Modelling state dependence and feedback effects between poverty, employment and parental home emancipation among European youth

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February 2009

Unfinished
PRELIMINARY DRAFT
DO NOT CITE OR QUOTE

ABSTRACT

Youth is one of the phases in the life-cycle when decisive transitions take place. Entering the labour market or leaving parental home are life events with important consequences for the economic well-being of young adults. In this paper, we study the interrelationship between employment, residential emancipation and poverty amongst young people in eight European countries for the period 1994-2000. Following Biewen (2004, 2008) and Wooldridge (2005), we propose the estimation of a trivariate probit model for poverty status, employment and leaving home decisions with feedback effects between the three processes that allows the measurement of state dependence, accounts for the initial condition problem and controls for unobserved heterogeneity and non-random selection of the sample. First results show that youth poverty genuine state dependence is positive and highly significant in all the analysed countries. Evidence proves there is a strong causal effect between poverty and leaving home in Scandinavian countries, however, time in economic hardship does not last long. In Southern Europe, instead, youth tend to leave their parental home much later than their European counterparts in order to avoid falling into a poverty state that proves to be more persistent. Past poverty has negative consequences on the likelihood of employment everywhere –albeit less strong in Nordic countries. And, economic hardship in the family of origin does not enhance neither delays residential emancipation (not even in strong family ties countries).

JEL Classification: I32, J13, C33

Keywords: youth poverty dynamics, trivariate multinomial probit, state dependence, feedback effects

1. Introduction

The analysis of youth poverty dynamics has received little attention in the literature despite the considerable amount of interest devoted to the study of poverty transience and the development of youth poverty studies. In fact, in the last two decades, most of the literature on poverty dynamics has focused on the adult population. Furthermore, youth poverty analyses have mainly been carried from a static point of view.[2]

In this paper, we argue that a better understanding of youth poverty dynamics is necessary if we are to design effective policies at fighting it. Youth is a temporary phase in the life cycle yet we know very little about the nature of poverty while young. Our particular contribution in this paper is the estimation of youth poverty with a method that overcomes the difficulties of modelling dynamics in a life time when important transitions take place.

On the one hand, this paper is devoted to the analysis of youth genuine state dependence in the poverty status, that is, we analyse to what extent experiencing poverty in a given period has a causal effect on future poverty. We decompose youth poverty persistence caused by observed and unobserved heterogeneity from the one due to genuine state dependence. Distinguishing between the two has important consequences for the design of social policies aimed at fighting economic hardship. If youth poverty is driven by genuine state dependence, helping young people to move above the poverty line today will reduce their likelihood of experiencing poverty tomorrow. Instead, if youth poverty is mainly due to heterogeneity, policies will have to be addressed at enhancing those characteristics that are protective factors against economic disadvantage.

On the other hand, in this paper we argue that youth poverty cannot be measured independently from certain life transitions as they have lasting consequences on young people's economic well-being. More precisely, we analyse how poverty relates with employment and leaving parental home by modelling simultaneously the three outcomes and allowing for feedback effects. We claim that only by acknowledging spill-over effects between the three processes, we can properly deal with the endogeneity problems that arise when studying life transitions possibly taking place in a sequential manner. As far as we know, similar estimates do not exist in the literature.

Thus, the questions this paper aims at answering can be summarised as follows. Is poverty temporarily lived by youth across Europe or rather is of permanent nature? Is poverty persistence explained by genuine state dependence or by observed and unobserved individual characteristics? Can youth poverty dynamics be measured independently from leaving home decisions or labour market opportunities? What is the link between employment and residential emancipation and how do both phenomena relate with poverty? Importantly, we expect the results to differ according to the institutional settings, the generosity of the Welfare State provision, the dynamism of youth labour markets and the cultural values, among other factors.

The empirical specification builds on a dynamic trivariate probit model where current and lagged dependent variables are included in the set of explanatory variables (see Biewen, 2004, 2008). The model controls for initial conditions following the methodology proposed by Wooldridge (2005). Furthermore, unobserved heterogeneity

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[2] See Jenkins (2000) for a complete review on the development of the literature on modelling poverty transitions and Aassve, Iacovou and Mencarini (2006) and Iacovou and Aassve (2007) for comprehensive surveys of youth poverty from a static perspective.

is integrated out in order to get consistent estimates and unobservables affecting poverty, employment and residential emancipation are allowed to be freely correlated. Data is from the European Community Household Panel and transitions refer to the period between 1994 and 2000. Our analysis is based on Spain, Italy, Denmark, Finland, Germany, France, United Kingdom and Ireland.

The paper is structured as follows. Next section revises the literature on youth poverty dynamics. Section 3 presents the dataset used and our definitions of youth, poverty, employment and emancipation. Section 4 develops at a descriptive level the relationships between poverty, employment and leaving home which allows foreseeing some of the effects that will be confirmed by the econometric model. Section 5 presents the econometric technique and Section 6 the empirical results. Section 7 summarises our main findings and discusses avenues for future research.

2. Youth poverty dynamics in the literature

Perhaps because youth is considered a temporary phase in the life cycle (and thus youth poverty flows a matter of smaller concern) or possibly because of the difficulties of modelling dynamics in a life time when many transitions take place, the fact is that most of the literature on poverty dynamics has focused on the analysis of the adult population. Few exceptions are revised as follows.

Aassve *et al.* (2005) analyse the most important events and characteristics associated with poverty entries and exits by means of discrete-time duration models. Their results confirm some of the findings observed in static analyses: poverty entries are associated with leaving home decisions (especially in Northern Europe) and with childbearing while marriage appears as a protective factor. Instead, poverty exits are related with job stability and not just with employment or finishing education. Important differences though are observed across Europe.[3]

The relationship between poverty entry and residential emancipation is studied in Aassve *et al.* (2007) for 13 European countries. Using propensity score matching techniques, they confirm that indeed in those countries where home-leaving occurs early, the extra risk of poverty associated with this event is higher, while the contrary for late home-leaving countries. Indeed, their analysis finds that in Finland and Denmark young people who stay in the parental home would actually face a lower risk of falling into poverty if they left than those who actually emancipate. The same is not true for the rest of the countries where those with the lowest risk of poverty actually do leave home. Still, their analysis is limited to the short-term effect of leaving home on poverty and no estimates of scarring effects in the poverty status are obtained.

In a similar fashion, Parisi (2008) estimates that, in Southern Europe, youth more prompt to leave, of younger ages and from poorer family background are more likely to enter poverty when they emancipate. Cantó and Mercader (2001a) study instead the consequences for the family of origin when youth emancipate: they find that nest-leaving in Spain is associated with higher poverty entries of the remaining household members highlighting youth contribution to the parental household well-being. Instead, no significant effect is observed in relation to poverty exits.

On the other hand, Mendola, Busetta and Aassve (2008), without strictly modelling dynamics, do study poverty persistence among young people in several European countries by analysing the number of periods that an individual is recorded to

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[3] Their models however do not deal with the problem of initial conditions and neither correct for the endogeneity/simultaneity problems that arise when modelling poverty flows in a time of demographic and labour market transitions. This is a drawback that we take up in this work.

be below the poverty line. Based on a generalised ordinal logit model, they find that despite of the high levels of poverty experienced by young people in Social Democratic countries, their poverty experience is very temporary in nature thanks to the generous welfare provision and the dynamism of labour markets. Still in relation to poverty duration, Cantó and Mercader (2001b) show that the presence of employed youth in a household significantly reduces the probability of persisting in poverty in Spain by avoiding entrance if the household head is not employed and by promoting exit if employed.

Yet, none of the revised contributions present measures of youth poverty state dependence while considering simultaneously unobserved heterogeneity. Neither the possible endogeneity existing between poverty, employment and emancipation has been modelled before for young people and in a comparative study as the one we present in this paper.

3. Data and definitions

The data we use for the analysis is the European Community Household Panel (ECHP) which is a harmonised cross-national longitudinal survey collected across all members of the former European Union-15 between 1994 and 2001 –except in Austria and Finland that joined in 1995 and 1996, respectively. Our analysis is based on the components from Spain, Italy, Finland, Denmark, Germany, France, United Kingdom and Ireland. Possibly the greatest advantage of the ECHP is that a standardised questionnaire is answered each year by a representative sample of individuals and households. Thus, comparative analysis across countries as the one we propose here is possible. Further, the information is quite rich on income, education, employment, household structure, housing, health and social relations. On the negative side, only the population living in private households is represented in the ECHP thus our study does not cover youth living in community housing or without stable accommodation.

Our working sample is restricted to those individuals between 16 and 29 years of age at the first time they participate in the panel. The lower bound is due to a practical reason: in the ECHP we have individual information only from 16 years old onwards. The upper bound may seem very high but in Southern Europe it is only in the late twenties when most of the transitions to adulthood take place.[4]

Table A.1. in the Appendix shows the number of observations used in the analysis. Importantly note how poverty transitions can only be measured for the period between 1994 and 2000 (and 1996 to 2000 in the Finnish case). This is so because all the annual income variables are collected retrospectively in the ECHP. Thus interviews that took place during the first wave of the panel in 1994 asked about the incomes obtained in 1993. As we do not want to neglect this time bias (see Debels and Vandecasteele, 2005, 2008), we build net household income at t summing up the incomes of all individuals present in the household at $t-1$. This methodology leaves us with only seven waves to be used as we cannot build household income referred to 1993 because we do not know household compositions for that year.[5] Unfortunately this methodological decision makes a certain number of missing values to arise when one of

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[4] The European Commission proposed in the Laeken indicators aimed at the study of poverty and social exclusion the analysis of the age group between 16 and 24. We find this age bound too restrictive in the case of our analysis.

[5] Note also that our final poverty estimations refer only to the period 1995 to 2000 if we use the first lag of the explanatory variables and the period 1996 to 2000 if second lags are also introduced.

the household members attrit or does not inform about his/her income. Yet we preferred to correct the time bias and deal with attrition within our methodology (see below).

Finally, and as for the definitions of our main variables of interest, we considered poor each young person with household equivalent income below 60% of the median, being the threshold time and country specific. Also incomes are made equivalent by using the modified OECD equivalence scale that gives a weight of 1 to the first member in the household, 0.5 to the rest of adults and 0.3 to children below 14 years of age. Further, as normally set in poverty studies, we accept all individual incomes are pooled together and equally shared among members. Moreover, we define that an individual is employed if is normally working 15 or more hours per week according to a self-defined variable. Finally, we define as emancipated that young person that lives in a household where none of the registered members are his/her progenitors.

4. The relationship between youth poverty, employment and leaving home

Poverty and the time of leaving home

The relationship between poverty and the time of leaving home is analysed in Figure 1 which shows, for each country, youth poverty headcount during the four years before and after residential emancipation. In the figure, $t = 0$ (marked with a vertical line) is the last period we observe young individuals in the parental home. Note that the studied sample in this case is limited to those individuals that are yet living with their parents the first time they participate in the panel and we observe them leaving.

[FIGURE 1 AROUND HERE]

As already well documented in the literature, the most striking differences in the youth poverty rates before and after emancipation are found in Nordic countries while the least in the Mediterranean ones (see Aassve *et al.* 2005, 2006, 2007).

In Spain and Italy, the poverty risk keeps decreasing during the four years previous to leaving the parental home but it does so also during two or three years after emancipation. Young Mediterraneans remain in the parental home until they can economically guarantee themselves a smooth residential transition. The period prior to emancipation is taken by Italians and Spaniards as an opportunity to accumulate resources (savings, home ownership, human capital, etc.) that will assure a similar level of economic well-being while emancipated than the one enjoyed in their parental home.[6] Note however the increase in the risk of poverty of Italians few years after emancipation –mostly linked with childbearing as 58.8% of Italians would be in charge of at least one child in their fourth year out of the parental home while only 29.1% of Spaniards.

On the contrary, the poverty risk for Danish and Finnish youth it multiplies by 15 times between the year previous to emancipation and the first year outside the parental home. For instance, in Denmark, at $t = 0$, young individuals had a poverty risk

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[6] See Alessie *et al.* (2006) on the effects of cohabitation on household savings decisions in Italy and the Netherlands.

of 2.3% while once out of the parental home ($t=1$) it increases to 41.7%.[7] Nevertheless, there is also, in both countries, a clear and fast pattern of poverty risk decrease in the successive years after emancipation. Thus, for most youth, time in economic hardship does not last long.

The patterns of the poverty risk and the time of leaving home in Germany, France, UK and Ireland are somehow in between those observed for Mediterranean and Nordic countries. We can see a certain increase in the poverty risk when leaving parental home but it is smoother (especially in Ireland) than the one experienced by Danish and Finns.

For the analysis of the influence of poverty in the family of origin on the decision to leave parental home, we have computed emancipation rates separately for poor and non-poor youth (not shown). The same pattern emerges in all the analysed countries: youth emancipation rates are lower if the family of origin is in economic hardship, as already found by Cantó and Mercader (2001a) for the Spanish case.

Employment and leaving home decisions

Figure 2 shows the percentage of employed and residentially emancipated youth by age group in each of the analysed countries. Interestingly, for Spain and Italy, but also for Ireland, the percentage of young people employed is always above the percentage of residentially emancipated, pointing out to the fact that for the majority of young individuals employment takes place earlier than emancipation.[8] This finding goes hand in hand with the commented results about the relationship between poverty and the decision to leave the parental home: young delay their emancipation while accumulating enough human capital or economic resources until they feel prepared to leave.[9] A similar pattern is found in the United Kingdom and Germany among youngest youth.[10] Yet, emancipation and employment in both countries takes place in a more simultaneous fashion for *relatively* late leavers (25 or older).

[FIGURE 2 AROUND HERE]

In Northern Europe, instead, leaving home takes place much earlier and before entering the labour market, being the pattern especially clear in Finland. For the majority of Finns, and especially for those above 20, employment is not a necessary condition for emancipation. In Denmark, we observe the same pattern only for those 22 or older. The youngest group, between 16 and 21, leave home (approximately one year) after having acquired the first job. Youngest youth with less employability search their first job while enjoying the economic security of being in the parental home.

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[7] Notice how this descriptive analysis does not take into account the fact that home stayers and leavers may have different characteristics that make the latter more prompt to leave home and enter poverty. The econometric model we present in the next section does take into account possible selection effects.

[8] Kaplan-Meier estimates for residential emancipation and entrance to the labour market (not shown) illustrate that young Italians and Spaniards spend 2 to 3 years working before leaving parental home depending on the age group. In Ireland, it takes up to 4 years among those between 20 to 24 years of age. Note that Kaplan-Meier estimates are limited though to the first time young people are employed and among those initially living with their parents.

[9] Jurado Guerrero (2001) argues that in Spain not leaving parental home under precarious economic conditions might even be a social norm.

[10] Yet, the time between first job and leaving home is only around one year, shorter than for their Mediterranean counterparts.

Finally, in France, the percentage of youth that is employed is very similar to those residentially emancipated and survival analysis estimates prove both transitions take place simultaneously for many individuals. Jurado Guerrero (2001) argues that employment is less relevant for French youth chances of being residentially emancipated (especially for men) since market income is often combined with public benefits and family help.

Youth employment and poverty

In order to analyse the relationship between youth employment and poverty, we have computed the poverty risk of all individuals according to a household categorisation that takes into account the reference person age, his/her employment status, the presence of young individuals in the household and whether they have a job or not.[11] We strictly follow the idea developed by Cantó and Mercader (2001a).[12]

First columns of Table 1 show the poverty risk of individuals living in a household where the reference person is young. Unsurprisingly, the poverty risk is in mean around 5 times higher when the young individual is not employed than when is so. Employment proves once more to be a crucial protective factor against poverty.

[TABLE 1 AROUND HERE]

The effect of the presence of young people on the poverty of their household, shown in the rest of columns, very much depends on the employment status of youth. While nearly in every country the presence of not employed youth increases the chances of being poor, as opposed to households without young members, the poverty strongly decreases with youth employment, being the effect especially clear in households where the reference person is not employed. Notice nevertheless that even when this help-effect follows the same pattern in each of the analysed countries in terms of poverty reduction, it is much more common in Italy, Spain and Ireland.[13] Remaining in the parental home while preparing the emancipation does not only benefit the young individual but also his/her progenitors in what can be seen as a family win-win strategy.

5. An econometric model of feedback effects between poverty, employment and leaving home decisions

To study the described relationships between poverty, employment and leaving home decisions among European youth, we propose the estimation of a dynamic random-effects trivariate probit model that allows for feedback effects between the three processes. We have chosen this model because it allows us to deal with the unrealistic assumption that each of the processes have no influence in future values of the outcomes. The model allows estimating state dependence for each outcome and spill-over effects between the processes which assesses whether youth are confronted with a

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[11] The reference person in the ECHP is appointed by the household and it does not necessarily refer to the main income receiver but rather to the household head.

[12] See Cantó and Mercader (2001a), Table 9.5., p.227.

[13] For the Spanish case, Cantó and Mercader (2001b) have been amongst the first to describe a *help-effect* that works from youth to parents especially in households where the head is unemployed or inactive. Similarly, Iacovou and Davia (2006) observe how it is in Southern Europe where adult children are more likely to be economically supporting their parents. Further, Kluve (2002) finds that in Southern Europe parents' financial satisfaction decreases when their young children leave their home while the contrary is found in Northern Europe.

sequential process of decision making or not.[14] Furthermore, the model controls for initial conditions following Wooldridge (2005) and unobserved heterogeneity by allowing free correlation between unobservables affecting each of the outcomes. Thus, our estimates are based on a balanced panel.

A similar econometric strategy has been applied before in different poverty analysis.[15] Biewen (2008) is main reference to us. The author models poverty, employment and the decision to live with others amongst the adult population in Germany. Among other results, he finds that there is a considerable amount of genuine state dependence in the poverty status and that past poverty decreases the probability of employment in the future while has a positive effect on living alone (or household split). Yet, his model is limited by the use of a common individual specific error which restricts the cross-process unobserved correlation structure (Biewen, 2008, p. 13). In our case, we overcome this constraint by allowing random effects to be different in each equation and freely correlated.

Devicienti and Poggi (2007) assess how poverty and social exclusion interact at the individual level in Italy. Their results on feedback effects show how both processes are affected by an important degree of state dependence and also how both phenomena reinforce each other. Amuedo-Dorantes and Serrano-Padial (2006), on the other hand, examine the poverty implications of past and current temporary employment in Spain. They find that holding a temporary contract increases not only the probability of current poverty but also of future poverty via an indirect effect that increases the chances of holding a type of contract in the future with higher poverty risk.[16]

In what follows, we focus first on the model specification, we discuss next the inclusion of the different feedback effects and finally the main model advantages and drawbacks.

Model specification

Let's define P_{it} as the individual poverty status of young individuals (measured at the household level), E_{it} the employment status in the labour market and L_{it} the emancipation status. We assume that in period t individuals can be characterised by a latent poverty propensity p_{it}^*, a latent employment propensity e_{it}^* and an emancipation propensity l_{it}^* that take the form:

$$p_{it}^* = \beta_0 E_{it} + \beta_1 L_{it} + \beta_2 P_{it-1} + \beta_3 E_{it-1} + \beta_4 L_{it-1} + \beta_5 Z_{it}^{'} + c_i + u_{it} \qquad (1)$$

$$e_{it}^* = \qquad \alpha_0 L_{it} + \alpha_1 P_{it-1} + \alpha_2 E_{it-1} + \alpha_3 L_{it-1} + \alpha_4 S_{it}^{'} + h_i + \varepsilon_{it} \qquad (2)$$

$$l_{it}^* = \qquad\qquad \gamma_0 P_{it-1} + \gamma_1 E_{it-1} + \gamma_2 L_{it-1} + \gamma_3 V_{it}^{'} + g_i + \lambda_{it} \qquad (3)$$

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[14] Martínez-Granado and Ruiz-Castillo (2002) have modelled before the interelationship between leaving parental home, entering the labour market and pursuing studies in the Spanish case. Yet, they assume that the three decisions are taken at the same point in time which we find unrealistic. As shown, the completion of a process (e.g. employment) is for many individuals a necessary condition for entering another process (e.g. emancipation) in given contexts.

[15] Other applications not devoted to poverty analysis can be found in Alessie *et al.* (2004) that studies the dynamics of risky financial assets ownership or Stewart (2007) for the interrelationship between unemployment and low-pay in Britain.

[16] Interestingly, the equation that models work status and type of contract is run by means of a multinomial logit. Unfortunately, they do not take into account living arrangements and therefore some of their results are driven by this fact –e.g. they find that a temporary contract is not significant to explain poverty among young males, the reason being that most of them live in the parental home.

$$P_{it} = I(p_{it}^* > 0) \qquad\qquad (4)$$

$$E_{it} = I(e_{it}^* > 0) \qquad\qquad (5)$$

$$L_{it} = I(l_{it}^* > 0) \qquad\qquad (6)$$

where $i = 1, 2, ... N$ refers to young individuals and $t = 1, ... T$ are the number of periods under study.[17] $I(p_{it}^* > 0)$, $I(e_{it}^* > 0)$ and $I(l_{it}^* > 0)$ are binary indicator functions equal to one if the latent propensity in each case is positive and equal to zero otherwise. Further, $Z_{it}^{'}$ is the vector of independent variables assumed to be exogenous, $(\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \alpha_0, \alpha_1, \alpha_2, \alpha_3, \gamma_0, \gamma_1, \gamma_2)$ are the feedback effects we are interested in (see below) and $(\beta_5, \alpha_4, \gamma_3)$ the rest of parameters to be estimated. Also, $Z_{it}^{'}$, $S_{it}^{'}$, $V_{it}^{'}$ are the three vectors of exogenous explanatory variables.

Further, the error terms include each a white noise error that changes over time (u_{it}, ε_{it} and λ_{it}, respectively) assumed to follow a normal distribution with zero mean and unit variance, with a variance-covariance matrix named Σ and correlation called generally ρ. The error term comprises also an (additive) individual specific effect in each equation c_i, h_i and g_i assumed to be trivariate normal with a variance-covariance matrix defined as

$$\begin{pmatrix} \sigma_{c_i}^2 & & \\ \rho_{c_i,h_i} & \sigma_{h_i}^2 & \\ \rho_{c_i,g_i} & \rho_{h_i,g_i} & \sigma_{g_i}^2 \end{pmatrix}.$$

As already well established in the literature, the treatment of initial conditions is crucial in the estimation of dynamic panel data models as the one proposed in (1) to (3).[18] The problem of initial conditions arises because the start of the observation window may not be the same than the start of the outcome experience. Just as in Biewen (2004, 2008) and Devicenti and Poggi (2007), we have chosen to follow Wooldridge (2005) on the treatment of initial conditions. The author proposes to find the density of the dependent variables from $t = 1, ..., T$ conditional on the initial condition and the explanatory variables -instead of finding the density for the whole period $t = 0, 1, ..., T$ given the explanatory variables. This implies the need to specify the density of the unobserved specific effects conditional on the dependent variables at $t = 0$ and

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[17] Notice that the period under analysis in this specification starts at $t = 1$ and not at $t = 0$ because we use one lagged of the variables. In later specifications where we include also P_{t-2}, the period under analysis starts at $t = 2$. In the case of Finland, the period under study starts at $t = 3$ and $t = 4$, respectively because this country only joined the ECHP project in 1996, two waves later than most of the countries.

[18] See Hsiao (1986), Wooldridge (2005) and Chay and Hyslop (2000) for a review on the different strategies that have dealt with the initial conditions problem. Alessie *et al.* (2004) approach, for instance, would imply to estimate three separate static equations for each outcome in the initial period P_{i0}, E_{i0}, L_{i0} and allow free cross-equation correlations. We find their methodology computationally difficult if we take into account that we have three outcomes under study and overall we would need to estimate a sex-variate probit. Plus, and as recommended by Heckman (1981), initial conditions should be instrumented with background information which is very scarce in the case of the ECHP.

the explanatory variables. Formally, we can write the unobserved specific errors for equation (1)-(3) as follows,

$$c_i = a_0 + a_1 P_{i0} + a_2 E_{i0} + a_3 L_{i0} + a_4 \overline{z}_i + \kappa_{1i} \qquad (7)$$

$$h_i = b_0 + b_1 P_{i0} + b_2 E_{i0} + b_3 L_{i0} + b_4 \overline{s}_i + \kappa_{2i} \qquad (8)$$

$$g_i = f_0 + f_1 P_{i0} + f_2 E_{i0} + f_3 L_{i0} + f_4 \overline{v}_i + \kappa_{3i} \qquad (9)$$

The specification for the individual specific effects includes both the initial value of the three outcomes and time-averaged of some explanatory variables that we call $\overline{z}_i$, $\overline{s}_i$, $\overline{v}_i$. κ_{ji} has zero mean normal distribution and variance $\sigma^2_{\kappa_{ji}}$. Further, and following Biewen (2008) and Stewart (2007), we also add interactions between the initial condition and the time-average of some observed variables, $\overline{Z}_{it}$ (see the empirical results below) in order to allow for a correlation between the individual specific effects and the time-varying variables.[19] And, we have tested with linear combinations of regressors in all time periods which allows to relax the assumption that the random effects are independent of the time-varying regressors (see Chamberlain, 1984; Alessie *et al.*, 2004).

The joint density of the three outcomes $\{P_{i1}, P_{i2}, ..., P_{iT}; E_{i1}, E_{i2}, ..., E_{iT}; L_{i1}, L_{i2}, ..., L_{iT}\}$ given the exogenous variables, Z_{it}, S_{it}, V_{it}, the initial values P_{i0}, E_{i0}, L_{i0} and the individual specific effects can be written as,

$$f(P_{i1}, ..., P_{iT}, E_{i1}, ..., E_{iT}, L_{i1}, ..., L_{iT} \mid Z_i, P_{i0}, E_{i0}, L_{i0}, c_i, h_i, g_i, \beta, \alpha, \gamma) = \qquad (7)$$

$$= \prod_{t=1}^{T} f(P_{it} \mid Z_{it}, E_{it}, L_{it}, P_{it-1}, E_{it-1}, L_{it-1}, c_i, \beta) \cdot f(E_{it} \mid S_{it}, L_{it}, P_{it-1}, E_{it-1}, L_{it-1}, h_i, \alpha) \cdot$$

$$\cdot f(L_{it} \mid V_{it}, P_{it-1}, E_{it-1}, L_{it-1}, g_i, \gamma) =$$

$$= \prod_{t=1}^{T} \Phi\Big[(2P_{it}-1)\big(\beta_0 E_{it} + \beta_1 L_{it} + \beta_2 P_{it-1} + \beta_3 E_{it-1} + \beta_4 L_{it-1} + \beta_5 Z_{it} +$$

$$+ a_0 + a_1 P_{i0} + a_2 E_{i0} + a_3 L_{i0} + a_4 \overline{z}_i + \kappa_{1i}\big)\Big] \cdot$$

$$\cdot \Phi\Big[(2E_{it}-1)\big(\alpha_0 L_{it} + \alpha_1 P_{it-1} + \alpha_2 E_{it-1} + \alpha_3 L_{it-1} + \alpha_4 V_{it} + b_0 + b_1 P_{i0} + b_2 E_{i0} + b_3 L_{i0} + b_4 \overline{s}_i + \kappa_{2i}\big)\Big]$$

$$\cdot \Phi\Big[(2L_{it}-1)\big(\gamma_0 P_{it-1} + \gamma_1 E_{it-1} + \gamma_2 L_{it-1} + \gamma_3 Z_{it} + f_0 + f_1 P_{i0} + f_2 E_{i0} + f_3 L_{i0} + f_4 \overline{v}_i + \kappa_{3i}\big)\Big]$$

where Φ denotes the cumulative distribution function of a standard normal distribution. Consistent estimates of the model's parameters are obtained by Conditional Maximum Likelihood (CML) that is approximated numerically using Gauss-Hermite quadrature with 12 points, though we checked how results did not change when using 6 or 24 quadrature points.[20] It is worth noticing how the individual specific effects are

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[19] Stewart (2007) includes the average of all the model time-varying covariates except for feedback effects and year dummies. Wooldridge (2000) also underlines the importance of including interaction terms so that the model is saturated.

[20] The alternative is to use Maximum Simulated Likelihood (see Alessie *et al.* 2004: Devicenti and Poggi (2007)? or Contoyannis *et al.*,2004)

integrated out in order to get consistent estimates (as specified). See Wooldridge (2000, 2005).

Further, we name correlations as follows:

$$\rho_1 = \mathrm{cov}(\kappa_{1i}, \kappa_{2i}) = corr(u_{it}, \varepsilon_{it}) \tag{8}$$

$$\rho_2 = \mathrm{cov}(\kappa_{1i}, \kappa_{3i}) = corr(u_{it}, \lambda_{it}) \tag{9}$$

$$\rho_3 = \mathrm{cov}(\kappa_{2i}, \kappa_{3i}) = corr(\varepsilon_{it}, \lambda_{it}) \tag{10}$$

where ρ_1 summarises the association between unobservable individual factors determining poverty status and employment. If ρ_1 is positive (negative) it means that those individuals more likely to be poor are also more (less) likely to be employed. We expect ρ_1 to be negative. Furthermore, ρ_2 accounts for unobservable heterogeneity between poverty and leaving home. When positive (negative) it means that unobservables that make young people more likely to be poor make them more (less) likely to be emancipated. It is difficult in this case to foresee the sign for this correlation. And, finally, ρ_3 which relates unobserved heterogeneity between employment and emancipation is supposed to be positive as unobserved characteristics that make youth more likely to be employed should make them also more likely to be emancipated (e.g. intelligence, career driven, etc.).

Feedback effects

As for the feedback effects, in the poverty equation, we include as explanatory variables poverty status at $t-1$ (and at $t-2$, in a second specification) in order to capture the sign and the degree of "true state dependence" in the poverty status once observed and unobserved heterogeneity is controlled for. As argued by Weber (2002), Devicienti and Poggi (2007), if we would not consider unobserved heterogeneity, true state dependence would be overestimated,

We expect poverty genuine state dependence (denoted by lagged poverty status) to be positive everywhere but longer lasting in Mediterranean countries as opposed to Nordic ones. As shown in Figure 1, the risk of youth poverty is very high in Finland and Denmark during the first years out of the parental home however it does decrease steadily from the first year onwards. Thus, we wait for poverty initial condition being positive though not necessarily significant in the Nordic countries.

Further, the poverty equation includes as explanatory variable whether the individual has left the parental home or not. According to the descriptive statistics, we should not find great differences of the poverty risk among emancipated and non emancipated youth in Mediterranean countries while much more so in Nordic ones. Yet, lagged emancipation status should reflect the fact that poverty decreases at a fast rate for Finns and Danish. And, finally, employment and lagged employment is included in the equation from which we expect a negative sign everywhere (both for emancipated and non emancipated youth).

In terms of the employment equation, and following the sequential conditioning structure proposed in Biewen (2004), we include as explanatory variables lagged employment status, current and lagged emancipation status and lagged poverty status. [21]

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[21] In Biewen (2008) it is argued the need to replace the sequential conditioning scheme proposed in an earlier version of the paper by which outcome 3 enters as explanatory variable in equation 2 for a

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From lagged employment status we expect a positive sign in all the analysed countries as state dependence is significant in the labour market (see Arulampalam *et al.*, 2000; Stewart, 2007; Heckman, 1981b). Moreover, we count on a positive influence of emancipation status (current and lagged) on employment given a higher level of individual income is necessary to support oneself outside the parental home. Yet as shown in Figure 2, emancipation does not necessarily have any influence on the employment status of Scandinavian youth.

Less clear is, as yet, the influence of lagged poverty status on the influence of employment. On the one hand, amongst those living in the parental home, one may think that economic hardship may precipitate young individuals to enter the labour market in order to help his/her family. If that would be the case, we could anticipate a positive sign between lagged poverty and current employment. On the other hand, it is also well known that poverty is intergenerationally transmitted thus individuals from an economic deprived background have less opportunities in the labour market.[22] In this case, we can wait for a negative sign –possibly, less strong in Nordic countries where the intergenerational transmission of poverty is highly mediated by more egalitarian educational systems and policies (see, for instance, Jäntti *et al.*, 2006).

And, finally, as for the leaving home equation, we have included only lagged employment, emancipation and poverty statuses. Just like before we expect lagged employment to be positively related with emancipation –though not necessarily significant in Nordic countries where employment is not an inevitable condition for emancipation. Further, we expect a highly significant and positive sign for lagged emancipation status, as 'come-backs' to parental home are rare in the analysed countries.[23] And, finally, the influence of lagged poverty status on leaving home decisions is difficult to predict. In the descriptive analysis of Section 4 it was argued that economic hardship in the family of origin does not seem to precipitate leaving parental home. Yet, an explanation for it is difficult to disentangle. In those contexts where family ties are strong, young individuals may feel more responsible about their parental well-being and thus remain in the parental home to offer help and companionship. On the other hand, individuals from poorer background may not only have fewer opportunities in the labour market but also emancipation possibilities.

Notice that if $\beta_0 = \beta_1 = \alpha_0 = 0$, the recursive structure of the proposed model would not be necessary and we could estimate the three equations separately with three univariate random-effects dynamic models. If the mentioned coefficients would be different from zero but $\rho_1 = \rho_2 = \rho_3 = \rho = 0$, again we could estimate equations separately by assuming that the lagged values of each outcome used as explanatory variable is exogenous. Otherwise, joint estimation is necessary in order to obtain consistent estimates, as argued.

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bivariate probit scheme where outcome 2 and 3 do not enter as explanatory variables in equations 3 and 2, respectively, and thus, both outcomes are treated symmetrically. We have chosen to include L_{it} in the employment equation because we are interested on the effect of leaving home in labour market decisions. However, we check that the rest of the results did not change much when we did model a symmetric structure. Moreover, note that in any case, we are not modelling a fully simultaneous model thus the consistency of our estimates is guaranteed.

[22] See, for instance, Hobcraft and Kiernan (2003) and Kiernan (1992).

[23] We were concerned about the possible difficulties arising from estimating a probit model with unobserved heterogeneity for leaving home given the small variability in the data. However, the inclusion of the lagged variable assured that estimates did not change much even when increasing importantly the number of quadrature points.

Model advantages and drawbacks

One of the main advantages of this dynamic model is that it allows estimating state dependence while distinguishing between genuine state dependence in each poverty, employment and emancipation status ($\beta_2, \alpha_2, \gamma_2$, respectively) and unobserved heterogeneity related to each outcome (c_i, χ_i and μ_i). Poverty genuine state dependence occurs because poverty in a given year may in itself increase the probability of being poor next year. Unobserved heterogeneity would explain persistence in a given status because those characteristics that make someone poor exhibit persistence over time. Further, the model estimates spill-over effects by separating genuine state dependence between outcomes ($\beta_0, \beta_1, \beta_3, \beta_4, \alpha_0, \alpha_1, \alpha_3, \gamma_0, \gamma_1$) from correlated unobserved heterogeneity (ρ_1, ρ_2, ρ_3).

Note the importance for policy design of distinguishing between effects (such as poverty genuine state dependence or employment status on the likelihood to be poor) from observed and unobserved heterogeneity. Both phenomena can explain why an individual is consecutively poor but, as pointed out by Devicienti and Poggi (2007), if state dependence exists and it is positive, policies aimed at fighting youth poverty today are effective in reducing poverty tomorrow. Also, improving the chances of young people in the labour market will have spill over effects on the reduction of youth poverty. Instead, if poverty is mainly due to unobserved heterogeneity it will be very hard for social policy to tackle it.

Another important advantage of the model is that it allows attrition to depend on the initial conditions in an arbitrary way. The MLE allows a different attrition probability depending on the initial value of each of the outcomes. Thus, attrition is taken into account without need to explicitly model it.[24]

As argued by Biewen (2004, 2008), not allowing for serial correlation in the white noise error terms is a limitation of this kind of model but it would be exceedingly difficult to estimate it given the multiple equations structure of the current model. However, it opens an interesting avenue for future research.[25] Further, the model does not include a great deal of explanatory variables given we are most interested on the feedback effects and the state dependence estimates rather than in a full parsimonious fit of each outcome.

6. Empirical results

Poverty

First rows of Table 2 and 3 show the results of the poverty equation for the analysed countries. As expected, poverty status at $t-1$ is positive and highly significant which proves the existence of a positive genuine state dependence. As already established in the literature among the adult population, being poor today increases in *itself* the chances of being poor tomorrow also for young people. However, specification 2 of the model, that includes second lags, also shows that poverty status at $t-2$ is not

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[24] See Cappellari and Jenkins (2002, 2004) for a methodology on poverty transitions that explicitly models sample retention.
[25] See Hyslop (1999) for an analysis of labour force participation of married women with a random-effects dynamic model that accounts for initial conditions, unobserved heterogeneity and also autocorrelation in the transitory error component or Contoyannis *et al.* (2004) in a study of individual health using similar techniques.

significant in Nordic countries any longer while it is so in Mediterranean ones. Danish and Finnish individuals do face problems of economic hardship during their youth however results show it is a situation of very temporary nature. Instead, Spaniards and Italians at risk of poverty in a given moment of time seem to face more difficulties to escape from this situation as shown by the significance of second lags. Further, notice also the significance of the initial condition poverty status for all the analysed countries. Yet, it is again in Italy, Spain and also Germany where the coefficients are higher pointing out at higher persistence in the poverty status.

[TABLE 2 & 3 AROUND HERE]

Results also show how being outside the parental home is strongly associated with poverty in Finland and Denmark, but also in the rest of the countries except for the Mediterranean ones. Notice however how the sign reverses and becomes negative for those that have been away from the parental home at least for two years -which again underlines the temporality of economic hardship lived by Finns and Danish, but also Germans and French.[26] In Spain and Italy, we do not find evidence of differences statistically significant between the poverty risk of leavers and stayers (see Mendola *et al.* for a similar result). As argued, Mediterranean youth do not leave parental home until they can guarantee themselves a sufficient standard of living.[27]

As for the labour market, unsurprisingly, we find current and lagged employment to be significant and negatively related with the poverty status. Note also how employment at $t = 0$ is not significant in most of the countries thus the spill-over effects of past employment on current poverty seem limited in terms of time as most of the coefficients are not precisely estimated -the exceptions being Italy and Finland where we find that those initially employed have greater chances of being currently poor and Denmark, the other way round.

The rest of variables that control for age, sex and time are not precisely estimated in most of the countries –except for age in Spain.

Employment

As for the results in the employment equation, the only common coefficient being significant across all countries is the one capturing state dependence in the employment status which is positive and significant, as expected. On the other hand, current emancipation status is significant everywhere but in Denmark, Finland and United Kingdom. In Continental and Mediterranean Europe the association between emancipation and employment is strong: when individuals cannot count of the support of welfare policies, as they do in Nordic countries, they face stronger incentives to seek employment. Surprisingly, though, the coefficient for lagged emancipation status on employment is negative in Spain, Italy, Germany and France. Separate regressions by gender (available from the authors upon request) show that these results are driven by

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[26] In Aassve *et al.* (2007) it is argued that Nordic youth perceive that the time in economic hardship will be short given the dynamism of youth labour markets and the generosity of the welfare states and thus emancipation is the result of a rational decision.

[27] It is also true that young people in Mediterranean countries mostly leave parental home to live with a partner, thus, benefiting from economies of scale. Notice also how the sign of leaving home initial condition is positive and significant only in Spain probably pointing out at the difficulties encountered by those that left parental home in their early youth. As noted by Parisi (2008), the later youth leave parental home the less likely are to enter poverty when they do leave.

females who are less likely to be employed once they have been emancipated at least for two years and may be engaged in childbearing.

As for the influence of lagged poverty on employment, we were not sure whether to expect a positive sign –indicating that young individuals precipitate to the labour market to help their families out of economic hardship– or a negative one –pointing out a certain degree of intergenerational poverty transmission. Our results show that the effect of poverty being transmitted across generations dominates and takes the form of lesser opportunities in the labour market. However, notice how the coefficient is not significant in Finland and less precisely estimated in Denmark conforming to the well-known fact that the transmission of poverty across generations is less important in these countries.

Finally, girls are less likely to be employed in all the countries and age follows the usual inverted U-shape –though not significant everywhere.

Emancipation

As expected, having left the parental home is positive and one of the most significant coefficients across equations. Young people that decide to leave the parental home are only in rare occasions coming back to it. Lagged employment status is positive in Mediterranean and Continental Europe indicating that employment is a prerequisite to emancipation, especially for men. A second specification with second lags for employment status prove that certain stability in the labour market is important in the decision to leave the parental home in given contexts.

Finally, and in relation to lagged poverty status, interestingly, the coefficient is negative and significant only in France while not precisely estimated in strong family ties countries as Spain or Italy.[28] That is, economic hardship in the family of origin does not delay neither enhance residential emancipation once other factors are controlled for.[29] Age is a strong determinant of leaving home decisions (except in Denmark) while girls are more likely to leave parental home than boys –as already well established in the literature.

7. Conclusions

This paper has studied the dynamics of youth poverty in eight European countries using data from the European Community Household Panel. Our main objective has been to disentangle 'true state dependence' in the poverty status from observed and unobserved characteristics.

To explore the dynamic nature of youth poverty, we have used a dynamic trivariate probit model with random effects that controls for unobserved heterogeneity and initial conditions while considers the possible endogeneity with employment and residential emancipation from the parental home.

A considerable amount of 'true state dependence' in the poverty status is found Also, we have found evidence of important spill-over effects

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[28] Parisi (2008) finds a negative association between family poverty at t and leaving home at $t+1$ for a pooled regression for all Southern Europe countries available at the ECHP. However, interaction terms with country show that coefficients are not precisely estimated for Spain.

[29] See Cantó and Mercader (2001b) for a similar result in the Spanish case.

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Figure 1. Youth poverty rate and the time of leaving home
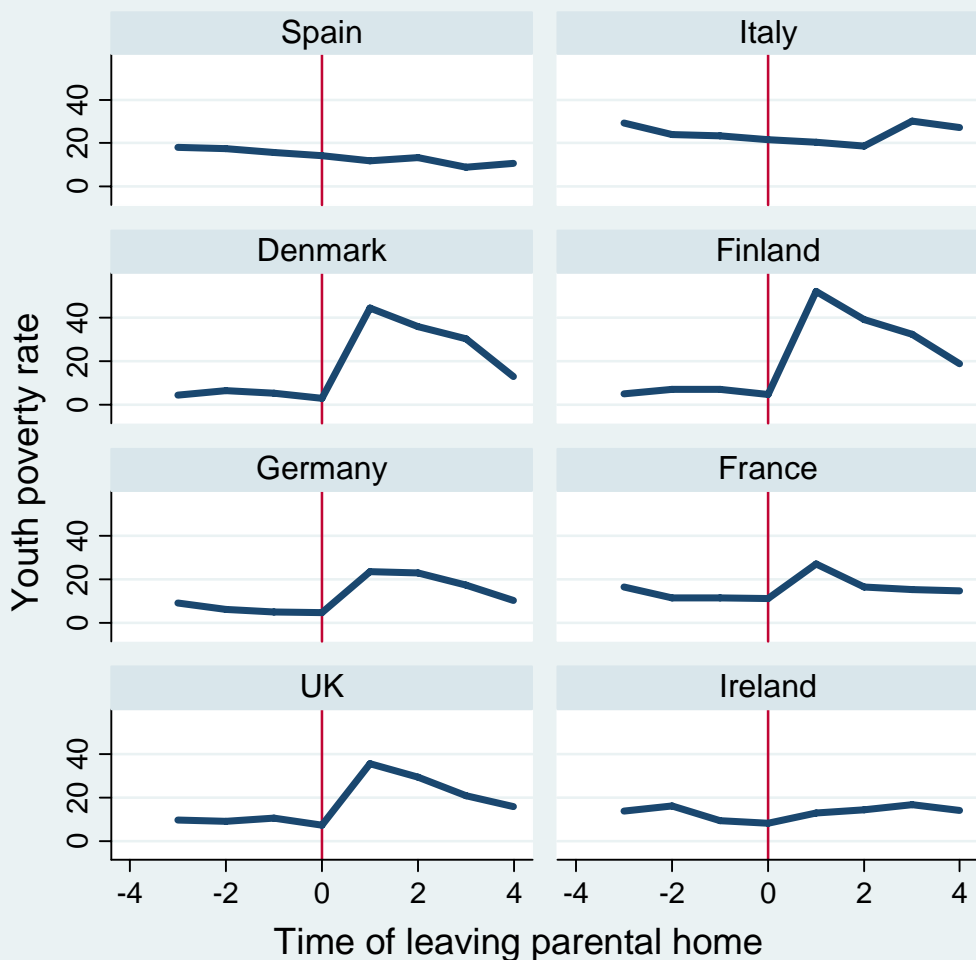
Source: Own calculations on the ECHP, 1994-2001.

Figure 2. % of employed and residentially emancipated youth by age group

Source: Own calculations on the ECHP, 1994-2001.

Table 1. Mean poverty rate by household type, 1994-2000.

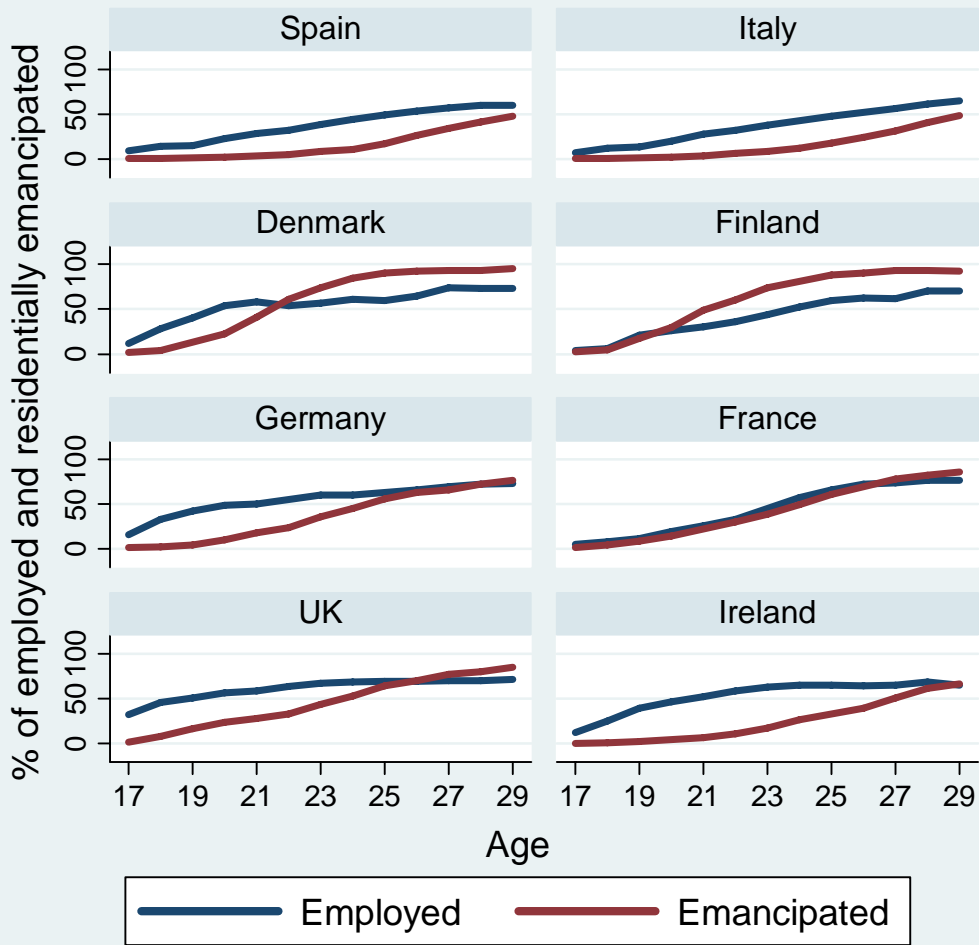|	All household types	Young reference person		Adult or elderly reference person					
				Reference person works			Reference person does not work		
					Some youth in household			Some youth in household	
		Works	Not at work	No youth	No youth employed	Some youth employed	No youth	No youth employed	Some youth employed
Spain	18.9	11.7 [11.0]	41.9 [3.2]	14.6 [28.0]	20.7 [16.1]	8.8 [16.9]	28.3 [16.6]	42.5 [5.1]	16.9 [3.2]
Italy	18.9	17.2 [5.8]	43.8 [1.1]	12.6 [26.0]	27.2 [16.2]	11.4 [12.8]	19.1 [21.3]	42.0 [6.6]	13.5 [10.3]
Denmark	9.8	4.5 [14.4]	29.8 [4.7]	2.5 [37.7]	5.6 [8.3]	2.4 [9.1]	26.0 [22.7]	19.6 [1.6]	4.4 [1.5]
Finland[30]	10.0	5.9 [12.5]	43.7 [3.9]	5.2 [41.5]	4.5 [10.7]	2.3 [6.3]	19.2 [22.0]	23.7 [2.0]	4.6 [1.0]
Germany	11.7	7.0 [9.5]	32.2 [3.5]	6.8 [31.3]	6.6 [7.9]	2.9 [10.2]	20.3 [28.3]	31.3 [3.8]	6.7 [5.5]
France	14.6	10.3 [12.1]	54.4 [2.2]	8.6 [32.1]	14.2 [12.9]	6.6 [9.3]	21.6 [24.5]	38.1 [3.5]	15.9 [3.4]
UK	17.0	10.3 [8.6]	55.4 [4.8]	6.6 [30.3]	13.1 [5.0]	2.9 [9.7]	28.3 [33.3]	46.8 [3.9]	11.9 [4.3]
Ireland	19.0	8.3 [7.8]	67.2 [3.3]	8.8 [27.2]	14.5 [9.5]	3.9 [15.5]	43.5 [18.2]	45.4 [7.8]	6.8 [10.7]

Source: Own calculation on the ECHP, 1994-2001. Youth refers to individuals between 16 and 29 years of age. This table follows the idea from Table 9.5. (p. 227) in Cantó and Mercader (2001a). Weighted results.

[30] Mean poverty rate does not include wave 4 as the information on the reference person is missing. Therefore, in the Finnish case, poverty rates refer to the period 1996-2000 except for 1997.

Table 2. Mean youth poverty rate and poverty dynamics rates by country, 1994-2000.

	Mean poverty rate	Poverty dynamics rates		
		Entry	Persistence	Exit
Spain	16.48	8.04	55.34	44.66
Italy	21.80	8.20	66.74	33.26
Denmark	10.76	6.08	50.64	49.36
Finland	13.45	7.16	56.30	43.70
Germany	10.39	4.45	55.80	44.20
France	14.79	6.21	59.75	40.25
UK	15.75	5.60	65.61	34.39
Ireland	13.22	5.48	63.09	36.91

Source: Own calculations on the ECHP, 1994-2001. In the case of Finland, the reference period is 1996-2000. Weighted results.

Variables list:
atwork: employed
left: emancipated
poorlag: lagged poverty status
atworkl: lagged employment status
leftl: lagged emancipation status
poor0: poverty initial condition
atwork0: employment initial condition
left0: emancipation initial condition
age, age2: age and age^2
meanage, meana2: mean average across individual
sex: girl
w3, w4,…: wave
eps1, eps2: standard deviation of random effect
rho12: correlation between unobservables of eq 1 and 2

(all include regional dummies except Denmark)

	spain4		italy4		denmark4		finland4	
Poverty equation								
_cons	-2.7660	**	-1.3621		-0.2684		0.0922	
atwork	-0.4908	***	-0.4981	***	-0.6001	***	-0.8537	***
left	0.0335		0.0200		2.2484	***	2.4637	***
poorlag	0.5936	***	0.7018	***	0.9180	***	1.0691	***
atworkl	-0.1609	***	-0.1979	***	-0.0787		-0.3087	***
leftl	-0.0272		0.1748	*	-0.9289	***	-1.0735	***
poor0	1.1016	***	1.1430	***	0.4586	***	0.9413	***
atwork0	0.0265		0.1823	**	-0.3908	***	0.2755	*
left0	0.5290	***	-0.0351		-0.1510		-0.2408	
age	-0.2745	***	-0.0991		0.0130		0.3250	
age2	0.0046	***	0.0013		-0.0006		-0.0061	
meanage	0.3872	***	0.0704		-0.0823		-0.4636	
meana2	-0.0073	***	-0.0010		0.0003		0.0072	
sex	0.0028		-0.0323		-0.1380		-0.0387	
w3	0.0764		-0.0942	**	0.0538			
w4	0.0286		-0.0543		0.0872			
w5	0.0522		-0.0029		-0.0179		0.0684	
w6	-0.0347		-0.1326	**	0.1944		0.1170	
Employment equation								
_cons	-8.8588	***	-3.8298	***	-5.8163	**	-6.5367	***
left	0.3754	***	0.3166	***	-0.0680		0.0210	
poorlag	-0.2283	***	-0.2709	***	-0.3106	**	-0.1597	
atworkl	1.1809	***	2.0180	***	1.2350	***	1.0923	***
leftl	-0.5965	***	-0.2643	***	-0.1864		0.1464	
age	0.6113	***	0.3556	***	0.1952		0.7173	***
age2	-0.0087	***	-0.0051	***	-0.0012		-0.0105	***
meanage	-0.0362		-0.1610	*	0.1878		-0.3103	*
meana2	-0.0003		0.0027	*	-0.0043		0.0045	
sex	-0.5937	***	-0.4401	***	-0.4177	***	-0.3313	***
w3	-0.1549	***	-0.0194		-0.0771			
w4	-0.0863	*	-0.0800	*	0.2213	**		
w5	-0.0246		0.0673		-0.0555		0.1576	**
w6	-0.0627		-0.0519		-0.0037		0.0981	
Leaving home equation								
_cons	-14.5431	***	-12.1739	***	-45.3710	**	-17.9974	***
poorlag	-0.0644		-0.1237		-0.4037		-0.2742	
atworkl	0.1966	**	0.2799	***	0.0368		0.1133	
leftl	4.1071	***	4.1702	***	5.3453	***	4.0857	***
age	0.8279	***	0.8592	***	1.8506		1.6766	***
age2	-0.0139	***	-0.0133	***	-0.0285		-0.0306	***
meanage	0.0087		-0.2328		1.7471	**	-0.3108	
meana2	0.0002		0.0041		-0.0419	***	0.0035	
sex	0.2160	***	0.3671	***	0.5507		0.3559	**
w3	0.0253		0.1724	**	0.2649			
w4	0.0384		0.0660		0.3721			
w5	0.0092		0.3017	***	0.5891		0.4456	***
w6	0.1145		-0.0046		-0.1201		0.1572	
eps1	0.7504	***	0.7874	***	0.4241	***	0.4795	***
eps2	0.7320	***	0.2801	***	0.3987	***	0.4255	***
eps3	0.4417	***	0.6105	***	0.9927	*	0.4231	
rho12	0.0605		0.0633		-0.6012		-0.1129	
rho13	0.3222	**	0.0782		0.3759		0.2332	
rho23	0.5208	***	0.5705	***	0.4412		0.1750	
ln-L	-11076.78		-12281.53		-1859.81		-3153.28	

NOTE: Standard errors suppressed;
       Significance: '*'=10%;   '**'=5%;   '***'=1%.

	germany4	france4	uk4

Poverty equation

	germany4	france4	uk4
_cons	-2.4704	0.5269	-0.0808
atwork	-0.5678 ***	-0.9594 ***	-0.6354 ***
left	1.2266 ***	1.1573 ***	1.0467 ***
poorlag	0.9033 ***	1.0318 ***	1.0793 ***
atworkl	-0.0269	-0.4043 ***	-0.4099 ***
leftl	-0.6195 ***	-0.6890 ***	-0.2525
poor0	1.1158 ***	0.8235 ***	0.9236 ***
atwork0	-0.0980	0.1170	-0.1222
left0	0.0042	-0.0309	0.0177
age	0.0151	-0.1576	-0.1483
age2	-0.0010	0.0031	0.0025
meanage	0.1000	-0.0183	-0.0007
meana2	-0.0027	0.0003	0.0000
sex	-0.0826	-0.0886	-0.1976 **
w3	-0.1247	-0.0326	0.1671
w4	-0.0237	0.1164	0.2684 **
w5	-0.1700 *	0.0244	-0.0015
w6	-0.1719 *	0.0670	0.2292 **

Employment equation

	germany4	france4	uk4
_cons	-1.7260 *	-8.9950 ***	-1.3611
left	0.5757 ***	0.6249 ***	-0.0334
poorlag	-0.2842 ***	-0.2318 ***	-0.3393 ***
atworkl	1.5156 ***	1.8592 ***	1.6404 ***
leftl	-0.3470 ***	-0.4370 ***	-0.0770
age	0.1057	0.6192 ***	0.1501
age2	-0.0017	-0.0108 ***	-0.0026
meanage	-0.0136	-0.0377	-0.0410
meana2	0.0005	0.0013	0.0008
sex	-0.4519 ***	-0.4694 ***	-0.6213 ***
w3	-0.0786	-0.1161 *	0.0867
w4	-0.1036 *	-0.2326 ***	0.0108
w5	-0.1265 **	0.0005	-0.0003
w6	0.0094	-0.0527	0.1303

Leaving home equation

	germany4	france4	uk4
_cons	-12.1362 ***	-12.0109 ***	-9.7222 ***
poorlag	-0.1483	-0.3379 **	0.2586
atworkl	0.3102 ***	0.3936 ***	0.0577
leftl	4.4137 ***	3.7772 ***	3.4919 ***
age	0.8710 ***	0.7948 ***	0.4306 **
age2	-0.0142 ***	-0.0133 ***	-0.0075 **
meanage	-0.1463	-0.0192	0.1780
meana2	0.0021	-0.0008	-0.0031
sex	0.4827 ***	0.3923 ***	0.2363 **
w3	0.0654	0.1643 *	-0.1319
w4	-0.1667	0.1284	-0.1162
w5	0.0821	0.1233	0.1218
w6	0.0324	0.0868	-0.0253
eps1	0.7891 ***	0.6582 ***	0.6381 ***
eps2	0.5397 ***	0.4251 ***	0.4369 ***
eps3	0.7048 ***	0.3895 **	0.3374 *
rho12	-0.2424 **	0.1865	-0.3907 **
rho13	0.2350	0.3177	0.4205
rho23	-0.2498 *	-0.0197	0.0000
ln-L	-7111.26	-5411.60	-3979.88

NOTE: Standard errors suppressed;
Significance: '*'=10%; '**'=5%;   '***'=1%.