit probabilities, while the labor market state probabilities correspond to the multinomial logit probability, both conditional on past observed status, covariates, and unobserved heterogeneity terms.

Because of the dynamic structure of the model and the possibility the start of the observed data does not coincide with the start of the analyzed process, an initial conditions problem arises (Heckman, 1981). We deal with this by adopting the Wooldridge method (2005), according to the version proposed by Rabe-Hesketh and Skrondal (2013), which involves the use of an alternative conditional maximum likelihood (CML) estimator that considers the distribution conditional on the value in the initial period. In addition, we incorporate the Mundlak method (1978) to relax the assumption that individual-specific random effects are independent of other covariates, and we assume correlated random effects. Thus the auxiliary models definitively read as:

$$h_i = \gamma_0 + \gamma_1 p_{i1} + \gamma_2 l_{ij1} + \gamma_3 \bar{x}_i + \gamma_4 x_{i1} + \mu_i, \quad (5)$$

$$g_i = \delta_0 + \delta_1 p_{i1} + \delta_2 l_{ij1} + \delta_3 \bar{x}_i + \delta_4 x_{i1} + \delta_5 \bar{r}_i + \delta_6 r_{i1} + \varepsilon_i, \quad (6)$$

where p_{i1} is the initial (disability-adjusted) income status and l_{ij1} is the labor market state at time 1. \bar{x}_i is a set of time-averaged time-variant control variables calculated from periods 2 to T, and x_{i1} is a set of initial values of time-varying covariates. $\gamma_1, \gamma_2, \gamma_3, \gamma_4, \delta_1, \delta_2, \delta_3, \delta_4, \delta_5,$ and δ_6 are sets of parameters to be estimated. Finally, the terms μ_i and ε_i are the residual unobserved heterogeneity, which is assumed to be independent of initial values, covariates and error terms specified in equations (1) and (3).

Because unobservable factors that characterize labor market choice may also affect the probability of being poor, we allow unobserved heterogeneity terms to be correlated, thus avoiding related bias when estimating how low-pay work affects the risk of poverty. Thus, we assume that poverty and labor market equations are linked via random effects and this association is captured by the correlation term $\rho = corr(\mu_i, \varepsilon_i)$, which represents the correlation between unobservable factors of the outcomes considered.

Finally, because the estimated coefficients describe the sign of the relationship but are inappropriate for determining the magnitude of the impact between outcome and explanatory variables, we compute and report the average marginal effects (AMEs).

5. Results

Estimation results are illustrated in Tables 1, 2a, and 2b. The former refers to the poverty equation, while the latter reports estimates related to the labor market equation (for the head of household and partner). With the aim of making it easier to interpret estimation results, we computed and reported average marginal effects (AMEs).

Results from the poverty equation show the existence of moderate genuine state dependence, being the related AME equal to +5.9 p.p. when focusing on the sample based on the household heads and +5.4 p.p. when focusing on the sample of partners. This finding confirms that experiencing poverty may determine a poverty-trap effect, possibly because of the disincentivizing role of access to social programs, increase in demoralization, depreciation of human capital, and unfavorable attitudes usually associated with experiencing poverty, which may affect the probability of escaping this condition (e.g. Biewen 2009). In addition, the significance of the starting values of poverty status, stresses the existence of a correlation between initial conditions and confounding factors, thus highlighting the importance of accounting for endogenous initial conditions and unobservable heterogeneity to avoid estimation bias in state-dependence parameters.

Looking now at the second pool of estimation results, we note the existence of a positive and statistically significant relationship between low-pay work and household poverty. The magnitude, however, differs between household heads and partners.

Being a household-head low-pay worker increases by +15 p.p. the probability of being poor (with respect to the base category, i.e. being a household-head high-pay worker). Quite interestingly, the effect associated with low pay is greater than those associated with unemployment and inactivity (+14.4 p.p. and +11.9 p.p., respectively). When focusing on partners, the positive association between low-pay work and household poverty is confirmed, but the magnitude is smaller, i.e. +4.9 p.p. (with respect to the base category) than those who emerge as household heads. In addition, the effect associated with low pay is relatively smaller than the effects associated with inactivity and unemployment (+13.6 p.p. and +11.8 p.p., respectively). All in all, these results highlight the detrimental role low-pay work plays in household poverty, in line with evidence that emerged from previous studies (e.g. Maitre et al. 2012, Barbieri and Cutuli 2016). Quite interestingly, the low-pay condition is particularly negative when affects household

heads, in line with Brandolini et al. (2002). In Italy, low-pay work is more detrimental than non-employment, possibly indicating earnings of this disadvantaged subgroup of workers are scarcely competitive with non-labor income (e.g. unemployment benefits, transfers from social schemes, etc.). The smaller effects we find for partners possibly highlight their added-worker role in the households. Thus, in relative terms, the partners' choice of participating in the labor market, including being employed in a low-pay job, may be helpful to reduce the probability of being poor for members living in those households. On the contrary, our results, confirm the leading role of heads in terms of income formation in Italian households. Their low-pay position is particularly detrimental to the living conditions of related households.

Table 1. Poverty equation

	Household Head			Partner		
	AME	s.e.		AME	s.e.	
Poverty t-1	0.059	0.008	***	0.054	0.009	***
Poverty time 1	0.110	0.007	***	0.091	0.009	***
Inactivity time t	0.119	0.014	***	0.136	0.010	***
Unemployment time t	0.144	0.014	***	0.118	0.011	***
Low-pay work time t	0.150	0.012	***	0.049	0.008	***
Inactivity time t-1	0.036	0.011	***	-0.009	0.015	
Unemployment time t-1	0.015	0.009	*	0.012	0.016	
Low-pay work time t-1	-0.004	0.007		-0.001	0.015	
Inactivity time 1	-0.002	0.010		0.087	0.014	***
Unemployment time 1	-0.002	0.009		0.068	0.014	***
Low-pay work time 1	-0.001	0.008		0.064	0.013	***
Observations	23000			12590		

Source: Authors' calculations from 2016-2019 EU-SILC data

Note: We control for the set of covariates described in Section 3, including regional and year dummies. * $p < .10$, ** $p < .05$, *** $p < .01$.

The adoption of a bivariate approach enables us to relax the hypothesis of strict exogeneity of labor market status in the poverty equation. From an economic point of view, this means considering the possibility that labor market outcome is not randomly determined but it possibly depends on past income conditions. Tables 3a and 3b illustrates results related to the labor market equation for the head of household and partner, respectively. The first rows refers to the association between past poverty status and current labor market states. In particular, we note that lagged poverty increases the probability of

being in low-pay work, both for household heads and partners (by +3 pp. and +2.6 pp., respectively). Similar effects emerge for inactivity and unemployment. This finding suggests that individuals with poor income conditions are more prone to experience disadvantaged positions in the labor market. Even when entering employment positions, poor individuals are more likely to be selected for low-pay jobs. In sum, our results are indicative that disadvantaged positions trap individuals through a vicious circle that links the labor market and income conditions. Removing factors that determine poverty conditions would be helpful to mitigate mentioned disadvantages.

Looking at both Tables 2a and 2b also emerging evidence of genuine state dependence in labor market states. In particular non-employed individuals are more likely to be trapped out of employment positions (for head of household, +9.9 pp. for inactivity and +6.5 pp. for unemployment; for partner, +29.2 for inactivity and +1 pp. for unemployment) even though the transition from unemployment and low-pay work and *vice versa* is also possible. Our results do not show a particular stepping-stone role of low-pay jobs toward high-pay positions.

Table 2a. Labor market equation for the head of household

	Household Head									
	Inactivity		Unemployment		Low-pay work		High-paid work			
	AME	s.e.	AME	s.e.	AME	s.e.	AME	s.e.		
Poverty t-1	0.002	0.004	0.005	0.005	0.030	0.007 ***	-0.037	0.010 ***		
Poverty time 1	0.007	0.004	0.015	0.005 ***	0.023	0.006 ***	-0.045	0.009 ***		
Inactivity time t-1	0.099	0.013 ***	0.065	0.011 ***	-0.014	0.009	-0.149	0.020 ***		
Unemployment time t-1	0.073	0.012 ***	0.124	0.014 ***	0.033	0.011 ***	-0.230	0.023 ***		
Low-pay work time t-1	-0.008	0.003 *	0.009	0.005 *	0.079	0.011 ***	-0.081	0.014 ***		
Inactivity time 1	0.066	0.011 ***	0.013	0.007 *	0.080	0.014 ***	-0.159	0.020 ***		
Unemployment time 1	0.029	0.007 ***	0.034	0.008 ***	0.056	0.011 ***	-0.119	0.017 ***		
Low-pay work time 1	0.023	0.007 ***	0.001	0.006	0.141	0.012 ***	-0.165	0.016 ***		

Source: Authors' calculations from 2016-2019 EU-SILC data

Note: We control for the set of covariates described in Section 3, including regional and year dummies. * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 2b. Labor market equation for the partner

	Partner											
	Inactivity			Unemployment			Low-pay work			High-paid work		
	AME	s.e.		AME	s.e.		AME	s.e.		AME	s.e.	
Poverty t-1	0.046	0.014	***	0.015	0.010		0.026	0.014	*	-0.088	0.021	***
Poverty time 1	-0.005	0.013		0.020	0.010	*	0.023	0.014		-0.037	0.020	*
Inactivity time t-1	0.292	0.023	***	0.010	0.013		-0.123	0.018	***	-0.180	0.028	***
Unemployment time t-1	0.160	0.024	***	0.180	0.020	***	-0.145	0.018	***	-0.196	0.030	***
Low-pay work time t-1	-0.009	0.017		-0.005	0.012		0.052	0.018	***	-0.038	0.020	*
Inactivity time 1	0.273	0.026	***	0.057	0.015	***	0.113	0.020	***	-0.443	0.035	***
Unemployment time 1	0.150	0.024	***	0.081	0.016	***	0.180	0.024	***	-0.410	0.037	***
Low-pay work time 1	0.148	0.020	***	0.012	0.011		0.205	0.017	***	-0.366	0.026	***

Source: Authors' calculations from 2016-2019 EU-SILC data.

Note: We control for the set of covariates described in Section 3, including regional and year dummies. * $p < .10$, ** $p < .05$, *** $p < .01$.

6. Conclusions

The phenomenon of low paid workers increasingly attracted interest and it has become an important feature of the labor market and a controversial topic for debate in many countries. In this work, we investigate the association between low-pay work and household poverty in Italy, a country characterized by considerable transformation for the labour market in the last decades including the significant increase of atypical contractual types, such as part-time contracts and fixed-term jobs, which contributed to the further fragmentation of an already dual labour market. We analyse separately head of household and partner in consideration of their different role for household income formation.

Our results offers interesting reflections. First, we note that low pay and poverty are dynamically interrelated. From the equation of poverty, we note that being a low paid worker increases the risk of poverty relatively more than being unemployed or inactive, especially for household heads. On the one hand, this is suggestive of a leading role of household head for income formation in Italian households. On the other, low paid condition in Italy is more detrimental than non-employment, a possible signal of the disadvantaged conditions of low-paid worker.

Second, from the equation for labour market outcomes, we see the presence of feedback effects from past poverty low-pay work, both for household heads and partners. Similar effects emerge for labour market status of inactivity and unemployment. This finding suggests that possibly disadvantaged

positions trap individuals through a vicious circle that links the labor market outcomes and income conditions. Removing factors that determine poverty conditions would be helpful to mitigate disadvantages in the labour market.

Third, we find evidence of genuine state dependence in labor market states, especially for non-employed individuals that are more likely to be trapped out of employment positions. Fourth, our results do not show a particular stepping-stone role of low-pay jobs toward high-pay positions.

All in all, our findings suggest that effective policy aimed at alleviating and/or reducing the risk of poverty, through the provision of social benefits, might be helpful also for individual labour market outcomes as well, especially for the weakest segments of the workforce, employed in marginal and low paid positions. Poverty and low paid employment, indeed, are dynamically interrelated.

Finally, despite being on one country, i.e. Italy, our results should be considered valid for similar countries. Nonetheless, we aim to extend to our analysis to (almost overall) European countries.

References

Andreß, H. J., Lohmann, H. 2008. Introduction: the working poor in Europe. In H. J. Andreß, and H. Lohmann (eds), Introduction: the Working Poor in Europe, Cheltenham: Edward Elgar Publishing, pp. 1–16.

Barbieri, P., Cutuli, G. 2016. Determinants and trends of in-work poverty risks in Italy. An analysis of the 2002-2012 years in Henning Lohmann and Ive Marx, Edward Elgar (Eds), Handbook of Research on In-Work Poverty,

Brandolini, A., Cipollone, P., Sestito, P. 2001. Earnings Dispersion, Low Pay and Household Poverty in Italy, 1977-1998, Temi di discussione (Economic working papers) 427, Bank of Italy, Economic Research and International Relations Area.

Cai, L., K. Mavromaras, and P. Sloane. 2018. Low paid employment in Britain: Estimating state-dependence and stepping stone effects. *Oxford Bulletin of Economics and Statistics*, 80(2): 283–326.

Clark, K., Kanellopoulos, N.C. 2013. Low pay persistence in Europe, *Labour Economics*, 23: 122-134.

- Crettaz, E. and Bonoli, G. 2011. Worlds of working poverty: national variations in mechanisms. In Fraser, N., Gutiérrez, R. and Peña-Casas, R. (Eds), *Worlds of Working Poverty: National Variations in Mechanisms*, New York: Palgrave Macmillan.
- Filandri, M., Struffolino, E. 2019. Individual and household in work poverty in Europe: understanding the role of labor market characteristics. *European Societies*, 21(1): 130-157.
- Fok, Y.K., Scutella, R. and Wilkins, R. 2015. The Low-Pay No-Pay Cycle: Are There Systematic Differences across Demographic Groups? *Oxford Bulletin of Economics and Statistics*, 77(6): 872-896.
- Heckman J.J. 1981. The incidental parameters problem and the problem of initial conditions in estimating a discrete time-discrete data stochastic process. In C.F. Manski & D. McFadden (Eds.), *Structural analysis of discrete data with econometric applications* (pp. 179–195). Cambridge, MA: MIT Press.
- Knabe, A., and A. Plum. 2013 Low-wage jobs—Springboards to high-paid ones? *Labour*, 27(3): 310–330.
- Lucifora, C., 1998. Working Poor? An analysis of Low-Wage Employment in Italy. In R. Asplund, P. J. Sloane and I. Theodossiou (eds.), *Low Pay and Earnings Mobility in Europe*, pp. 185-208. Cheltenham: Edward Elgar.
- Lucifora, C., McKnight, A., Salverda, W. 2005. Low-wage employment in Europe: a review of the evidence. *Socio-Economic Review*, 3(2): 259–292.
- Maitre, B., Nolan, B., Whelan, C.T. 2012. Low pay, in-work poverty and economic vulnerability: A comparative analysis using EU-SILC. *The Manchester School*, 80: 99-116.
- McCormick, B. 1990. A theory of signalling during job search, employment efficiency and ‘stigmatized’ jobs. *Review of Economic Studies*, 57: 299–313.
- Mundlak Y. 1978. On the Pooling of Time-Series and Cross-Section Data. *Econometrica*, 49: 69–85.
- Peña-Casas, R. and Latta, M. 2004. *Working Poor in the European Union*, Denmark: Eurofound.
- Schnabel, C. 2021. Low-wage employment. *IZA World of Labor*, 276, doi: 10.15185/izawol.276.v2
- Rabe-Hesketh S., Skrondal A. 2013. Avoiding Biased Versions of Wooldridge’s Simple Solution to the Initial Conditions Problem. *Economics Letters*, 120: 346–349.

Stewart, M. 2007. The inter-related dynamics of unemployment and low pay, *Journal of Applied Econometrics*, Vol. 22, pp. 511–531.

Uhlendorff A. 2006. From No Pay to Low Pay and Back Again? A Multi-State Model of Low Pay Dynamics. IZA discussion paper No. 2482, IZA Bonn.

Wooldridge J. 2005. The initial condition problem in dynamic, non-linear panel data models with unobserved heterogeneity. *Journal of Applied Econometrics*, 2: 39–54.

Appendix

Table A1. Descriptive statistics

Variable	Household Head		Partner	
	Mean	Std. Dev.	Mean	Std. Dev.
Dependent variables				
Poor	0.153	0.360	0.148	0.355
<i>Labour market status if the head of household</i>				
Inactive	0.040	0.196	0.342	0.474
Unemployed	0.052	0.222	0.100	0.300
Low paid employee	0.108	0.311	0.144	0.351
High paid employee	0.800	0.400	0.414	0.493
Covariates				
<i>Characteristics of the head of household</i>				
Age [20, 24]	0.017	0.130	0.015	0.122
Age [25, 34]	0.134	0.341	0.118	0.323
Age [35, 44]	0.294	0.456	0.303	0.460
Age [45, 54]	0.400	0.490	0.416	0.493
Age [55, 59]	0.155	0.362	0.147	0.354
Female head of the household	0.327	0.469	0.163	0.369
Primary education	0.327	0.469	0.354	0.478
Secondary education	0.489	0.500	0.480	0.500
Tertiary education	0.184	0.387	0.166	0.372
Head in a Union	0.614	0.487	0.940	0.238
<i>Household characteristics</i>				
Number of disabled people	0.299	0.616	0.272	0.601
Presence of elderly	0.072	0.259	0.023	0.151
Home ownership	0.653	0.476	0.678	0.467
Presence of kids 0-3	0.097	0.296	0.144	0.351
Presence of kids 4-15	0.393	0.489	0.543	0.498
Other not employed in the households	0.881	0.964	0.632	0.890
Other low paid in the households	0.144	0.381	0.143	0.377
Other high paid in the household	0.302	0.508	0.922	0.460
Unemployment benefit	0.194	0.395	0.190	0.393
Relative change in unemployment rate	-5.301	2.589	-5.254	2.627
Partner aged 20-34			0.146	0.353
Partner female			0.863	0.344
Partner highly educated			0.147	0.354
Observations	34,174		19,317	

Source: Authors' calculations from 2016-2019 EU-SILC data