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# How and Why the Dynamics of Poverty Differ Across European Countries

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# How and why the dynamics of poverty differ across European countries

by Damioli Giacomo*

## Abstract

In a duration analysis framework, I develop a method in the spirit of the popular Oaxaca-Blinder decomposition that allows disentangling the cross-country differences in measures of poverty dynamics in the contribution due to differences in the distribution of characteristics and the contribution due to differences in the poverty dynamics generating process. I illustrate this with the comparison of ten European countries in the second half of the 1990s. Despite remarkable differences in the composition of the working-age population, the results of the analysis show that cross-country variation in poverty dynamics measures is mainly determined by differences in the poverty dynamics generating process rather than by the heterogeneity in population composition. Since the age of the household head and household living arrangements show the most varied effects among the explanatory variables, the results of the paper point out family related policies as one of the main driver of poverty dynamics heterogeneity.

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## 1. Introduction

The study of poverty flow patterns, transitions and persistence, or in a single word poverty dynamics, is receiving increasing attention from applied economists and policy makers. On one hand, since the seminal paper by Bane and Ellwood (1986), a large group of studies show how a longitudinal perspective complements and enriches the understanding of the poverty phenomenon and of its correlates. Empirical evidence highlighted that, while a majority of experiences of poverty are short-lived, a minority of the poor are living in long-term poverty through long poverty spells or nearly repeated poverty and non-poverty spells. On the other hand, policy makers are giving more emphasis to dynamic perspectives. This attitude spread from US to elsewhere and is founded on the idea that dynamic analysis is helpful to unravel causes of social phenomenon while static one to describe their symptoms.[1]

The aim of this paper is to disentangle the determinants of cross-national differences in dynamics of income poverty across European countries. In a duration analysis framework, I develop a method that allows decomposing the cross-country differences in measures of poverty dynamics in the contribution due to differences in the distribution of characteristics of the population and the contribution due to differences in the poverty dynamics generating process.

The method, which is an application of the decomposition proposed by DiNardo et al. (1996) in the spirit of the popular Oaxaca-Blinder decomposition, is based on simple counterfactuals such as "how long would poverty (or non poverty) spells, with the composition of the population of country A, have lasted in country B?" Biewen and Jenkins (2005), using parametric models of the income distribution, proposed a similar method to decompose the differences in the poverty rates of Britain, Germany and the US in differences in the underlying distribution of poverty-relevant characteristics and differences in the incidence of poverty conditional on these characteristics. The methodological contribution of the present analysis is to extend the decomposition, in a tractable way, to hazard rate models-based measures of poverty dynamics.

Previous poverty dynamics comparisons typically estimated different models for every country, as for instance Valletta (2006), and assessed national differences

[1] See, among others, Ellwood (1998) about the policy-makers attitudes towards poverty with an eye to the US debate.

through the variation in the magnitudes of the point-estimates, while differences in the distribution of characteristics typically are not incorporated in the analysis. Other studies (e.g., Fouarge and Layte, 2005, and Callens and Croux, 2008) pooled countries together assuming a common poverty generating process, and modeled cross-country heterogeneity as country-specific intercept shifts.

Differently, I allow for differences in the distribution of characteristics and, by specifying separate identical exit and re-entry hazard models for each country, for differences in the effects of characteristics that have typically been shown to affect relative income poverty, such as the educational qualification of the household head, the household labour market attachment and the living arrangement. The approach is substantially relevant to the comparison of the ten European countries covered in the analysis, given the heterogeneity of their institutional settings and composition of the population characteristics.[2]

The interest on low income individuals, especially those who spend long periods of time in poverty, is because they absorb a relevant share of public funds and have a relatively high chance of falling below a socially acceptable economic wellbeing. Understanding the relationships between the conditional poverty dynamics generating process and distribution characteristics is essential to understand the factors giving rise to cross-national differences in time spent in poverty. Poverty spells may last more in country A than in country B either because country A's population has characteristics that make individuals more prone to longer poverty experiences (for instance, there is a large proportion of low educated individuals) or because country A's conditional poverty dynamics generating process is more adverse (for instance, being low educated has a stronger effect on poverty exits and re-entries) than in country B.

The reminder of the paper is organised as it follows. Section 2 describes the institutional framework in the countries covered in the analysis and overviews the related literature. Section 3 presents the methods, i.e. the hazard models and the decomposition of cross-national differences in of poverty dynamics measures. Section 4 presents the ECHP dataset, the definitions of income poverty and the construction of the dataset for the survival analysis. Results are shown and discussed in Section 5. A summary and the conclusions are provided in Section 7.

[2] They are Belgium, Britain, Denmark, Germany Greece, Ireland, Italy, The Netherlands, Portugal and Spain.

## 2. Background

### 2.1 The institutional framework

The institutional system is a potentially important determinant of cross-country variation of available incomes and poverty dynamics. Since the influential work by Esping-Andersen (1990), many social scientists made use of a welfare regime typology distinguishing between social democratic, corporatist and liberal regime types. The typology was extended for Europe to include a Southern regime type by Ferrera (1996). The current analysis uses this established classification as an intuitive unified framework to interpret the empirical evidence. The description of the typology is based on Bertola et al. (2000) and Lohmann and Marx (2008).

The universal provision of generous public transfers is a key feature of social democratic welfare states, such as Denmark, which offer benefits to individuals as citizenship rights and require a high burden of taxation. The labour market is relatively flexible. The introduction of active labour market policies in the 1990s gave rise to a system often referred as flexicurity, since it combines flexibility (numerical flexibility in particular, i.e. liberal hiring and firing rules) and security (i.e., high benefit levels).

Corporatist welfare regimes, such as those in Belgium, Germany and The Netherlands, are mainly based on insurance programs that cover the risk of income loss due to unemployment, disability, or sickness. Benefits are typically generous, while entitlement tends to be conditioned to previous social security contributions, so that these schemes are mostly targeted towards individuals with a history of employment. Active labour market policies are less developed than in social democratic countries. Employment protection is more stringent than in Denmark, wage determination is centralised and minimum wages (or contractual minima in Germany) are high.

The liberal or Anglo-Saxon welfare type, which Ireland and the UK belong to, is characterised by means-tested assistance, which often provides less generous transfers than in other regimes, and modest universal transfers. This system requires lower income taxes and social security contributions compared to the universal and the conservative welfare regimes. The labour market is flexible and wages determination is generally decentralised, under the belief that markets guarantee equality.

The southern European welfare type, such as the systems in Greece, Italy, Portugal and Spain, has piecemeal benefit system that relies on family ties rather than

on social insurance. It shares with the liberal type the general absence of active labour market policies, while it has the strictest employment protection legislation.

The key advantage of the augmented Esping-Andersen (augEA) typology is simplifying the comparison of complicated regulations and social security schemes. Nevertheless, a simple classification does not capture all relevant institutional differences. Table 1 compares the composition, distinguishing by poverty status, of household equivalent disposable income and public transfers across the countries covered in the analysis. It also reports the share of each different type of public transfer, as classified in the ECHP. The emerging evidence, combined with the overview of the main features of social security systems by Pellizzari (2004), contextualises the augEA typology and provides a first idea on the correlation between disposable income and institutions.

A first clear indication is that labour income is by far the most relevant income source of working-age adults, accounting for about 80% of the equivalent income of individuals living in non-poor households in all countries. For individuals living in poor households, the share of labour incomes over equivalent income accounts for about 50% in average, but differs substantially across countries.

Strikingly, in all southern countries labour income is the most relevant income source for the poor, accounting for much higher shares than in all other countries. The evidence indicates a particular relevance of the "working poor" phenomenon in southern countries. Conversely, the incomes of the poor in southern countries have the lowest shares from public transfers, which are constituted mainly of old age pensions. Low public transfers are explained with the low coverage of social protection schemes and the modest levels of benefits. The relative importance of pensions, particularly marked in Greece and Italy, is in line with a "clientelar" use of public resources to redistribute income that relies on informal family networks for guaranteeing a minimum level of social assistance.[3]

Moving to the specific sources of equivalent public transfers among the poor working-age population, unemployment related benefits account for the largest share in the corporatist countries, Ireland and Spain.[4] While for the corporatist countries and

[3] Empirical evidence on the substitution of public with private support in southern European countries is documented for the case of unemployment shocks by Bentolilla and Ichino (2006).

[4] All countries have an unemployment insurance scheme that entitles workers who have paid enough contributions to receive compensation if they become unemployed. Germany, the Netherlands, Portugal, Spain and the liberal countries have also unemployment assistance schemes that provide

Spain the result is in line with high unemployment rates, the evidence is surprising for Ireland, which has been characterised by relatively low unemployment rates. However, this might be the result of the extremely low share of labour incomes in overall disposable income for the poor, suggesting that labour market attachment is particularly relevant to avoid poverty in Ireland. Furthermore, it has to be stressed that respondents might have misclassified public transfers in the wrong ECHP category. As an example, the positive income shares of social assistance are not realistic in Greece and Italy, as these countries do not provide a general social assistance scheme.

That being said, family related allowances play a major role for the poor in Britain and, to a less extent in Ireland and the corporatist countries. Apart than in southern countries (and in Germany before 1997), family allowances are paid to any household with children, regardless of their income, until the child reaches a certain age and their amount varies according to the child's age and the number of children and parents in the household. Family allowances account for about 20% of public transfers to the poor in all countries.

Educational benefits account for a relevant share of public transfers only in the social democratic countries, and in Denmark in particular, perhaps providing evidence for the relevant role played by active labour market policies. Disability benefits, which typically pay a benefit to individuals whose capacity to work is hampered by some sort of invalidity, account between 10% and 20% of the public transfers received by the poor in all countries.

Housing benefits account for a relevant share of public transfers in Britain. However, the provision of housing benefits is much varied. Some countries provide a means-tested benefit (Britain, Germany, the Netherlands and some regions in Spain); others provide specific housing supplements for those on low-income benefits (Ireland and Portugal). Denmark has both. Belgium and Italy provide public housing for low income families, while Greece offers a tax allowance for house rents.

typically lower amounts to individuals who have not paid enough contributions or have exhausted their entitlement. ECHP does not provide separate information on unemployment insurance and assistance.

**Table 1. Sources' shares of equivalised disposable income of working-age adults in EU countries, 1994-2000**

| | Composition (%) of equivalised net income | | | Composition (%) of equivalent public transfers | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Labour incomes[a] | Public transfers | Other incomes[b] | Unemployment related benefits | Pensions[c] | Family related allowances | Invalidity benefits | Educational benefits | Other benefits | Social assistance | Housing allowances |
| | | | | | *Non-poor individuals* | | | | | | |
| Belgium | 78.2 | 15.8 | 6.0 | 16.5 | 37.2 | 28.3 | 15.4 | 0.7 | 1.4 | 0.5 | 0.1 |
| Britain | 84.8 | 10.4 | 4.8 | 2.3 | 40.3 | 20.2 | 21.7 | 2.6 | 5.2 | 0.0 | 7.8 |
| Denmark | 82.7 | 15.2 | 2.2 | 26.3 | 15.8 | 22.3 | 19.0 | 7.0 | 2.4 | 4.8 | 2.4 |
| Germany | 81.8 | 13.9 | 4.3 | 19.2 | 45.6 | 20.4 | 12.6 | 1.1 | 0.0 | 0.6 | 0.5 |
| Greece | 80.8 | 13.2 | 6.0 | 2.4 | 88.3 | 2.3 | 5.0 | 0.2 | 0.9 | 0.6 | 0.3 |
| Ireland | 87.9 | 10.3 | 1.8 | 27.4 | 26.3 | 26.0 | 13.9 | 3.9 | 1.0 | 0.6 | 0.9 |
| Italy | 81.4 | 14.8 | 3.8 | 5.0 | 84.2 | 2.3 | 7.1 | 0.6 | 0.3 | 0.2 | 0.3 |
| Netherlands | 84.1 | 13.9 | 2.0 | 14.8 | 27.1 | 15.5 | 32.8 | 2.9 | 0.0 | 5.6 | 1.3 |
| Portugal | 84.7 | 13.2 | 2.1 | 12.6 | 61.0 | 9.5 | 13.4 | 1.5 | 1.2 | 0.5 | 0.3 |
| Spain | 84.5 | 12.3 | 3.1 | 19.9 | 53.5 | 1.1 | 23.0 | 0.0 | 1.9 | 0.2 | 0.4 |
| | | | | | *Poor individuals* | | | | | | |
| Belgium | 36.3 | 60.2 | 3.5 | 38.8 | 18.1 | 21.3 | 16.8 | 1.5 | 0.7 | 2.7 | 0.1 |
| Britain | 44.9 | 50.3 | 4.8 | 7.0 | 9.2 | 32.6 | 18.7 | 4.1 | 10.0 | 0.0 | 18.3 |
| Denmark | 49.2 | 47.1 | 3.7 | 19.5 | 9.3 | 11.0 | 12.3 | 39.2 | 2.7 | 2.3 | 3.7 |
| Germany | 40.3 | 53.1 | 6.6 | 38.5 | 18.3 | 18.6 | 10.9 | 3.1 | 0.0 | 6.6 | 4.2 |
| Greece | 70.0 | 25.3 | 4.7 | 2.7 | 78.1 | 7.2 | 9.6 | 0.0 | 1.2 | 1.1 | 0.1 |
| Ireland | 29.2 | 69.6 | 1.2 | 47.6 | 8.1 | 20.5 | 19.2 | 1.3 | 1.1 | 1.6 | 0.5 |
| Italy | 72.7 | 23.3 | 4.0 | 12.3 | 59.3 | 4.7 | 21.2 | 0.5 | 0.6 | 1.3 | 0.1 |
| Netherlands | 50.7 | 42.0 | 7.3 | 13.1 | 4.1 | 19.0 | 23.5 | 20.4 | 0.0 | 17.6 | 2.3 |
| Portugal | 66.1 | 32.2 | 1.6 | 10.5 | 46.3 | 14.5 | 19.7 | 1.5 | 2.4 | 4.9 | 0.2 |
| Spain | 58.4 | 37.7 | 3.9 | 35.9 | 31.8 | 2.8 | 25.3 | 0.1 | 2.8 | 1.0 | 0.3 |

[a] Labour incomes include earnings from regular and lump-sum wages and self-employment net incomes; [b] Other incomes include capital and rental incomes and private transfers; [c] Pensions include old-age related and survivors' benefits.

Notes: author computation from ECHP 1994-2001 data. The sample is derived pooling all waves for working-age adults, i.e. individuals aged at least 20 and with the household head aged less than 60. Income are made equivalent across households using the modified OECD equivalence scale. The poverty line is 60% of median income.

## 2.2 Related literature and previous evidence on

Previous cross-national comparisons in the poverty dynamics literature endorsed mainly two different approaches. The first one is estimating a regression in which all countries are pooled together and cross-country heterogeneity is captured by an intercept country-specific shift. This approach, adopted for instance by Fouarge and Layte (2005) and Callens and Croux (2009) in Europe, assumes the same poverty-generating process for all countries, i.e. equal effects of characteristics across countries. A second approach has been to estimate separate equations for each country and base the cross-national analysis on the comparison of the point estimates of those models, while differences in the distribution of characteristics typically are not incorporated in the analysis. An example is Valletta (2006), in which separate poverty exit and re-entry logistic models are analysed for Canada, Germany, UK and US.

This paper suggests to explicitly recognizing the impact of the distribution of characteristics along with the poverty generating process on cross-country differences. A large body of research has stressed differences in the composition of population, for instance in household living arrangements, in European countries. Biewen and Jenkins (2005) applied a decomposition method to assess to what extent cross-country differences in poverty rates are due to differences in the distribution of characteristics and differences in the conditional poverty function. I extend it, in a tractable way, to hazard regressions-based measures of longitudinal poverty.

A well documented finding is that pre-enlargement European countries may be divided in three groups according to cross-sectional measures of income distribution. Table 2 reports the median equivalised income, poverty rates and Gini indexes for working-age adults. The estimates and the implied ranking are very close to the ones presented in cross-country poverty analyses that use ECHP and other surveys.[5] Social democratic countries have the lowest poverty rates and Gini indexes, liberal and southern countries have the highest ones and corporatist countries rank in an intermediate position.

It has also been established a similarity in cross-country grouping between cross-sectional and longitudinal measures of poverty, with countries with higher poverty prevalence being also characterised by average longer permanence in poverty (OECD, 2001 and 2009). The last 8 columns of Table 2, which report the distribution of the

[5] See, among others, Förster et al. (2004) and Förster and Pellizzari (2005).

number of years in poverty for the working-age adults observed in all waves, broadly confirm the finding for the countries included in the current analysis. Denmark has the highest proportion of individuals who do not experience any poverty episode in the 7-year temporal window and the lowest proportion of adults in poverty for a large number of years, followed by the corporatist countries and Britain. On the other extreme, Ireland and Southern countries have the highest proportions of adults in poverty for long periods and the lowest ones of adults never found poor. Notice that Britain and Ireland appear to have more dissimilar distribution of time spent in poverty than the cross-sectional measures of income distribution, making Britain closer to corporatist countries and Ireland closer to Southern ones.

A typical goal of cross-country poverty comparisons is the assessment of the impact of country-specific institutions on the time individuals spend in poverty. Fouarge and Layte (2005) suggest, by comparing exit hazard models with country-specific vs. welfare type-specific controls, that the grouping in Europe may be traced back to differences in the augEA welfare regime typology. Similar evidence is provided by Oxley et al. (2000), which compare measures of poverty persistence derived from national surveys based pre- and post- tax-and-transfer incomes in some European countries, Canada and US. They show that among European countries the UK system has the weakest impact on the relief from prolonged permanence in poverty, while the systems of Netherlands and Sweden have the strongest one and the German one takes an intermediate position.[6]

With respect to previous cross-national comparisons of poverty dynamics in Europe, differences in dynamics are flexibly modelled by using both exit and re-entry multiple spells hazard models. This allows for multivariate- based assessment of of poverty recurrence, which might be of interest in the case individuals experience short but nearly repeated poverty spells disproportionally more in some countries than in others. Furthermore, by including at least a country for every welfare regime type, the analysis aims at assessing similarities and differences between countries with different institutional settings.

[6] Valletta (2006) insists rather on the fact that North-American countries have higher poverty persistence measures than European ones and, by comparing measures derived from pre- and post- tax-and-transfer incomes, relates the finding to national tax-and-transfers systems.

**Table 2. Equivalised disposable income distribution of working-age adults in EU countries, 1994-2000**

| | Median income (2000's €) | Gini index | Poverty rate | Number of years in poverty (%) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Belgium | 15854 | 0.28 | 0.11 | 76.5 | 10.8 | 4.5 | 1.8 | 1.7 | 1.0 | 1.8 | 1.9 |
| Britain | 15451 | 0.31 | 0.13 | 75.8 | 7.2 | 4.9 | 3.1 | 2.2 | 2.4 | 1.5 | 2.9 |
| Denmark | 17192 | 0.21 | 0.07 | 85.5 | 6.8 | 4.3 | 1.4 | 1.1 | 0.6 | 0.3 | 0.0 |
| Germany | 15157 | 0.27 | 0.11 | 77.3 | 10.1 | 4.4 | 2.4 | 1.7 | 0.8 | 1.4 | 2.0 |
| Greece | 9479 | 0.33 | 0.17 | 61.2 | 11.5 | 7.9 | 5.3 | 4.7 | 2.5 | 3.2 | 3.1 |
| Ireland | 12694 | 0.34 | 0.16 | 65.1 | 7.7 | 6.3 | 6.5 | 3.8 | 2.3 | 3.4 | 4.8 |
| Italy | 11690 | 0.30 | 0.18 | 65.1 | 12.2 | 6.4 | 3.7 | 3.4 | 2.7 | 3.4 | 3.2 |
| Netherlands | 14419 | 0.27 | 0.10 | 82.0 | 9.4 | 2.7 | 2.1 | 1.8 | 1.0 | 0.6 | 0.5 |
| Portugal | 8432 | 0.35 | 0.16 | 64.7 | 9.8 | 7.5 | 3.1 | 5.3 | 2.0 | 3.1 | 4.5 |
| Spain | 9819 | 0.34 | 0.18 | 60.3 | 10.2 | 9.2 | 6.2 | 5.2 | 3.6 | 3.6 | 1.7 |

Notes: author computation from 1994-2001 ECHP data. The sample is derived pooling all waves for working-age adults, i.e. individuals aged at least 20 and with the household head aged less than 60. The proportions of the number of years spent on poverty are estimated on the balanced portion of the sample. Income is adjusted through the Purchasing Power Parities provided by Eurostat in ECHP files; expressed in 2000 prices via the Consumer Price Indexes provided by OECD; and made equivalent across households using the modified OECD equivalence scale. The poverty line is 60% of median income.

## 3. Methods

As in many previous cross-country poverty dynamics studies (for instance, Fouarge and Layte, 2005, Valletta, 2006), this paper adopts a survival analysis model. This modelling framework, introduced by Bane and Ellwood (1986) to study the exit from poverty in the US, is based on the idea, common to other commonly adopted frameworks in the poverty dynamics literature such as dynamic random effects and Markovian models, that low income is a state with defined attributes and consequently the transitions between different states provide insights on lifetime changes in individual well-being. An issue of this approach is the loss of information due to the dichotomisation of a continuous variable, income, in order to define the poverty status. The approach based on the analysis of covariance of the sort pioneered by Lillard and Willis, differently, models directly income rather than poverty. While survival analysis allows the most flexible treatment of dynamics among the poverty transitions models, the preference over structural variance models is mainly due to the simpler tractability.[7]

[7] One major critique that has been raised to approaches that directly model incomes is that they assume a common dynamic for the whole population, not distinguishing between rich and poor. In that respect some commentators suggested that the approach applies better to the population subgroups and the income sources, such as men's earnings, for which the models were initially designed. For a detailed

Using the analytical framework developed by Stevens (1995), I model poverty dynamics by specifying two hazard rate equations, one for exit from and a second for re-entry into poverty. The generic discrete hazard rates of leaving and re-entering into poverty at survival-time *d* are the conditional probabilities of exiting the state in the *dth* time interval given having survived until the end of the *(d-1)th* time interval. The probabilities of ending a poverty spell at duration $d$, $h^p_{idt}$, and of ending a non-poverty spell after $d$ years out of poverty, $h^n_{idt}$, are specified as two discrete-time proportional hazard functions:

$$h^p_{dit} = h(d^p_{it} \mid \gamma^p(.), \beta^p) = \Lambda(\gamma(d^p_{it}) + \beta^p X_{it-1}) \quad (1)$$

$$h^n_{dit} = h(d^n_{it} \mid \gamma^n(.), \beta^n) = \Lambda(\gamma(d^n_{it}) + \beta^n_t X_{it-1}) \quad (2)$$

where $\Lambda(.)=\exp(.)/[1+\exp(.)]$ is the logistic cumulative distribution function; the subscript *d* indexes survival time, while the subscripts *i* and *t* refer to individuals and calendar time. The baseline hazard $\gamma(.)$ takes a non-parametric piecewise specification, i.e. specified using a set of duration dummies, which constitute a flexible form to capture duration dependence. $X_{it-1}$ represent observable household characteristics (and $\beta^j$ are the associated parameters), which vary across people and time and are measured at calendar time $t-1$ in order to reduce potential endogeneity issues raised by simultaneity between changes in outcomes and changes in attributes.

Left-censored spells are discarded because their duration is unknown implying that an individual is recorded in the spells sample only if he makes a transition. Since the number of individuals who are measured as poor in all waves is small (as shown in the last column of Table 2), we may consider the population of reference of the analysis the subgroup of individuals that are found at least once in poverty. Each individual might have gone through repeated spells of poverty and/or repeated spells of non-poverty. Right-censored spells, i.e. individuals who do not experience a transition in the last wave which they are recorded in, are naturally included in survival analysis through the conditioning probability of having survived in the state.

Models (1) and (2) are estimated by applying a standard package for logistic models to a censoring indicator keeping the value of one if the spell ends and zero

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discussion of the issues raised by different approaches that have been used to investigate poverty dynamics see Jenkins (2000).

otherwise (Allison, 1981, Jenkins, 1995).[8] The dependent and explanatory are measured at the household level. This implies a cross-sectional replication of poverty status and explanatory variables for members of the same household at a point in time. Personal trajectories of household members differ overt time through household formation and disruption. Being the household intrinsically time-varying, it can not be used as a longitudinal unit of analysis. We control for the violation of the independence assumption by estimating robust standard errors that cluster across groups of individuals who share (at least) a common household member at a point in time, as suggested by Cappelari and Jenkins (2004).

Once models parameters have been estimated, they can be used to compute a number of interesting statistics. In particular, I derive the following probabilities for every individual:

$$e_{1it}(\beta^p, X^p_{it-1}) = h(d^p_{it} <= 1 \mid \beta^p, X^p_{it-1}) = h^p_{1it} \tag{3}$$

$$e_{2it}(\beta^p, X^p_{it-1}) = h(d^p_{it} >= 4 \mid \beta^p, X^p_{it-1}) = (1-h^p_{1it})(1-h^p_{2it})(1-h^p_{3it})h^p_{4it} \tag{4}$$

$$r_{1it}(\beta^n, X^n_{it-1}) = h(d^n_{it} <= 1 \mid \beta^n, X^n_{it-1}) = h^n_{1it} \tag{5}$$

$$r_{2it}(\beta^n, X^n_{it-1}) = h(d^n_{it} >= 4 \mid \beta^n, X^n_{it-1}) = (1-h^n_{1it})(1-h^n_{2it})(1-h^n_{3it})h^n_{4it} \tag{6}$$

where the parameters $\gamma(.)$ characterising the baseline hazard are subsumed in $\beta$ to make the notation simpler. $e_{1it}$ indicates the probability of individual *i* exiting from poverty at time *t* after 1 year since entry, $e_{2it}$ the probability of remaining poor for 4 or more years, $r_{1it}$ indicates the probability of re-entering into poverty after 1 since exit and $e_{2it}$ the probability of remaining out of poverty for 4 or more years.

In order to separate the influence of differences in the conditional poverty dynamics generating process and differences in the distribution of characteristics, I use a decomposition method in the spirit of Oaxaca (1973) and Blinder (1973). The decompositions are based on simple counterfactuals such as "how long would a poverty (or non poverty) spell, with the composition of the population of country A, have lasted in country B?" The difficulty is that the measures of poverty dynamics (3)-(6) are nonlinear function of characteristics so that their average at the country

[8] More sophisticated models, which allow for time invariant unobserved heterogeneity and correlation across poverty and non poverty spells as in Stephen (1999) were not supported by the data in many countries.

level cannot be expressed as a simple function of average characteristics as in the case of wage regressions. However, I generalize the idea behind the Oaxaca-Blinder decomposition following the decomposition method proposed by DiNardo et al. (1996) to analyze the changes overtime in the US distribution of wages, by applying the measures of poverty dynamics to appropriately weighted samples.

Aggregate poverty dynamics measures at the country level can be written as:

$$p(\beta, X) = \int_X p_{it}(\beta, X_{it-1}) dG(X) \qquad p = e_1, e_2, r_1, r_2 \qquad (7)$$

where $p_{it}(\beta, X_{it-1})$ is the conditional poverty dynamics measure of the subpopulation with characteristics $X_{it-1}$ and $G(.)$ is the distribution of characteristics in the population. In the case explanatory variables are discrete, as in the current analysis, the set of population subgroups $X$ is a finite sample, and expression (7) can be rewritten as:

$$p(\beta, X) = \sum_{X_{it-1} \in X} p_{it}(\beta, X_{it-1}) G(X_{it-1}) \qquad p = e_1, e_2, r_1, r_2 \qquad (8)$$

The probabilities in (7) and (8) can be estimated by replacing $\beta$ by their estimates $\hat{\beta}$ and the population distribution function $G(.)$ by the empirical distribution of characteristics in the sample. In practical terms, as expression makes clear, this is equivalent to estimate the probabilities for every population subgroup (as defined by a different combination of the explanatory variables) and then averaging across subgroups, using as weight the prevalence of that subgroup in the sample. Equations (7) and (8) make clear the different factors that contribute to the overall distribution of each country. On one hand, the composition of the population is incorporated through $G(.)$, on the other hand, the contribution of the country-specific poverty-generating process is captured by $p(\beta, X)$.

Using the representation in (7), the difference in poverty measures between country A and country B can be expressed as:

$$
\begin{aligned}
p_A(\beta_A, X_A) - p_B(\beta_B, X_B) = & \\
&= \int_X p_A(\beta_A, X) dG(X_A) - \int_X p_B(\beta_B, X) dG_B(X) \\
&= \int_X p_A(\beta_A, X) dG(X_A) - \int_X p_B(\beta_B, X) dG_A(X) \\
&+ \int_X p_B(\beta_B, X) dG_A(X) - \int_X p_B(\beta_B, X) dG_B(X) \\
&= \left[p_{AA} - p_{BA}\right] + \left[p_{BA} - p_{BB}\right] = C_I + D_I \qquad (9) \\
&= \left[p_{AA} - p_{AB}\right] + \left[p_{BA} - p_{BB}\right] = C_{II} + D_{II} \qquad (10) \\
&= \left[0.5(C_I + C_{II})\right] + \left[0.5(D_I + D_{II})\right] = C_S + D_S \qquad (11)
\end{aligned}
$$

in the straightforward notation used by Biewen and Jenkins (2005) in their decomposition of difference is poverty rates between Germany, Britain and the US.

According to (9), the difference in poverty dynamics measures between country A and country B may be decomposed into a contribution due to cross-national differences in poverty generating function, $C_I = \left[p_{AA} - p_{BA}\right]$ and a contribution due to differences in the distribution of household characteristics $D_I = \left[p_{BA} - p_{BB}\right]$. Analogously, the decomposition (10) interchanges the role of the countries, leading to contributions $D_{II}$ and $C_{II}$. A third decomposition, the Shapley-value decomposition in (11), is the simple average of the corresponding contributions in the first two decompositions.[9] In fact, like the familiar Oaxaca-Blinder decomposition, the results from the decomposition depend on the roles of the countries (typically, $C_I \neq C_{II}$ and $D_I \neq D_{II}$). Despite this limitation, I argue that it is a useful method to disentangle the drivers of cross-country differences in longitudinal poverty.

## 4. Data, definitions and sample

The current study relies on the European Community Household Panel (ECHP), which collect harmonised demographic and socio-economic information for the 15 countries that were composing the European Union before the 2004 enlargement interviewing the same individuals in the period 1994-1001. The ECHP provides a unique environment to compare duration models in Europe since its successor, the European Union Statistics on Income and Living Conditions (EU-SILC), retains

[9] See Shorrocks (1999) for details of the Shapley value decomposition and its properties.

individuals for a maximum of just 4 years by design. ECHP data are preferred to the Cross-National Equivalent File (CNEF), which contains equivalently defined variables for the longitudinal national surveys of Australia, Canada, Germany, the UK and the US, because they enable the construction of longer overlapping temporal windows.[10]

I focus on the countries for which information is comparable. They are Belgium, Britain, Denmark, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. For these countries the ECHP dataset is an eight waves' panel covering the period 1994-2001. Austria, Finland and Luxembourg are excluded from the analysis because the data are provided for a shorter period. The data for France, differently than in all other countries, does not provide information on personal net incomes. The Swedish survey is a series of repeated cross-sections. The information for Britain and Germany is derived from national survey files, relying on surveys existing prior to the ECHP realization: the British Household Panel Survey (BHPS) and German Socio-Economic Panel Study (GSOEP). For a critical analysis of ECHP see, among others, Peracchi (2002).

For the construction of the poverty status indicator, I rely on personal annual net incomes.[11] Personal net include annual earnings and self-employment incomes, capital and rental incomes, pensions and other social insurance incomes, such as unemployment, sickness\disability and family related benefits and grants. Income is adjusted to be comparable across time and countries by the Harmonised Indexes of Current Prices provided by OECD[12] and the Purchasing Power Parities provided in the ECHP Country file.

From individual annual net incomes I derive a measure of equivalent household net income, given by the sum of all incomes of each household member divided by the 'modified OECD' equivalence scale (where the first adult in a household is given the value 1, each additional adult is given a value of 0.5 and each child a value of 0.3). In the ECHP, incomes are recorded retrospectively so that they refer to the year prior to the interview. In order to have both characteristics and incomes referring to the same time, incomes recalled at wave *t* are matched with characteristics reported at wave *t–1*. The procedure implies the loss of the last observation each individual is

[10] Valletta (2006) could construct just partially overlapping six-year panels for each country.
[11] Variable PI100 in the ECHP Personal File.
[12] http://stats.oecd.org/index.aspx?querytype=view&queryname=221.

observed in the panel, since its characteristics can not be associated to any income. The analysis covers therefore the 7-years overlapping years from 1994 to 2000.

Equivalent income is attributed to each member, assuming a common living standard within the household. An individual is poor if his equivalent household net income is less than the 60 per cent of median equivalent net income of each wave, adopting a relative poverty line. Although the assumptions underlying the measurement of poverty status are arbitrary, their use has become common practice in poverty comparisons across Europe and facilitates comparisons with earlier work on poverty dynamics.

The sample for the analysis is given by all valid cases of individuals aged more than 20 and living in a household with the head younger than 60 years old. Children are not considered as economically dependent on their parents' incomes and no longitudinal identifier is provided in the ECHP files for individuals younger than 17. Individuals living in households whose head is aged 60 or more are not considered because the poverty dynamics process is different from the one characterising younger individuals. Poverty incidence, severity and persistence is typically higher for older people than the working age population and older families wellbeing depends on different determinants, such as access to pensions and other savings, health and care services.[13] After pooling all waves in a standard person-wave long panel sample, I derive poverty and out of poverty spells for each person. I exclude left-censored spells (because their duration is unknown) and sequences with gaps in the poverty status.[14] I use an unbalanced panel.

## 5. Results

The population is divided across characteristics that have typically been shown to affect relative income poverty. The explanatory variables are dummies indicating: 3 age ranges of the household head (30-; 30-45; 45-60); whether the head has completed less than the second stage of secondary education (ISCED 2); 5 living arrangements (or household types: childless singles, childless couples, lone parents, parents in couple, other); whether the household head is employed and, for household with more than one adults, whether a second member is employed. Controls for year specific

[13] See, for instance, the discussion by Valletta (2006: 268–69).
[14] If the missing values on the poverty variable are at the start or at the end of the poverty sequence, I treat the related spell as left- or right-censored respectively.

effects complete the specification. In alternative unreported specifications we included self-reported current health status, both at the individual and household level, but we eventually dropped it as its effect on poverty transitions resulted small and insignificant on all countries. The ECHP does not provide information on ethnic background, while migration and citizenship variables are not available in all considered countries.

### 5.1 Cross-country differences in the distribution of characteristics

The differences in the composition of the working-age population are summarised in Table 3, which reports the means of explanatory variables for the overall working-age population. Unlike the spells sample used for the hazard and decomposition analysis, the sample for the proportions reported in Table 3 includes all working-age individuals (adults from now on) independently on their longitudinal trajectories in and out of poverty. Table 3 provides therefore an accurate description of cross-country differences in the distribution of characteristics.

The proportion of adults with low educated head varies remarkably across countries. It is relatively high in southern countries, Ireland and The Netherlands, where it ranges between 50% and 63%; particularly high in Portugal (about 85%); intermediate in Britain (42%); and low in Belgium, Denmark and Germany (less than 30%).

Individuals living in household with the head younger than 30 (young from now on) account for a relatively high share (about 20%) of the population in Britain, Denmark, Germany and The Netherlands and for a smaller one (less than 10%) in Southern countries. The cross-country differences are explained by the age at which young adults leave the parental household to form a new one, as documented by Iacovou (2002) and Aassve et al. (2006). Denmark and The Netherlands have the highest proportion of individuals who leave the parental household before the 30 years of age, and the Southern European countries have the lowest one.

Childless singles are more prevalent in Denmark (16%) and The Netherlands (12%), while account for a tiny fraction (about 3%) of the population in the other countries. The evidence is consistent with the destination on leaving the parental household. In Southern countries and Ireland most individuals leave to form a cohabiting couple, while in Northern countries there is a much higher proportion that leaves to live alone (Aassve et al. 2007).

Lone parents constitute a small share of the population, with the highest rates being 4% in Britain, Belgium and Denmark. Part of the cross-country differences in childless singles and particularly lone parents is due to heterogeneity in divorce rates, with Britain, Belgium and Denmark having the highest rates (about 3 annual divorces over 1000 people) and Ireland and the Southern countries the lowest ones (about 1 annual divorce over 1000 people).[15]

Individuals living in childless couples are more common in Britain, corporatist and social democratic countries (between 21% and 31% of the population) than in southern countries (about 13%). Parents in couple account for similar shares (between 36% and 43%, but Belgium with 50%) of the population. They are the most widespread household type in Britain, Denmark and the corporatist countries.

In Ireland and southern countries, differently, the most prevalent living arrangement (between 38% and 45% of the population) is a residual category that contains individuals living in household with at least 2 adults that do not form a conjugal couple. This includes adult children that leave with their parents, all forms of extended family structures and cohabitations of unrelated individuals.

The proportion of individuals living in a household with head employed is similar across countries, ranging from 77% in Ireland to 85% in Spain.

The proportions of adults living in households that have a member other than the head in employment, computed over the sample of adults in couple or other living arrangements, show highly varied proportions. They account for the largest share of the population in Denmark (82%), Portugal (78%), Britain and Germany (about 76%) and Belgium (72%). In other southern countries, their proportion is smaller (between 51% and 60%), while occupies an intermediate position in Ireland and The Netherlands (67%).

The ranking is closely related to female employment rates and shares of dual-earner couples. Only exception is The Netherlands, which is found to have an intermediate proportion (67%) despite relatively high female employment rate and dual-earner couples share. Also, part-time employment is exceptionally highly diffused in The Netherlands, indicating that the proportion of adults living in

[15] Germany, The Netherlands and Portugal have 2 divorces over 1000 people in the period considered in the analysis. See Gonzalez and Viitanen (2010, Figure 2: p. 132) for figures on divorce rates over time across 18 European countries.

households with at least a member other than the head in employment might be underestimated.[16]

**Table 3. Composition of the working-age population in European countries**

| | Belgium | Britain | Denmark | Germany | Greece | Ireland | Italy | Netherlands | Portugal | Spain |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Overall population (1994-2000)* | | | | | |
| head low educated | 0.28 | 0.42 | 0.20 | 0.19 | 0.55 | 0.52 | 0.60 | 0.50 | 0.86 | 0.63 |
| head aged 30- | 0.11 | 0.18 | 0.20 | 0.18 | 0.12 | 0.09 | 0.06 | 0.18 | 0.09 | 0.09 |
| head aged 30-44 | 0.50 | 0.42 | 0.42 | 0.40 | 0.40 | 0.42 | 0.37 | 0.48 | 0.40 | 0.39 |
| head aged 45-59 | 0.39 | 0.39 | 0.38 | 0.42 | 0.49 | 0.49 | 0.57 | 0.35 | 0.51 | 0.52 |
| childless singles | 0.09 | 0.09 | 0.16 | 0.09 | 0.03 | 0.04 | 0.04 | 0.12 | 0.02 | 0.03 |
| childless couples | 0.21 | 0.29 | 0.31 | 0.27 | 0.14 | 0.12 | 0.12 | 0.29 | 0.14 | 0.12 |
| lone parents | 0.04 | 0.04 | 0.04 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 |
| parents in couple | 0.50 | 0.36 | 0.38 | 0.37 | 0.36 | 0.43 | 0.41 | 0.42 | 0.37 | 0.39 |
| other arrangement | 0.16 | 0.21 | 0.12 | 0.25 | 0.45 | 0.38 | 0.43 | 0.15 | 0.45 | 0.45 |
| head employed | 0.83 | 0.79 | 0.83 | 0.80 | 0.84 | 0.77 | 0.78 | 0.85 | 0.81 | 0.85 |
| other household member employed[a] | 0.72 | 0.76 | 0.82 | 0.76 | 0.58 | 0.67 | 0.60 | 0.67 | 0.78 | 0.51 |

[a] The proportion is estimated over individuals in couple and other living arrangements.
Notes: author computation from 1994-2001 ECHP data. The sample is derived pooling all waves for working-age adults, i.e. individuals aged at least 20 and with the household head aged less than 60.

Table 4 reports the means of explanatory variables for the adults included in the poverty and non-poverty spells samples, which include all fresh spells, *de facto* containing only the individuals who did experience a transition in or out of poverty, i.e. individuals who were poor in at least 1 year. Being based on the samples used for the estimation of the poverty exit and re-entry hazards models, the proportions reported in Table 4 show the relevant cross-national differences of the distribution of characteristics to interpret the results of the decomposition analysis. Furthermore, the comparison of the proportions over the overall population with their analogous ones over the spells sample is a useful benchmark to assess the differences in selection into poverty with respect to the population characteristics. For convenience in the exposition, I refer to the adults in the spells samples as the poor population.

As expected, individuals with low educated head are clearly overrepresented in the poor population of all countries, while the cross-country differences in their proportions are fairly similar over the overall and the poor population.

[16] See Lohmann and Marx (2008, Table 1.3: 32-33) for a comparison of 2001 female employment rates, share of persons in dual-earner couples and part-time employment across European countries.

The proportion of individuals living in households with a young head over the poor population is in line the analogous proportion over the overall population, but in Denmark and The Netherlands. In these countries they are disproportionally more likely to be poor. Aassve et al. (2007) have shown that just a part of the cross-country difference between the poverty risks of young individuals who left and stayed in the parental house is explained by the comparatively high proportion in Northern countries of young adults that leave to live alone.

Childless singles are overrepresented in the poor population in the countries where they are more prevalent, i.e. in Britain, Denmark and the corporatist countries. The differences between the proportions in the overall and poor population are particularly striking in Denmark and The Netherlands, where respectively the 54% and 63% of childless singles are young adults (compared to 36% in the poor population obtained pooling all countries).[17] Differently, in southern countries and Ireland the proportion of childless singles over the poor population is similar to the one over the overall population.

Adults living in childless couples are underrepresented in the poor population in all countries, and most markedly in Britain. Lone parents are overrepresented in the poor population in Denmark, Belgium, and especially Britain and, to a lower extent, in other corporatist countries and Ireland. In southern countries they display similar proportion over the overall and poor population. Parents in couple are clearly underrepresented in the poor population in Denmark, overrepresented in Ireland and have similar proportions to the ones over the overall population in other countries. Adults living in the residual living arrangements are typically slightly underrepresented in the poor population.

Adults living in households with employed head are underrepresented over the poor population in most countries. Nevertheless, differences in the poor population are more striking than in the overall population. In liberal countries and Germany, the proportions of individuals with head employed drop substantially within the poor population. On the other extreme, southern countries have similar proportions of individuals with employed head in the overall and poor samples, meaning that the attachment of the head to the labour market is not enough to prevent poverty for many households. Individuals living in multiple–adults households that have a member

[17] The majority of childless singles in the poor population obtained pooling all countries is accounted for by individuals aged 45-59 (38%).

other than the head in employment are underrepresented in the poor population in all countries, with similar cross-national differences between the proportions over the poor and overall population.

**Table 4. Composition of the working-age population in European countries**

| | Belgium | Britain | Denmark | Germany | Greece | Ireland | Italy | Netherlands | Portugal | Spain |
|---|---|---|---|---|---|---|---|---|---|---|
| *Poverty spells sample (1995-2000)* | | | | | | | | | | |
| head low educated | 0.44 | 0.57 | 0.25 | 0.34 | 0.77 | 0.70 | 0.76 | 0.61 | 0.96 | 0.81 |
| head aged 30- | 0.10 | 0.21 | 0.44 | 0.23 | 0.11 | 0.10 | 0.08 | 0.33 | 0.13 | 0.14 |
| head aged 30-44 | 0.54 | 0.46 | 0.28 | 0.40 | 0.42 | 0.49 | 0.39 | 0.48 | 0.39 | 0.45 |
| head aged 45-59 | 0.36 | 0.33 | 0.28 | 0.37 | 0.47 | 0.41 | 0.53 | 0.20 | 0.48 | 0.41 |
| childless singles | 0.16 | 0.17 | 0.39 | 0.18 | 0.02 | 0.09 | 0.04 | 0.26 | 0.02 | 0.03 |
| childless couples | 0.17 | 0.15 | 0.25 | 0.22 | 0.13 | 0.11 | 0.06 | 0.14 | 0.11 | 0.08 |
| lone parents | 0.11 | 0.16 | 0.12 | 0.08 | 0.01 | 0.06 | 0.02 | 0.08 | 0.03 | 0.01 |
| parents in couple | 0.47 | 0.44 | 0.19 | 0.40 | 0.40 | 0.58 | 0.48 | 0.46 | 0.49 | 0.48 |
| other arrangement | 0.09 | 0.09 | 0.06 | 0.13 | 0.44 | 0.16 | 0.41 | 0.07 | 0.34 | 0.39 |
| head employed | 0.56 | 0.47 | 0.59 | 0.53 | 0.82 | 0.43 | 0.73 | 0.68 | 0.80 | 0.71 |
| other household member employed[a] | 0.38 | 0.43 | 0.49 | 0.48 | 0.47 | 0.29 | 0.38 | 0.33 | 0.59 | 0.30 |
| *Non-poverty spells sample (1995-2000)* | | | | | | | | | | |
| head low education | 0.41 | 0.50 | 0.26 | 0.28 | 0.73 | 0.65 | 0.72 | 0.59 | 0.96 | 0.74 |
| head aged 30- | 0.10 | 0.17 | 0.39 | 0.22 | 0.10 | 0.08 | 0.08 | 0.29 | 0.07 | 0.14 |
| head aged 30-44 | 0.53 | 0.45 | 0.26 | 0.39 | 0.40 | 0.45 | 0.33 | 0.41 | 0.38 | 0.39 |
| head aged 45-59 | 0.37 | 0.37 | 0.35 | 0.39 | 0.50 | 0.47 | 0.60 | 0.30 | 0.55 | 0.46 |
| childless singles | 0.14 | 0.14 | 0.26 | 0.11 | 0.01 | 0.05 | 0.03 | 0.24 | 0.02 | 0.02 |
| childless couples | 0.14 | 0.18 | 0.30 | 0.24 | 0.12 | 0.04 | 0.08 | 0.22 | 0.10 | 0.09 |
| lone parents | 0.07 | 0.07 | 0.04 | 0.04 | 0.01 | 0.04 | 0.01 | 0.04 | 0.01 | 0.01 |
| parents in couple | 0.47 | 0.40 | 0.26 | 0.38 | 0.38 | 0.47 | 0.37 | 0.39 | 0.34 | 0.34 |
| other arrangement | 0.17 | 0.21 | 0.12 | 0.23 | 0.48 | 0.40 | 0.50 | 0.11 | 0.54 | 0.54 |
| head employed | 0.72 | 0.68 | 0.74 | 0.67 | 0.84 | 0.70 | 0.79 | 0.82 | 0.82 | 0.84 |
| other household member employed[a] | 0.58 | 0.70 | 0.73 | 0.67 | 0.57 | 0.63 | 0.56 | 0.60 | 0.83 | 0.46 |

[a] The proportion is estimated over individuals in couple and other living arrangements.
Notes: author computation from 1994-2001 ECHP data. The sample is derived pooling all waves for working-age adults, i.e. individuals aged at least 20 and with the household head aged less than 60. The *panel sample* includes individuals independently on their poverty history, the *spells sample* all fresh poverty and non-poverty spells.

In summary, the main cross-country differences in the composition of both the overall and poor working-age population are found in the prevalence of low educated and young heads, household arrangements and, among individuals living in multiple–adults households, the labour market attachment of other than the head household members. The proportions of heads in employment and parents in couple are

generally similar across countries. Most differences cluster well across welfare regime types, with countries belonging to the same regime showing a similar composition of the population. The most remarkable exception is constituted by the liberal regime, as Britain and Ireland, though sharing similar proportions of measures of household labour market attachment, have substantially distinct living arrangements. In this respect, Ireland is more similar to southern countries, while Britain to corporatist ones.

The comparison of the estimates over the overall and poor population shows that selection in poverty differs across countries with respect to many characteristics. More specifically, childless singles and individuals living in households with a young head experience a particularly high poverty risk in Denmark and The Netherlands. Lone parents are disproportionally overrepresented over the poor population in Britain. Parents in couple are underrepresented over the poor population in Denmark and overrepresented in Ireland. The head being employed is comparatively more effective in reducing the poverty risk in the liberal countries and Germany.

### 5.2 The poverty dynamics generating process

Table 5 shows the marginal effects associated to household characteristics for the exit and re-entry hazard models. Marginal effects measure the change in the hazard probability implied by a change of the relevant household characteristic from 0 to 1 while maintaining all other explanatory variables at their sample average. They are interesting in themselves, especially in countries, such as Denmark, Greece, The Netherlands and Portugal, for which the present paper constitutes the first assessment of poverty dynamics with hazard rate models. On the other hand, previous studies that adopt a duration analysis approach and focus on European countries constitute a good benchmark to contrast my results.

The coefficients attached to the baseline hazard show the presence of negative duration dependence for the exit and re-entry rates in most of the countries. Negative duration dependence means that the probability of leaving the sate decreases with the time spent in the state. Baseline hazard effects are likely to overestimate the presence of true state dependence (i.e., the causal effect of current on future status), as unobserved individual heterogeneity is likely to be correlated with permanence in the state (i.e., adults with better unobservables tend to stay more time out of poverty and less time in poverty) and is not controlled for in the model.

Negative duration dependence in the poverty process is found in many countries.[18] The effect is particularly strong in the exit processes of Belgium, Germany, Italy and Portugal. In Britain, and to a less extent in Ireland and Spain, the probability of leaving poverty significantly decreases after 3 years in the state. No duration dependence effect is found in the exit process of Denmark, suggesting that the probability of leaving poverty keeps unchanged with the time spent in poverty. However, it must be said that the effects of nearly all explanatory variables on poverty exit probabilities are imprecisely estimated, possibly because of the low number of observation. Negative duration dependence is also found in the non poverty processes of all countries. The effect is delayed in liberal countries and Denmark, where the probability of re-entering poverty significantly decreases after more than 2 years since exit.

The head having a low educational qualification increases the time spent in poverty in most of the countries, only exceptions being Denmark and Portugal, where neither the exit nor the re-entry probabilities are significantly affected. In the other countries low education has the effect of decreasing the exit probability and increasing the probability of re-entry. The typical change in the probabilities is about 10%. Estimates are significant in both processes in Greece, Ireland, Italy and Spain. In Belgium and Germany the effect is smaller but still present, as only the re-entry rate is decreased, as well as in Britain and The Netherlands, where the exit rate only is decreased.[19]

The age of the head does not affect hazard rates in the majority of the countries. The probability of leaving poverty is higher for adults living in households with a young head in Britain, lower in Italy and The Netherlands and similar to the one experienced by adults living in household with the head aged more than 30 in other countries.[20] The re-entry rates are unaffected by the age of the head in all countries.

As compared with adults living in childless couples, childless singles have similar exit probabilities in all countries. In Ireland and Portugal, they have a 10% lower

[18] The discussion about duration dependence is based on different not reported Wald tests that I used to assess the equality of the duration-dummies effects.

[19] Similar strong effect of the educational level of the head on poverty exit and re-entry rates has been found in all single European country studies (Jenkins and Rigg, 2001, Devicienti, 2001 and 2002, Cantó, 2002 and 2003, Biewen, 2006 and Devicienti and Gualtieri, 2007).

[20] Devicienti and Gualtieri (2007), commenting the increase of the exit rates with the age of the head in Italy, suggest that it may be driven by an upward mobility in the head's job career.

probability of re-entering poverty. In Britain they have a 6% higher probability of re-entering poverty.

Lone parents have significantly lower (than adults living in childless couples) probabilities of exiting poverty in Spain and higher re-entry probabilities in Britain, Germany, The Netherlands and Portugal. Parents in couple have lower exit probabilities in Italy and The Netherlands and higher re-entry probabilities in Italy, The Netherlands, Spain and, to a smaller extent, in Britain.[21] Surprisingly, they are associated to significantly low re-entry probabilities in Greece and Ireland. Surprisingly, lone parents are associated to significantly low re-entry probabilities in Greece and Ireland, while parents in couple to higher exit probabilities in Ireland.

Living in the residual household type shows highly varied effects across countries. In Ireland, the adults in the residual household type spend extremely short periods in poverty, as the change amounts to 44% in the exit probability and -21% in the re-entry one. In Italy, results indicate that adults in the residual household type are less to leave the current state because the effect is -9% on both the exit and re-entry probabilities. A strong positive effect (27%) on the exit probabilities is found in Denmark, a strong negative one (-27%) in The Netherlands and a smaller positive one (7%) on the re-entry probability is detected in Greece.

Attachment to the labour market has an impact on exit and re-entry rates in all countries, but in Denmark where the effects of the head and another member being employed are not significant in neither processes. As found by Jenkins (2000) for Britain, estimates show that it is important to allow for employment effects of other than the head household members, since the corresponding impact on hazard rates is often stronger than the one associated to the head being in employment.

In summary, some regularity has been found in most of the countries, especially for the effects of time spent in the state, the educational attainment of the head and the household labour market attachment. However, results indicate a large cross-country heterogeneity in the estimated effects. In particular, age of the head effects living arrangements have a quite different impact on hazard rates across the countries. In most cases, results confirm the expected impacts and match the findings of previous European single-countries studies, but some effects, such as the low re-entry probabilities of lone parents in Greece and Ireland, are surprising.

[21] Consistently, strong effects for the number of children are reported by Devicienti (2001) for Britain, Devicienti and Gualtieri (2007) for Italy and Cantó Sanchez (2003) for Spain.

**Table 5. Marginal effects of poverty exit and re-entry hazard models in EU countries, 1995-2000 (robust standard errors in parenthesis)**

| | Belgium | Britain | Denmark | Germany | Greece | Ireland | Italy | Netherlands | Portugal | Spain |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *Poverty exit* | | | | | |
| Baseline hazard: | | | | | | | | | | |
| poor since 2 years | -0.14* | 0.00 | 0.03 | -0.11*** | -0.09** | -0.07 | -0.14*** | -0.09 | -0.11** | -0.05 |
| | (0.07) | (0.04) | (0.08) | (0.04) | (0.04) | (0.07) | (0.03) | (0.06) | (0.04) | (0.04) |
| poor since 3 years | -0.21* | -0.14*** | -0.01 | -0.24*** | -0.21*** | -0.23** | -0.15*** | -0.18** | -0.18*** | -0.14*** |
| | (0.10) | (0.04) | (0.13) | (0.06) | (0.05) | (0.07) | (0.04) | (0.09) | (0.05) | (0.05) |
| poor since 4+ years | -0.41*** | -0.13* | -0.12 | -0.25*** | -0.22*** | -0.19* | -0.25*** | -0.15 | -0.17*** | -0.20*** |
| | (0.08) | (0.06) | (0.20) | (0.07) | (0.06) | (0.08) | (0.05) | (0.11) | (0.06) | (0.07) |
| Household characteristics: | | | | | | | | | | |
| head low education | -0.05 | -0.08** | 0.10 | 0.02 | -0.12*** | -0.15*** | -0.13*** | -0.12* | -0.09 | -0.08** |
| | (0.06) | (0.03) | (0.07) | (0.04) | (0.04) | (0.06) | (0.03) | (0.06) | (0.08) | (0.04) |
| head aged 30-44 | 0.04 | -0.09** | 0.06 | 0.03 | -0.07 | -0.12 | 0.08* | 0.06 | 0.03 | 0.01 |
| | (0.09) | (0.04) | (0.07) | (0.04) | (0.06) | (0.09) | (0.05) | (0.06) | (0.05) | (0.04) |
| head aged 45-59 | 0.06 | -0.08* | 0.01 | 0.00 | -0.09 | -0.15 | 0.14*** | 0.22*** | 0.05 | 0.00 |
| | (0.09) | (0.04) | (0.08) | (0.05) | (0.06) | (0.09) | (0.05) | (0.06) | (0.05) | (0.04) |
| childless singles | 0.13 | 0.09 | -0.12 | -0.01 | 0.04 | 0.16 | 0.02 | -0.03 | -0.10 | -0.06 |
| | (0.10) | (0.07) | (0.08) | (0.05) | (0.09) | (0.12) | (0.06) | (0.07) | (0.09) | (0.07) |
| lone parents | -0.02 | 0.08 | -0.04 | 0.01 | -0.06 | 0.05 | -0.05 | -0.09 | -0.02 | -0.20*** |
| | (0.12) | (0.07) | (0.10) | (0.07) | (0.13) | (0.13) | (0.08) | (0.10) | (0.09) | (0.09) |
| parents in couple | 0.09 | 0.00 | 0.12 | -0.01 | 0.04 | 0.18* | -0.12*** | -0.15** | -0.03 | -0.06 |
| | (0.10) | (0.06) | (0.09) | (0.05) | (0.05) | (0.10) | (0.05) | (0.07) | (0.06) | (0.05) |
| other arrangement | 0.04 | 0.00 | 0.27** | 0.05 | 0.07 | 0.44*** | -0.09** | -0.27** | 0.03 | 0.06 |
| | (0.16) | (0.08) | (0.11) | (0.07) | (0.05) | (0.09) | (0.05) | (0.10) | (0.06) | (0.06) |
| head employed | 0.17*** | 0.12*** | 0.05 | 0.07** | 0.12*** | 0.24*** | 0.06** | 0.15*** | 0.04 | 0.13*** |
| | (0.06) | (0.03) | (0.06) | (0.03) | (0.04) | (0.06) | (0.03) | (0.05) | (0.04) | (0.03) |
| other household | 0.14* | 0.19*** | -0.07 | 0.09** | 0.02 | 0.19*** | 0.11*** | 0.23*** | 0.05 | 0.10** |
| member employed | (0.08) | (0.05) | (0.10) | (0.04) | (0.03) | (0.07) | (0.03) | (0.06) | (0.04) | (0.04) |
| No. spells | 401 | 736 | 274 | 1069 | 1606 | 496 | 2245 | 573 | 1147 | 1999 |
| No. observations | 593 | 1324 | 380 | 1568 | 2601 | 835 | 3662 | 830 | 1977 | 3085 |
| No. individuals | 373 | 692 | 252 | 974 | 1396 | 443 | 1994 | 504 | 1039 | 1715 |
| No. clusters | 234 | 501 | 194 | 620 | 605 | 243 | 859 | 357 | 473 | 742 |
| Log-likelihood | -368 | -806 | -242 | -1033 | -1690 | -456 | -2320 | -520 | -1250 | -2037 |
| | | | | | *Poverty re-entry* | | | | | |
| Baseline hazard: | | | | | | | | | | |
| poor since 2 years | -0.07*** | 0.01 | -0.01 | -0.07*** | -0.10*** | -0.01 | -0.09*** | -0.09*** | -0.09*** | -0.11*** |
| | (0.02) | (0.02) | (0.04) | (0.02) | (0.02) | (0.04) | (0.02) | (0.02) | (0.02) | (0.02) |
| poor since 3 years | -0.08*** | 0.01 | -0.05 | -0.08*** | -0.10*** | -0.13*** | -0.11*** | -0.09*** | -0.07*** | -0.10*** |
| | (0.02) | (0.03) | (0.04) | (0.02) | (0.03) | (0.04) | (0.02) | (0.02) | (0.02) | (0.03) |
| poor since 4+ years | -0.11*** | -0.06* | -0.07* | -0.11*** | -0.12*** | -0.09 | -0.19*** | -0.16*** | -0.12*** | -0.11*** |
| | (0.02) | (0.03) | (0.04) | (0.01) | (0.03) | (0.05) | (0.02) | (0.02) | (0.02) | (0.03) |
| Household characteristics: | | | | | | | | | | |
| head low education | 0.04* | 0.01 | -0.02 | 0.07*** | 0.12*** | 0.07* | 0.07*** | 0.01 | -0.02 | 0.11*** |
| | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.04) | (0.02) | (0.03) | (0.05) | (0.02) |
| head aged 30-44 | 0.02 | 0.02 | 0.04 | 0.01 | 0.04 | 0.01 | 0.00 | -0.04 | -0.05* | 0.03 |
| | (0.04) | (0.02) | (0.04) | (0.02) | (0.04) | (0.06) | (0.03) | (0.03) | (0.03) | (0.03) |

| | Belgium | Britain | Denmark | Germany | Greece | Ireland | Italy | Netherlands | Portugal | Spain |
|---|---|---|---|---|---|---|---|---|---|---|
| head aged 45-59 | 0.02 | -0.03 | 0.08** | -0.01 | 0.02 | 0.00 | -0.04 | -0.03 | 0.00 | 0.03 |
| | (0.04) | (0.03) | (0.04) | (0.02) | (0.04) | (0.07) | (0.03) | (0.03) | (0.04) | (0.03) |
| childless singles | 0.04 | 0.06* | -0.02 | 0.04 | -0.06 | -0.09** | -0.01 | -0.03 | -0.11*** | 0.07 |
| | (0.05) | (0.04) | (0.04) | (0.03) | (0.05) | (0.04) | (0.05) | (0.03) | (0.03) | (0.06) |
| lone parents | 0.09* | 0.13*** | 0.01 | 0.15*** | -0.12** | -0.12*** | 0.03 | 0.14** | 0.26* | 0.02 |
| | (0.07) | (0.06) | (0.07) | (0.06) | (0.05) | (0.04) | (0.08) | (0.07) | (0.15) | (0.10) |
| parents in couple | 0.05 | 0.06* | 0.00 | 0.04 | -0.05* | -0.06 | 0.13*** | 0.07** | 0.05 | 0.09** |
| | (0.04) | (0.03) | (0.04) | (0.03) | (0.03) | (0.06) | (0.04) | (0.03) | (0.04) | (0.04) |
| other arrangement | 0.04 | 0.00 | 0.01 | -0.01 | 0.07** | -0.21*** | -0.09** | 0.09 | 0.03 | 0.06 |
| | (0.07) | (0.04) | (0.06) | (0.03) | (0.03) | (0.06) | (0.04) | (0.07) | (0.03) | (0.04) |
| head employed | -0.05* | -0.16*** | 0.04 | -0.04** | -0.02 | -0.13*** | -0.06** | -0.03 | -0.01 | -0.10*** |
| | (0.03) | (0.03) | (0.03) | (0.02) | (0.03) | (0.05) | (0.03) | (0.03) | (0.03) | (0.03) |
| other household | -0.08** | -0.08*** | -0.11** | -0.02 | -0.07** | -0.14*** | -0.09*** | -0.07*** | -0.10*** | -0.07*** |
| member employed | (0.03) | (0.03) | (0.04) | (0.02) | (0.03) | (0.05) | (0.02) | (0.02) | (0.03) | (0.02) |
| No. spells | 456 | 838 | 283 | 1168 | 1566 | 454 | 2281 | 645 | 1322 | 2238 |
| No. observations | 1018 | 1872 | 650 | 2795 | 3231 | 870 | 4875 | 1447 | 2907 | 4330 |
| No. individuals | 421 | 755 | 263 | 1066 | 1381 | 414 | 2035 | 599 | 1214 | 1916 |
| No. clusters | 254 | 630 | 200 | 646 | 582 | 221 | 842 | 422 | 525 | 778 |
| Log-likelihood | -362 | -807 | -239 | -1024 | -1635 | -391 | -2383 | -562 | -1258 | -2217 |

* p-value < .10, ** p-value < .05 and *** p-value < .01.

Notes: author computation from ECHP data. The sample includes all fresh poverty and non poverty spells of individuals aged more than 19 living in a household with head aged less than 60. The reference category is an individual that is in the relevant poverty status since 1 year in the transition year 1995-96. The reference household is a childless couple with non low educated head aged less than 30. Robust standard errors are clustered across groups of individuals who share (at least) one household member at some point in the panel sample. Year specific dummies are not reported.

### 5.3 The cross-country differences in poverty dynamics measures

Figure 1 compares, for all countries, 4 poverty dynamics measures based on exit and re-entry hazards with their analogous figures observed in the data. The measures are: the probability of leaving poverty after 1 year since entry (1-year exit probability in brief from now on), the probability of re-entering poverty after 1 year since exit (1-year re-entry probability), the probability of remaining poor for 4 or more years since entry (chronic poverty probability) and the probability of staying non poor for 4 or more years since exit (out of poverty recurrence-free probability). The graphs indicate that exit and re-entry hazard models replicate closely the cross-country distributions of time spent in and out of poverty observed in the raw data.

In general, countries cluster around welfare regimes types as established in previous work on poverty dynamics in Europe (for instance, Fouarge and Layte, 2005). Adults in social democratic and corporatist countries experience shorter poverty spells the longer non poverty ones than adults in southern countries.

Denmark exhibits the most favourable probabilities: 1-year exit probability equal to 0.58, chronic poverty probability 0.07, 1-year re-entry probability 0.16 and out of poverty recurrence-free probability 0.65.[22] Belgium, Germany and The Netherlands follow close, with 1-year exit probabilities around 0.55 and chronic poverty probability around 0.16. Belgium and Germany display slightly more favourable re-entry hazard rates than The Netherlands, with smaller 1-year re-entry probabilities (0.20 vs. 0.25) and higher out of poverty recurrence-free (0.64 vs. 0.59) probabilities.

The probabilities associated to liberal and southern countries show greater within welfare regime variation. The smallest 1-year exit (0.38) and the highest chronic poverty (0.29) probabilities are estimated in Britain. The other liberal country, Ireland, has markedly higher 1-year exit (0.52) and slightly lower chronic poverty (0.25) probabilities. Portugal has the second smallest 1-year exit (0.44) probability, and the same chronic poverty (0.29) probability as Britain. Spain is associated to 1-year exit probability equal to 0.54, the highest among liberal and Southern countries, and an extremely low chronic poverty (0.14) probability, the second slowest after the Danish one.

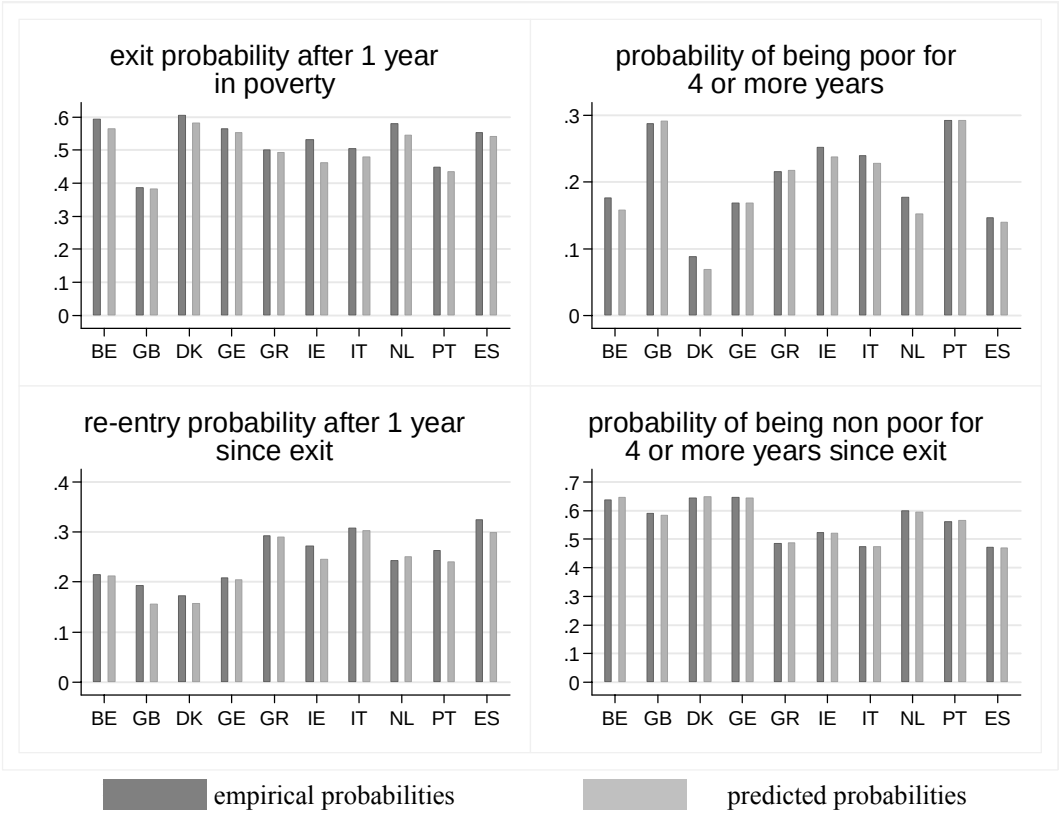
Within welfare regime variation in liberal and southern countries is also evident when looking at non poverty spells length. Spain reveals the highest 1-year re-entry (0.30) and the lowest out of poverty recurrence-free (0.47) probabilities. Britain, in contrast, displays the lowest 1-year re-entry probability (0.16, as the Danish one) and the highest, among liberal and southern countries, out of poverty recurrence-free probability (0.58). Ireland has markedly higher 1-year exit (0.25) and lower out of poverty free-recurrence (0.52) probabilities. Among southern countries, Portugal shows the lowest 1-year re-entry (0.24) and the highest out of poverty recurrence-free probability (0.57). Greece and Italy have re-entry hazard-based probabilities fairly similar to the Spanish ones.

In summary, results indicate that Danish adults experience the shortest poverty episodes and the longest non poverty ones, closely followed by the ones from corporatist countries. Longer periods in poverty are found in liberal and Southern countries, which display clear within welfare regime differences. British and Portuguese working-age population experiences the longest poverty and non poverty spells, meaning that Portugal and especially Britain are the countries with less

[22] The figures reported in the text refer to the predicted probabilities.

mobility in and out of poverty. On the other extreme, Spanish working-age population is characterised by the shortest poverty and non poverty spells among liberal and southern countries, i.e. the highest mobility in and out of poverty. In Spain, poverty spells length is much in line with durations found in corporatist countries, non poverty spells length with durations found in Greece, Ireland and Italy. Poverty spells length of Ireland is closer to southern than British duration.

**Figure 1. Poverty exit and re-entry empirical and predicted probabilities**




Notes: author computation from ECHP data. Empirical probabilities represent the relevant proportions observed in the raw data. Predicted probabilities are computed for every person in the relevant sample using the parameters' estimates of the hazard models reported in Table 5 and then averaged across individuals.

### 5.4 Decomposing cross-country differences in poverty dynamics measures

Table 6 reports the difference ($P_{11}$–$P_{22}$) in the predicted exit probabilities after 1 year in poverty of selected countries 1 and 2, two terms representing the part of the difference explained by differences in the poverty generating process ($C_I$ and $C_{II}$) and two terms representing the part of the difference explained by differences in the distribution of characteristics ($D_I$ and $D_{II}$). $C_I$ ($C_{II}$) is interpreted by answering the question "how would the 1-year exit probability have been in country 2 (1) using the

conditional hazard function of country 1 (2)?". Analogously, $D_I$ ($D_{II}$) is interpreted by answering the question "how would the 1-year exit probability have been in country 2 (1) using the composition of the population of country 1 (2)?".

Table 6 covers nearly all potential decomposition outcomes.[23] I exclude from the discussion the comparisons of countries with small differences, as even a little change in the predicted probabilities implies exceptionally large proportional differences preventing a meaningful interpretation.[24]

The first reported in Table 6 shows that the poverty dynamics generating process over-explains the difference in 1-year exit probabilities between The Netherlands and Portugal. This is because the Dutch 1-year exit probability would have been 14 probability-points lower (covering about 130% of the total difference) if the Portuguese poverty dynamics generating process had applied there. On the other hand, if the distribution of household characteristics in Portugal had been as in The Netherlands, the Portuguese 1-year exit probability would have been about 3 percentage points lower. This implies that the larger 1-year exit probability in The Netherlands was partially offset by a less favourable distribution of household characteristics.

Using a similar reasoning, the differences in 1-year exit probability are fully explained, in the decomposition of Italy and Britain differences, and largely explained (about 70% of the total difference), in the decomposition of Belgium and Ireland differences, by differences in the poverty generating process. About half of pair decompositions lead to one of the 3 outcomes we have just outlined.

The decomposition with the roles of the two countries reversed yields nearly identical results in these examples. That is not the outcome in many decompositions. However, in most cases the poverty generating process is the main determinant of the cross-country difference in poverty dynamics measures even in the decompositions that result in different contributions of the distribution of characteristics and the poverty generating process according to the roles of the country. This is because even the smallest of the terms that capture the contribution of differences in the poverty generating process accounts for the 70% or more of the cross-country difference in poverty dynamics measures. This occurs in another 20% of the relevant cases.

[23] The decomposition of poverty dynamics differences is shown for all countries and measures in Appendix A.
[24] I use simple two-sample tests of proportion as criterion to select the relevant countries.

The last two decompositions reported in Table 6 illustrate the remaining cases. The decomposition of differences in 1-year exit probability between Ireland and The Netherlands is an example of a decomposition that delivers contradictory results according to the role of the countries. In fact, the results imply that 1-year exit probability in Ireland would have been 5 probability points lower if the Dutch poverty generating process would have applied there, meaning that the poverty generating process accounts for about the 60% of the total difference. However, they also indicate that 1-year exit probability in The Netherlands would have been 2 probability points lower if the Irish poverty generating process would have applied there, in what case the poverty generating process accounts for less than 30% of the total difference. In these cases, which account for about 20% of the relevant comparisons, no conclusion can be inferred from the exercise.

The decomposition of differences in 1-year exit probability between Spain and Ireland is one of the just 4 cases in which the distribution of characteristics is the main determinant of differences in measures in poverty dynamics measures. The other cases are the decompositions of differences in chronic poverty probabilities between Spain and Ireland, 1-year re-entry probabilities between Italy and The Netherlands and out of poverty free-recurrence probabilities between Britain and Germany.

In summary, in some pair comparisons the decomposition analysis leads to divergent conclusions depending on the roles of the countries. In many others, which constitute the large majority of comparisons, they lead to coincident results. When this happens, differences in exit and re-entry hazard-based measures of poverty dynamics appear to be largely led by differences in the poverty dynamics generating process.

**Table 6. Decomposition of differences in predicted exit probabilities after 1-year in poverty. (The numbers in parentheses are percentages of the total difference)**

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| NL | PT | 0.11 | 0.14 | -0.03 | 0.14 | -0.03 | 0.14 | -0.03 |
| | | (100) | (130.92) | (-30.92) | (128.19) | (-28.19) | (129.56) | (-29.56) |
| IT | GB | 0.10 | 0.10 | 0.00 | 0.10 | 0.00 | 0.10 | 0.00 |
| | | (100) | (99.53) | (0.47) | (105.14) | (-5.14) | (102.34) | (-2.34) |
| BE | IE | 0.10 | 0.07 | 0.03 | 0.07 | 0.03 | 0.07 | 0.03 |
| | | (100) | (70.28) | (29.72) | (70.91) | (29.09) | (70.60) | (29.41) |
| IE | NL | 0.08 | 0.05 | 0.03 | 0.02 | 0.06 | 0.04 | 0.05 |
| | | (100) | (61.87) | (38.13) | (28.43) | (71.57) | (45.15) | (54.85) |
| ES | IE | 0.08 | 0.02 | 0.06 | -0.03 | 0.11 | -0.01 | 0.09 |
| | | (100) | (22.52) | (77.48) | (-44.02) | (144.02) | (-10.75) | (110.75) |

$C_I$, $C_{II}$ is the part of the poverty difference accounted for by differences in the conditional exit and re-entry hazard functions. $D_I$, $D_{II}$ is the part of the poverty difference accounted for by differences in the distribution of characteristics. $C_S$ (Shapley) is the average over $C_I$ and $C_{II}$ and $D_S$ is the average over $D_I$ and $D_{II}$.

Notes: Two-sample tests of proportion indicate that the differences are significantly different from 0 at the 95% confidence level.

## 6. Conclusions

The aim of this paper is to disentangle the determinants of cross-national differences in dynamics of income poverty across European countries. In a duration analysis framework, I develop a method in the spirit of the popular Oaxaca-Blinder decomposition that allows disentangling the cross-country differences in measures of poverty dynamics in the contribution due to differences in the distribution of characteristics of the population and the contribution due to differences in the poverty dynamics generating process. Previous cross-national poverty dynamics comparisons based on multivariate analyses disregarded the influence of differences in the composition of the population and, in the case of European countries comparisons, even the heterogeneous effects of characteristics on poverty and non poverty spells length..

Estimates from exit and re-entry hazard rate models indicate that Danish working-age population experiences the shortest poverty episodes and the longest non poverty ones, closely followed by adults in Belgium, Germany and The Netherlands. Longer periods in poverty are found in Britain, Ireland and southern countries, which however display heterogeneity in poverty recurrence and persistence. In particular, British and Portuguese working-age population experiences the longest poverty and

non poverty spells, meaning that working-age adults of these countries experience the lowest mobility in and out of poverty. On the other extreme, Spanish working-age population is characterised by the shortest poverty and non poverty spells, i.e. the highest mobility in and out of poverty.

Despite remarkable differences in the composition of the working-age population, noticeably in the prevalence of low educated and young heads, household arrangements and, among individuals living in multiple–adults households, the labour market attachment of other than the head household members, the results of the decomposition analysis show that cross-country variation in poverty dynamics measures is mainly determined by differences in the poverty dynamics generating process rather than by the heterogeneity in population composition.

Since the employment status and educational qualification of household members affect time spent in poverty more similarly across countries than the age of the household head and household living arrangements, the results of the paper points out family related policies as one of the main driver of the European difference in the dynamics of poverty.

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**Appendix A. Decomposition of differences in cross-national poverty dynamics measures. (The numbers in parentheses are percentages of the total difference)**

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| BE | GB | 0.18* | 0.15 | 0.03 | 0.17 | 0.01 | 0.16 | 0.02 |
| | | (100) | (84.31) | (15.69) | (94.05) | (5.95) | (89.18) | (10.82) |
| BE | DK | -0.02 | -0.02 | 0.00 | -0.11 | 0.09 | -0.07 | 0.05 |
| | | (100) | (112.93) | (-12.93) | (624.47) | (-524.47) | (368.70) | (-268.70) |
| BE | GE | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 |
| | | (100) | (112.61) | (-12.61) | (96.22) | (3.78) | (104.42) | (-4.42) |
| BE | GR | 0.07* | 0.11 | -0.04 | 0.09 | -0.01 | 0.10 | -0.03 |
| | | (100) | (156.27) | (-56.27) | (119.01) | (-19.01) | (137.64) | (-37.64) |
| BE | IE | 0.10* | 0.07 | 0.03 | 0.07 | 0.03 | 0.07 | 0.03 |
| | | (100) | (70.28) | (29.72) | (70.91) | (29.09) | (70.60) | (29.41) |
| BE | IT | 0.09* | 0.11 | -0.02 | 0.05 | 0.04 | 0.08 | 0.01 |
| | | (100) | (127.81) | (-27.81) | (57.69) | (42.31) | (92.75) | (7.25) |
| BE | NL | 0.02 | 0.03 | -0.01 | -0.02 | 0.04 | 0.01 | 0.02 |
| | | (100) | (126.92) | (-26.92) | (-100.22) | (200.22) | (13.35) | (86.65) |
| BE | PT | 0.13* | 0.17 | -0.04 | 0.13 | 0.00 | 0.15 | -0.02 |
| | | (100) | (134.27) | (-34.27) | (98.97) | (1.03) | (116.62) | (-16.62) |
| BE | ES | 0.02 | 0.03 | 0.00 | 0.06 | -0.03 | 0.05 | -0.02 |
| | | (100) | (119.47) | (-19.47) | (237.93) | (-137.93) | (178.70) | (-78.70) |
| GB | DK | -0.20* | -0.13 | -0.07 | -0.28 | 0.08 | -0.21 | 0.01 |
| | | (100) | (63.30) | (36.70) | (140.07) | (-40.07) | (101.69) | (-1.69) |
| GB | GE | -0.17* | -0.13 | -0.04 | -0.16 | -0.01 | -0.15 | -0.03 |
| | | (100) | (78.65) | (21.35) | (96.32) | (3.68) | (87.49) | (12.52) |
| GB | GR | -0.11* | -0.09 | -0.02 | -0.08 | -0.03 | -0.09 | -0.03 |
| | | (100) | (78.29) | (21.71) | (72.68) | (27.32) | (75.49) | (24.52) |
| GB | IE | -0.08* | -0.12 | 0.04 | -0.07 | -0.01 | -0.10 | 0.02 |
| | | (100) | (151.42) | (-51.42) | (91.08) | (8.92) | (121.25) | (-21.25) |
| GB | IT | -0.10* | -0.10 | 0.00 | -0.10 | 0.00 | -0.10 | 0.00 |
| | | (100) | (105.14) | (-5.14) | (99.53) | (0.47) | (102.34) | (-2.34) |
| GB | NL | -0.16* | -0.13 | -0.03 | -0.16 | 0.00 | -0.15 | -0.02 |
| | | (100) | (82.53) | (17.47) | (98.29) | (1.71) | (90.41) | (9.59) |
| GB | PT | -0.05* | -0.03 | -0.03 | -0.03 | -0.02 | -0.03 | -0.03 |
| | | (100) | (49.71) | (50.29) | (58.78) | (41.22) | (54.25) | (45.76) |
| GB | ES | -0.16* | -0.18 | 0.02 | -0.10 | -0.06 | -0.14 | -0.02 |
| | | (100) | (114.42) | (-14.42) | (60.51) | (39.49) | (87.47) | (12.54) |
| DK | GE | 0.03 | 0.10 | -0.07 | 0.04 | -0.02 | 0.07 | -0.05 |
| | | (100) | (344.17) | (-244.17) | (152.45) | (-52.45) | (248.31) | (-148.31) |
| DK | GR | 0.09* | 0.30 | -0.21 | 0.05 | 0.04 | 0.18 | -0.09 |
| | | (100) | (330.75) | (-230.75) | (60.76) | (39.24) | (195.76) | (-95.76) |
| DK | IE | 0.12* | 0.27 | -0.15 | 0.05 | 0.07 | 0.16 | -0.04 |
| | | (100) | (222.71) | (-122.71) | (43.58) | (56.42) | (133.15) | (-33.15) |
| DK | IT | 0.10* | 0.31 | -0.21 | 0.03 | 0.07 | 0.17 | -0.07 |
| | | (100) | (301.18) | (-201.18) | (29.67) | (70.33) | (165.43) | (-65.43) |
| DK | NL | 0.04 | 0.13 | -0.09 | -0.03 | 0.07 | 0.05 | -0.01 |
| | | (100) | (349.59) | (-249.59) | (-73.63) | (173.63) | (137.98) | (-37.98) |
| DK | PT | 0.15* | 0.35 | -0.20 | 0.16 | -0.01 | 0.26 | -0.11 |
| | | (100) | (237.18) | (-137.18) | (107.57) | (-7.57) | (172.38) | (-72.38) |

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| DK | ES | 0.04 | 0.26 | -0.21 | 0.06 | -0.02 | 0.16 | -0.12 |
| | | (100) | (605.03) | (-505.03) | (148.07) | (-48.07) | (376.55) | (-276.55) |
| GE | GR | 0.06* | 0.11 | -0.05 | 0.05 | 0.01 | 0.08 | -0.02 |
| | | (100) | (182.22) | (-82.22) | (83.29) | (16.71) | (132.76) | (-32.76) |
| GE | IE | 0.09* | 0.09 | 0.00 | 0.03 | 0.06 | 0.06 | 0.03 |
| | | (100) | (96.16) | (3.84) | (31.70) | (68.30) | (63.93) | (36.07) |
| GE | IT | 0.07* | 0.11 | -0.03 | 0.02 | 0.05 | 0.07 | 0.01 |
| | | (100) | (145.94) | (-45.94) | (28.17) | (71.83) | (87.06) | (12.95) |
| GE | NL | 0.01 | 0.01 | 0.00 | -0.05 | 0.06 | -0.02 | 0.03 |
| | | (100) | (107.36) | (-7.36) | (-553.49) | (653.49) | (-223.07) | (323.07) |
| GE | PT | 0.12* | 0.17 | -0.05 | 0.11 | 0.01 | 0.14 | -0.02 |
| | | (100) | (146.52) | (-46.52) | (91.18) | (8.82) | (118.85) | (-18.85) |
| GE | ES | 0.01 | 0.05 | -0.03 | 0.02 | -0.01 | 0.04 | -0.02 |
| | | (100) | (359.00) | (-259.00) | (191.29) | (-91.29) | (275.15) | (-175.15) |
| GR | IE | 0.03 | -0.02 | 0.05 | -0.13 | 0.16 | -0.08 | 0.11 |
| | | (100) | (-66.36) | (166.36) | (-421.32) | (521.32) | (-243.84) | (343.84) |
| GR | IT | 0.01 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 | 0.02 |
| | | (100) | (-7.36) | (107.36) | (-20.01) | (120.01) | (-13.69) | (113.69) |
| GR | NL | -0.05* | -0.05 | 0.00 | -0.08 | 0.03 | -0.07 | 0.02 |
| | | (100) | (102.91) | (-2.91) | (150.84) | (-50.84) | (126.88) | (-26.88) |
| GR | PT | 0.06* | 0.03 | 0.03 | 0.04 | 0.02 | 0.04 | 0.03 |
| | | (100) | (54.30) | (45.70) | (65.39) | (34.61) | (59.85) | (40.16) |
| GR | ES | -0.05* | -0.06 | 0.01 | -0.09 | 0.04 | -0.08 | 0.03 |
| | | (100) | (127.69) | (-27.69) | (179.37) | (-79.37) | (153.53) | (-53.53) |
| IE | IT | -0.02 | 0.11 | -0.13 | 0.00 | -0.02 | 0.06 | -0.08 |
| | | (100) | (-632.57) | (732.57) | (-2.93) | (102.93) | (-317.75) | (417.75) |
| IE | NL | -0.08* | -0.02 | -0.06 | -0.05 | -0.03 | -0.04 | -0.05 |
| | | (100) | (28.43) | (71.57) | (61.87) | (38.13) | (45.15) | (54.85) |
| IE | PT | 0.03 | 0.16 | -0.13 | 0.05 | -0.02 | 0.11 | -0.08 |
| | | (100) | (596.50) | (-496.50) | (175.75) | (-75.75) | (386.13) | (-286.13) |
| IE | ES | -0.08* | 0.03 | -0.11 | -0.02 | -0.06 | 0.01 | -0.09 |
| | | (100) | (-44.02) | (144.02) | (22.52) | (77.48) | (-10.75) | (110.75) |
| IT | NL | -0.07* | -0.06 | 0.00 | -0.07 | 0.00 | -0.07 | 0.00 |
| | | (100) | (98.58) | (1.42) | (102.50) | (-2.50) | (100.54) | (-0.54) |
| IT | PT | 0.04 | 0.04 | 0.01 | 0.03 | 0.01 | 0.04 | 0.01 |
| | | (100) | (84.35) | (15.65) | (77.38) | (22.62) | (80.87) | (19.14) |
| IT | ES | -0.06* | -0.08 | 0.02 | -0.07 | 0.01 | -0.08 | 0.02 |
| | | (100) | (139.59) | (-39.59) | (115.94) | (-15.94) | (127.77) | (-27.77) |
| NL | PT | 0.11* | 0.14 | -0.03 | 0.14 | -0.03 | 0.14 | -0.03 |
| | | (100) | (130.92) | (-30.92) | (128.19) | (-28.19) | (129.56) | (-29.56) |
| NL | ES | 0.00 | -0.04 | 0.04 | 0.04 | -0.04 | 0.00 | 0.00 |
| | | (100) | (-820.71) | (920.71) | (969.05) | (-869.05) | (74.17) | (25.83) |
| PT | ES | -0.11* | -0.10 | 0.00 | -0.12 | 0.02 | -0.11 | 0.01 |
| | | (100) | (99.53) | (0.47) | (114.66) | (-14.66) | (107.10) | (-7.10) |
| | | *probability of being poor for 4 or more years* | | | | | | |
| BE | GB | -0.13* | -0.11 | -0.03 | -0.12 | -0.01 | -0.12 | -0.02 |
| | | (100) | (80.07) | (19.93) | (89.91) | (10.09) | (84.99) | (15.01) |
| BE | DK | 0.09* | 0.09 | 0.00 | 0.13 | -0.04 | 0.11 | -0.02 |
| | | (100) | (103.06) | (-3.06) | (141.66) | (-41.66) | (122.36) | (-22.36) |

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| BE | GE | -0.01 | -0.01 | 0.00 | -0.01 | 0.00 | -0.01 | 0.00 |
| | | (100) | (104.36) | (-4.36) | (98.74) | (1.26) | (101.55) | (-1.55) |
| BE | GR | -0.06* | -0.09 | 0.03 | -0.07 | 0.01 | -0.08 | 0.02 |
| | | (100) | (152.47) | (-52.47) | (121.93) | (-21.93) | (137.20) | (-37.20) |
| BE | IE | -0.08* | -0.05 | -0.03 | -0.05 | -0.03 | -0.05 | -0.03 |
| | | (100) | (64.07) | (35.93) | (62.85) | (37.15) | (63.46) | (36.54) |
| BE | IT | -0.07* | -0.09 | 0.02 | -0.03 | -0.04 | -0.06 | -0.01 |
| | | (100) | (125.05) | (-25.05) | (47.30) | (52.70) | (86.18) | (13.83) |
| BE | NL | 0.01 | 0.00 | 0.00 | 0.04 | -0.03 | 0.02 | -0.02 |
| | | (100) | (40.70) | (59.30) | (746.09) | (-646.09) | (393.40) | (-293.40) |
| BE | PT | -0.13* | -0.17 | 0.03 | -0.13 | 0.00 | -0.15 | 0.02 |
| | | (100) | (125.69) | (-25.69) | (98.36) | (1.64) | (112.03) | (-12.03) |
| BE | ES | 0.02 | 0.02 | 0.00 | -0.01 | 0.03 | 0.01 | 0.02 |
| | | (100) | (87.92) | (12.08) | (-55.08) | (155.08) | (16.42) | (83.58) |
| GB | DK | 0.22* | 0.14 | 0.08 | 0.25 | -0.03 | 0.20 | 0.03 |
| | | (100) | (62.86) | (37.14) | (114.75) | (-14.75) | (88.81) | (11.20) |
| GB | GE | 0.12* | 0.08 | 0.04 | 0.12 | 0.01 | 0.10 | 0.03 |
| | | (100) | (65.02) | (34.98) | (95.26) | (4.74) | (80.14) | (19.86) |
| GB | GR | 0.07* | 0.04 | 0.03 | 0.04 | 0.03 | 0.04 | 0.03 |
| | | (100) | (60.93) | (39.07) | (58.72) | (41.28) | (59.83) | (40.18) |
| GB | IE | 0.05 | 0.11 | -0.05 | 0.04 | 0.01 | 0.08 | -0.02 |
| | | (100) | (198.05) | (-98.05) | (83.21) | (16.79) | (140.63) | (-40.63) |
| GB | IT | 0.06* | 0.07 | -0.01 | 0.06 | 0.00 | 0.07 | -0.01 |
| | | (100) | (110.30) | (-10.30) | (100.44) | (-0.44) | (105.37) | (-5.37) |
| GB | NL | 0.14* | 0.10 | 0.03 | 0.14 | 0.00 | 0.12 | 0.02 |
| | | (100) | (75.61) | (24.39) | (99.03) | (0.97) | (87.32) | (12.68) |
| GB | PT | 0.00 | -0.03 | 0.03 | -0.03 | 0.03 | -0.03 | 0.03 |
| | | (100) | (3159.97) | (-3059.97) | (2591.00) | (-2491.00) | (2875.49) | (-2775.49) |
| GB | ES | 0.15* | 0.18 | -0.03 | 0.10 | 0.05 | 0.14 | 0.01 |
| | | (100) | (119.01) | (-19.01) | (63.90) | (36.10) | (91.46) | (8.55) |
| DK | GE | -0.10* | -0.13 | 0.03 | -0.11 | 0.01 | -0.12 | 0.02 |
| | | (100) | (130.06) | (-30.06) | (114.64) | (-14.64) | (122.35) | (-22.35) |
| DK | GR | -0.15* | -0.21 | 0.06 | -0.11 | -0.04 | -0.16 | 0.01 |
| | | (100) | (140.57) | (-40.57) | (76.01) | (23.99) | (108.29) | (-8.29) |
| DK | IE | -0.17* | -0.22 | 0.05 | -0.10 | -0.07 | -0.16 | -0.01 |
| | | (100) | (130.10) | (-30.10) | (61.24) | (38.76) | (95.67) | (4.33) |
| DK | IT | -0.16* | -0.22 | 0.06 | -0.09 | -0.07 | -0.16 | -0.01 |
| | | (100) | (137.79) | (-37.79) | (56.14) | (43.86) | (96.97) | (3.04) |
| DK | NL | -0.08* | -0.12 | 0.04 | -0.03 | -0.05 | -0.08 | -0.01 |
| | | (100) | (144.39) | (-44.39) | (39.44) | (60.56) | (91.92) | (8.09) |
| DK | PT | -0.22* | -0.28 | 0.06 | -0.24 | 0.01 | -0.26 | 0.04 |
| | | (100) | (126.70) | (-26.70) | (105.43) | (-5.43) | (116.07) | (-16.07) |
| DK | ES | -0.07* | -0.13 | 0.06 | -0.09 | 0.02 | -0.11 | 0.04 |
| | | (100) | (186.10) | (-86.10) | (123.42) | (-23.42) | (154.76) | (-54.76) |
| GE | GR | -0.05* | -0.09 | 0.04 | -0.04 | -0.01 | -0.07 | 0.02 |
| | | (100) | (184.68) | (-84.68) | (76.96) | (23.04) | (130.82) | (-30.82) |
| GE | IE | -0.07* | -0.07 | 0.00 | -0.01 | -0.06 | -0.04 | -0.03 |
| | | (100) | (94.82) | (5.18) | (11.13) | (88.87) | (52.98) | (47.03) |
| GE | IT | -0.06* | -0.09 | 0.03 | -0.01 | -0.05 | -0.05 | -0.01 |
| | | (100) | (147.78) | (-47.78) | (11.43) | (88.57) | (79.61) | (20.40) |
| GE | NL | 0.02 | 0.02 | 0.00 | 0.06 | -0.04 | 0.04 | -0.02 |
| | | (100) | (101.48) | (-1.48) | (387.56) | (-287.56) | (244.52) | (-144.52) |

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| GE | PT | -0.12* | -0.17 | 0.05 | -0.11 | -0.01 | -0.14 | 0.02 |
| | | (100) | (136.71) | (-36.71) | (89.28) | (10.72) | (113.00) | (-13.00) |
| GE | ES | 0.03 | 0.00 | 0.03 | 0.02 | 0.01 | 0.01 | 0.02 |
| | | (100) | (-1.00) | (101.00) | (66.40) | (33.60) | (32.70) | (67.30) |
| GR | IE | -0.02 | 0.04 | -0.06 | 0.12 | -0.14 | 0.08 | -0.10 |
| | | (100) | (-176.37) | (276.37) | (-602.39) | (702.39) | (-389.38) | (489.38) |
| GR | IT | -0.01 | 0.00 | -0.02 | 0.01 | -0.02 | 0.01 | -0.02 |
| | | (100) | (-36.97) | (136.97) | (-49.14) | (149.14) | (-43.06) | (143.06) |
| GR | NL | 0.06* | 0.06 | 0.00 | 0.09 | -0.02 | 0.08 | -0.01 |
| | | (100) | (99.67) | (0.33) | (134.30) | (-34.30) | (116.99) | (-16.99) |
| GR | PT | -0.07* | -0.05 | -0.03 | -0.05 | -0.02 | -0.05 | -0.03 |
| | | (100) | (61.79) | (38.21) | (68.83) | (31.17) | (65.31) | (34.69) |
| GR | ES | 0.08* | 0.09 | -0.01 | 0.11 | -0.03 | 0.10 | -0.02 |
| | | (100) | (117.53) | (-17.53) | (136.57) | (-36.57) | (127.05) | (-27.05) |
| IE | IT | 0.01 | -0.11 | 0.12 | -0.01 | 0.02 | -0.06 | 0.07 |
| | | (100) | (-1180.90) | (1280.90) | (-111.19) | (211.19) | (-646.05) | (746.05) |
| IE | NL | 0.08* | 0.03 | 0.06 | 0.06 | 0.03 | 0.05 | 0.05 |
| | | (100) | (33.69) | (66.31) | (68.47) | (31.53) | (51.08) | (48.92) |
| IE | PT | -0.05 | -0.17 | 0.12 | -0.08 | 0.02 | -0.13 | 0.07 |
| | | (100) | (313.49) | (-213.49) | (142.43) | (-42.43) | (227.96) | (-127.96) |
| IE | ES | 0.10* | -0.01 | 0.10 | 0.04 | 0.05 | 0.02 | 0.08 |
| | | (100) | (-6.55) | (106.55) | (44.82) | (55.18) | (19.14) | (80.87) |
| IT | NL | 0.08* | 0.07 | 0.00 | 0.08 | 0.00 | 0.08 | 0.00 |
| | | (100) | (96.98) | (3.02) | (101.61) | (-1.61) | (99.30) | (0.71) |
| IT | PT | -0.06* | -0.06 | -0.01 | -0.05 | -0.01 | -0.06 | -0.01 |
| | | (100) | (87.99) | (12.01) | (81.08) | (18.92) | (84.54) | (15.47) |
| IT | ES | 0.09* | 0.11 | -0.03 | 0.10 | -0.01 | 0.11 | -0.02 |
| | | (100) | (129.15) | (-29.15) | (108.46) | (-8.46) | (118.81) | (-18.81) |
| NL | PT | -0.14* | -0.17 | 0.03 | -0.18 | 0.04 | -0.18 | 0.04 |
| | | (100) | (119.78) | (-19.78) | (125.58) | (-25.57) | (122.68) | (-22.68) |
| NL | ES | 0.01 | 0.05 | -0.04 | -0.02 | 0.03 | 0.02 | -0.01 |
| | | (100) | (374.80) | (-274.80) | (-153.00) | (253.00) | (110.90) | (-10.90) |
| PT | ES | 0.15* | 0.15 | 0.00 | 0.16 | -0.01 | 0.16 | -0.01 |
| | | (100) | (99.36) | (0.64) | (107.86) | (-7.86) | (103.61) | (-3.61) |
| | | | | *re-entry probability after 1 year since exit* | | | | |
| BE | GB | 0.06* | 0.05 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 |
| | | (100) | (82.28) | (17.72) | (95.36) | (4.64) | (88.82) | (11.18) |
| BE | DK | 0.06* | 0.02 | 0.04 | 0.04 | 0.02 | -0.01 | 0.01 |
| | | (100) | (35.53) | (64.47) | (69.31) | (30.69) | (52.42) | (47.58) |
| BE | GE | 0.01 | -0.03 | 0.03 | -0.02 | 0.03 | 0.00 | 0.00 |
| | | (100) | (-347.23) | (447.23) | (-281.19) | (381.19) | (-314.21) | (414.21) |
| BE | GR | -0.08* | -0.10 | 0.02 | -0.02 | -0.06 | -0.04 | 0.04 |
| | | (100) | (121.85) | (-21.85) | (28.75) | (71.25) | (75.30) | (24.70) |
| BE | IE | -0.03 | -0.03 | 0.00 | -0.07 | 0.04 | 0.02 | -0.02 |
| | | (100) | (94.37) | (5.63) | (216.96) | (-116.96) | (155.66) | (-55.66) |
| BE | IT | -0.09* | -0.10 | 0.01 | -0.07 | -0.03 | -0.02 | 0.02 |
| | | (100) | (111.32) | (-11.32) | (72.39) | (27.61) | (91.85) | (8.15) |
| BE | NL | -0.04 | -0.04 | 0.00 | -0.05 | 0.01 | 0.00 | 0.00 |
| | | (100) | (107.19) | (-7.19) | (132.31) | (-32.31) | (119.75) | (-19.75) |
| BE | PT | -0.03 | -0.07 | 0.04 | -0.09 | 0.06 | 0.01 | -0.01 |
| | | (100) | (238.29) | (-138.29) | (334.96) | (-234.96) | (286.62) | (-186.62) |

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| BE | ES | -0.09* | -0.09 | 0.00 | -0.07 | -0.02 | -0.01 | 0.01 |
| | | (100) | (105.54) | (-5.54) | (82.55) | (17.45) | (94.05) | (5.95) |
| GB | DK | 0.00 | -0.02 | 0.02 | 0.00 | 0.00 | -0.01 | 0.01 |
| | | (100) | (2114.11) | (-2014.11) | (-303.21) | (403.21) | (905.45) | (-805.45) |
| GB | GE | -0.05 | -0.07 | 0.02 | -0.08 | 0.03 | 0.01 | -0.01 |
| | | (100) | (134.88) | (-34.88) | (168.40) | (-68.40) | (151.64) | (-51.64) |
| GB | GR | -0.13* | -0.17 | 0.04 | -0.09 | -0.05 | -0.04 | 0.04 |
| | | (100) | (126.78) | (-26.78) | (64.49) | (35.51) | (95.63) | (4.37) |
| GB | IE | -0.09* | -0.10 | 0.01 | -0.13 | 0.04 | 0.01 | -0.01 |
| | | (100) | (108.23) | (-8.23) | (139.05) | (-39.05) | (123.64) | (-23.64) |
| GB | IT | -0.15* | -0.18 | 0.03 | -0.12 | -0.03 | -0.03 | 0.03 |
| | | (100) | (119.69) | (-19.69) | (80.86) | (19.14) | (100.27) | (-0.27) |
| GB | NL | -0.09* | -0.11 | 0.02 | -0.10 | 0.01 | 0.00 | 0.00 |
| | | (100) | (117.26) | (-17.26) | (108.65) | (-8.65) | (112.95) | (-12.95) |
| GB | PT | -0.08* | -0.14 | 0.05 | -0.13 | 0.05 | 0.00 | 0.00 |
| | | (100) | (161.39) | (-61.39) | (154.89) | (-54.89) | (158.14) | (-58.14) |
| GB | ES | -0.14* | -0.17 | 0.02 | -0.13 | -0.01 | -0.02 | 0.02 |
| | | (100) | (117.48) | (-17.48) | (91.82) | (8.18) | (104.65) | (-4.65) |
| DK | GE | -0.05 | -0.05 | 0.00 | -0.05 | 0.00 | 0.00 | 0.00 |
| | | (100) | (99.94) | (0.06) | (95.66) | (4.34) | (97.80) | (2.20) |
| DK | GR | -0.13* | -0.12 | -0.02 | -0.05 | -0.08 | -0.03 | 0.03 |
| | | (100) | (88.21) | (11.79) | (38.26) | (61.74) | (63.23) | (36.77) |
| DK | IE | -0.09* | -0.09 | 0.00 | -0.12 | 0.03 | 0.02 | -0.02 |
| | | (100) | (95.95) | (4.05) | (133.00) | (-33.00) | (114.47) | (-14.47) |
| DK | IT | -0.15* | -0.12 | -0.02 | -0.07 | -0.08 | -0.03 | 0.03 |
| | | (100) | (83.93) | (16.07) | (46.95) | (53.05) | (65.44) | (34.56) |
| DK | NL | -0.09* | -0.08 | -0.01 | -0.08 | -0.01 | 0.00 | 0.00 |
| | | (100) | (90.45) | (9.55) | (84.44) | (15.56) | (87.44) | (12.56) |
| DK | PT | -0.08* | -0.11 | 0.03 | -0.11 | 0.03 | 0.00 | 0.00 |
| | | (100) | (131.45) | (-31.45) | (132.47) | (-32.47) | (131.96) | (-31.96) |
| DK | ES | -0.14* | -0.11 | -0.03 | -0.09 | -0.06 | -0.01 | 0.01 |
| | | (100) | (80.78) | (19.22) | (60.85) | (39.15) | (70.82) | (29.18) |
| GE | GR | -0.09* | -0.07 | -0.02 | -0.01 | -0.07 | -0.03 | 0.03 |
| | | (100) | (76.71) | (23.29) | (12.73) | (87.27) | (44.72) | (55.28) |
| GE | IE | -0.04 | -0.01 | -0.04 | -0.07 | 0.03 | 0.03 | -0.03 |
| | | (100) | (12.77) | (87.23) | (167.96) | (-67.96) | (90.37) | (9.63) |
| GE | IT | -0.10* | -0.08 | -0.02 | -0.05 | -0.05 | -0.02 | 0.02 |
| | | (100) | (80.51) | (19.49) | (48.01) | (51.99) | (64.26) | (35.74) |
| GE | NL | -0.05 | -0.01 | -0.04 | -0.05 | 0.00 | 0.02 | -0.02 |
| | | (100) | (13.84) | (86.16) | (108.57) | (-8.56) | (61.20) | (38.80) |
| GE | PT | -0.03 | 0.00 | -0.03 | -0.08 | 0.05 | 0.04 | -0.04 |
| | | (100) | (10.25) | (89.75) | (239.94) | (-139.94) | (125.10) | (-25.10) |
| GE | ES | -0.09* | -0.07 | -0.02 | -0.04 | -0.05 | -0.02 | 0.02 |
| | | (100) | (76.98) | (23.02) | (44.64) | (55.36) | (60.81) | (39.19) |
| GR | IE | 0.04 | 0.02 | 0.02 | 0.05 | -0.01 | -0.01 | 0.01 |
| | | (100) | (54.98) | (45.02) | (114.15) | (-14.15) | (84.57) | (15.43) |
| GR | IT | -0.01 | -0.02 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 |
| | | (100) | (120.74) | (-20.74) | (102.91) | (-2.91) | (111.82) | (-11.82) |
| GR | NL | 0.04 | 0.01 | 0.03 | 0.01 | 0.03 | 0.00 | 0.00 |
| | | (100) | (29.38) | (70.62) | (34.11) | (65.89) | (31.74) | (68.26) |
| GR | PT | 0.05 | 0.06 | -0.01 | 0.01 | 0.04 | 0.03 | -0.03 |
| | | (100) | (124.23) | (-24.23) | (14.53) | (85.47) | (69.38) | (30.62) |

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| GR | ES | -0.01 | 0.00 | -0.01 | 0.00 | -0.01 | 0.00 | 0.00 |
| | | (100) | (-23.63) | (123.63) | (-23.78) | (123.78) | (-23.71) | (123.71) |
| IE | IT | -0.06* | -0.07 | 0.01 | -0.06 | 0.01 | 0.00 | 0.00 |
| | | (100) | (117.85) | (-17.85) | (113.27) | (-13.27) | (115.56) | (-15.56) |
| IE | NL | 0.00 | 0.05 | -0.06 | -0.04 | 0.03 | 0.05 | -0.05 |
| | | (100) | (-1120.65) | (1220.65) | (791.23) | (-691.23) | (-164.71) | (264.71) |
| IE | PT | 0.01 | -0.03 | 0.04 | -0.04 | 0.05 | 0.01 | -0.01 |
| | | (100) | (-487.65) | (587.65) | (-717.51) | (817.51) | (-602.58) | (702.58) |
| IE | ES | -0.05* | -0.05 | 0.00 | -0.06 | 0.00 | 0.00 | 0.00 |
| | | (100) | (103.97) | (-3.97) | (108.51) | (-8.51) | (106.24) | (-6.24) |
| IT | NL | 0.05* | 0.02 | 0.03 | 0.02 | 0.03 | 0.00 | 0.00 |
| | | (100) | (44.21) | (55.79) | (45.37) | (54.63) | (44.79) | (55.21) |
| IT | PT | 0.06* | 0.05 | 0.01 | 0.02 | 0.05 | 0.02 | -0.02 |
| | | (100) | (82.55) | (17.45) | (23.63) | (76.37) | (53.09) | (46.91) |
| IT | ES | 0.00 | 0.02 | -0.02 | 0.00 | 0.00 | 0.01 | -0.01 |
| | | (100) | (451.19) | (-351.19) | (48.53) | (51.47) | (249.86) | (-149.86) |
| NL | PT | 0.01 | 0.01 | 0.00 | -0.02 | 0.03 | 0.01 | -0.01 |
| | | (100) | (64.65) | (35.35) | (-188.31) | (288.31) | (-61.83) | (161.83) |
| NL | ES | -0.05 | 0.00 | -0.04 | -0.04 | -0.01 | 0.02 | -0.02 |
| | | (100) | (6.15) | (93.85) | (78.22) | (21.78) | (42.19) | (57.81) |
| PT | ES | -0.06* | -0.01 | -0.05 | -0.06 | 0.00 | 0.03 | -0.03 |
| | | (100) | (14.57) | (85.43) | (99.94) | (0.06) | (57.26) | (42.74) |
| | | *probability of being non poor for 4 or more years since entry* | | | | | | |
| BE | GB | 0.06* | 0.08 | -0.01 | 0.07 | -0.01 | 0.08 | -0.01 |
| | | (100) | (122.41) | (-22.41) | (109.24) | (-9.24) | (115.83) | (-15.83) |
| BE | DK | 0.00 | 0.05 | -0.06 | 0.03 | -0.03 | 0.04 | -0.05 |
| | | (100) | (-2888.99) | (2988.99) | (-1674.20) | (1774.20) | (-2281.60) | (2381.60) |
| BE | GE | 0.00 | 0.06 | -0.05 | 0.05 | -0.05 | 0.06 | -0.05 |
| | | (100) | (2107.54) | (-2007.54) | (1831.00) | (-1731.00) | (1969.27) | (-1869.27) |
| BE | GR | 0.16* | 0.19 | -0.03 | 0.07 | 0.09 | 0.13 | 0.03 |
| | | (100) | (117.72) | (-17.72) | (46.30) | (53.70) | (82.01) | (17.99) |
| BE | IE | 0.13* | 0.12 | 0.00 | 0.19 | -0.06 | 0.16 | -0.03 |
| | | (100) | (98.41) | (1.59) | (151.08) | (-51.08) | (124.75) | (-24.75) |
| BE | IT | 0.17* | 0.19 | -0.02 | 0.14 | 0.04 | 0.17 | 0.01 |
| | | (100) | (110.03) | (-10.03) | (78.61) | (21.39) | (94.32) | (5.68) |
| BE | NL | 0.05 | 0.06 | 0.00 | 0.07 | -0.02 | 0.07 | -0.01 |
| | | (100) | (108.69) | (-8.69) | (136.40) | (-36.40) | (122.55) | (-22.55) |
| BE | PT | 0.08* | 0.14 | -0.06 | 0.19 | -0.11 | 0.17 | -0.09 |
| | | (100) | (175.13) | (-75.13) | (228.43) | (-128.43) | (201.78) | (-101.78) |
| BE | ES | 0.18* | 0.19 | -0.01 | 0.16 | 0.02 | 0.18 | 0.01 |
| | | (100) | (104.62) | (-4.62) | (87.36) | (12.64) | (95.99) | (4.01) |
| GB | DK | -0.07* | -0.02 | -0.05 | -0.07 | 0.01 | -0.05 | -0.02 |
| | | (100) | (30.97) | (69.03) | (112.21) | (-12.21) | (71.59) | (28.41) |
| GB | GE | -0.06* | -0.02 | -0.04 | -0.01 | -0.05 | -0.02 | -0.05 |
| | | (100) | (39.21) | (60.79) | (12.24) | (87.76) | (25.73) | (74.28) |
| GB | GR | 0.09* | 0.18 | -0.08 | 0.02 | 0.07 | 0.10 | -0.01 |
| | | (100) | (186.08) | (-86.08) | (23.17) | (76.83) | (104.63) | (-4.63) |
| GB | IE | 0.06* | 0.08 | -0.02 | 0.12 | -0.06 | 0.10 | -0.04 |
| | | (100) | (125.71) | (-25.71) | (193.46) | (-93.46) | (159.59) | (-59.59) |
| GB | IT | 0.11* | 0.17 | -0.06 | 0.07 | 0.04 | 0.12 | -0.01 |
| | | (100) | (159.39) | (-59.39) | (62.10) | (37.90) | (110.75) | (-10.75) |

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| GB | NL | -0.01 | 0.03 | -0.04 | -0.00 | -0.01 | 0.02 | -0.03 |
| | | (100) | (-229.79) | (329.79) | (-21.82) | (121.82) | (-125.81) | (225.81) |
| GB | PT | 0.02 | 0.14 | -0.12 | 0.09 | -0.08 | 0.12 | -0.10 |
| | | (100) | (773.56) | (-673.56) | (535.93) | (-435.93) | (654.75) | (-554.75) |
| GB | ES | 0.11* | 0.17 | -0.06 | 0.10 | 0.01 | 0.14 | -0.03 |
| | | (100) | (148.79) | (-48.79) | (86.95) | (13.05) | (117.87) | (-17.87) |
| DK | GE | 0.00 | 0.00 | 0.00 | -0.00 | -0.00 | 0.00 | 0.00 |
| | | (100) | (93.20) | (6.80) | (40.50) | (59.50) | (66.85) | (33.15) |
| DK | GR | 0.16* | 0.13 | 0.03 | 0.03 | 0.13 | 0.08 | 0.08 |
| | | (100) | (80.65) | (19.35) | (19.68) | (80.32) | (50.17) | (49.84) |
| DK | IE | 0.13* | 0.12 | 0.01 | 0.17 | -0.05 | 0.15 | -0.02 |
| | | (100) | (94.20) | (5.80) | (137.69) | (-37.69) | (115.95) | (-15.95) |
| DK | IT | 0.18* | 0.13 | 0.05 | 0.06 | 0.12 | 0.10 | 0.09 |
| | | (100) | (73.87) | (26.13) | (31.59) | (68.41) | (52.73) | (47.27) |
| DK | NL | 0.06 | 0.04 | 0.02 | 0.03 | 0.02 | 0.04 | 0.02 |
| | | (100) | (67.54) | (32.46) | (61.02) | (38.98) | (64.28) | (35.72) |
| DK | PT | 0.08 | 0.14 | -0.05 | 0.13 | -0.05 | 0.14 | -0.05 |
| | | (100) | (162.81) | (-62.81) | (156.32) | (-56.32) | (159.57) | (-59.57) |
| DK | ES | 0.18* | 0.13 | 0.05 | 0.10 | 0.08 | 0.12 | 0.07 |
| | | (100) | (70.79) | (29.21) | (53.38) | (46.62) | (62.09) | (37.92) |
| GE | GR | 0.16* | 0.13 | 0.03 | 0.04 | 0.12 | 0.09 | 0.08 |
| | | (100) | (80.36) | (19.64) | (25.23) | (74.77) | (52.80) | (47.21) |
| GE | IE | 0.12* | 0.07 | 0.06 | 0.17 | -0.05 | 0.12 | 0.01 |
| | | (100) | (53.89) | (46.11) | (138.43) | (-38.43) | (96.16) | (3.84) |
| GE | IT | 0.17* | 0.14 | 0.03 | 0.09 | 0.08 | 0.12 | 0.06 |
| | | (100) | (82.60) | (17.40) | (54.69) | 45.31 | (68.65) | (31.36) |
| GE | NL | 0.05 | -0.01 | 0.06 | 0.06 | -0.01 | 0.03 | 0.03 |
| | | (100) | (-24.84) | (124.84) | (111.69) | -11.69 | (43.43) | (56.58) |
| GE | PT | 0.08* | 0.03 | 0.05 | 0.16 | -0.08 | 0.10 | -0.02 |
| | | (100) | (39.41) | (60.59) | (200.12) | -100.12 | (119.77) | (-19.77) |
| GE | ES | 0.18* | 0.14 | 0.03 | 0.10 | 0.08 | 0.12 | 0.06 |
| | | (100) | (80.85) | (19.15) | (54.36) | 45.64 | (67.61) | (32.40) |
| GR | IE | -0.03 | 0.00 | -0.03 | -0.04 | 0.01 | -0.02 | -0.01 |
| | | (100) | (11.15) | (88.85) | (125.87) | -25.87 | (68.51) | (31.49) |
| GR | IT | 0.01 | 0.02 | 0.00 | 0.01 | -0.00 | 0.02 | 0.00 |
| | | (100) | (129.12) | (-29.12) | (103.36) | -3.36 | (116.24) | (-16.24) |
| GR | NL | -0.11* | -0.06 | -0.04 | -0.07 | -0.04 | -0.07 | -0.04 |
| | | (100) | (60.52) | (39.48) | (64.19) | 35.81 | (62.36) | (37.65) |
| GR | PT | -0.08* | -0.09 | 0.02 | -0.01 | -0.07 | -0.05 | -0.03 |
| | | (100) | (121.08) | (-21.08) | (11.33) | 88.67 | (66.21) | (33.80) |
| GR | ES | 0.02 | 0.00 | 0.01 | -0.00 | 0.02 | 0.00 | 0.02 |
| | | (100) | (24.38) | (75.62) | (14.40) | 85.60 | (19.39) | (80.61) |
| IE | IT | 0.05* | 0.06 | -0.02 | 0.06 | -0.01 | 0.06 | -0.02 |
| | | (100) | (133.13) | (-33.13) | (123.41) | -23.41 | (128.27) | (-28.27) |
| IE | NL | -0.07 | -0.16 | 0.09 | -0.02 | -0.05 | -0.09 | 0.02 |
| | | (100) | (226.07) | (-126.07) | (33.33) | 66.67 | (129.70) | (-29.70) |
| IE | PT | -0.04 | 0.02 | -0.06 | 0.04 | -0.08 | 0.03 | -0.07 |
| | | (100) | (-37.57) | (137.57) | (-89.56) | 189.56 | -(63.57) | (163.57) |
| IE | ES | 0.05 | 0.05 | 0.00 | 0.06 | -0.01 | 0.06 | -0.01 |
| | | (100) | (102.48) | (-2.48) | (112.64) | -12.64 | (107.56) | (-7.56) |
| IT | NL | -0.12 | -0.08 | -0.04 | -0.08 | -0.04 | -0.08 | -0.04 |
| | | (100) | (63.73) | (36.27) | (65.44) | 34.56 | (64.59) | (35.42) |

| 1 | 2 | $P_{11}-P_{22}$ | $\underbrace{P_{11}-P_{21}}_{C_I}$ | $\underbrace{P_{21}-P_{22}}_{D_I}$ | $\underbrace{P_{12}-P_{22}}_{C_{II}}$ | $\underbrace{P_{11}-P_{12}}_{D_{II}}$ | $C_S$ | $D_S$ |
|---|---|---|---|---|---|---|---|---|
| IT | PT | -0.09* | -0.07 | -0.02 | -0.01 | -0.08 | -0.04 | -0.05 |
| | | (100) | (80.84) | (19.16) | (16.36) | 83.64 | (48.60) | (51.40) |
| IT | ES | 0.00 | -0.02 | 0.03 | 0.01 | -0.00 | -0.01 | 0.02 |
| | | (100) | (-439.30) | (539.30) | (157.75) | -57.75 | -(140.78) | (240.78) |
| NL | PT | 0.03 | 0.04 | -0.01 | 0.08 | -0.05 | 0.06 | -0.03 |
| | | (100) | (124.49) | (-24.49) | (290.83) | -190.83 | (207.66) | (-107.66) |
| NL | ES | 0.12* | 0.06 | 0.07 | 0.11 | 0.02 | 0.09 | 0.05 |
| | | (100) | (47.65) | (52.35) | (86.50) | 13.50 | (67.08) | (32.93) |
| PT | ES | 0.10* | 0.02 | 0.08 | 0.09 | -0.00 | 0.06 | 0.04 |
| | | (100) | | | | | | |

* A two-sample test of proportion indicates that the difference is significantly different from 0 at the 95% confidence level.

$C_I$, $C_{II}$ is the part of the poverty difference accounted for by differences in the conditional exit and re-entry hazard functions. $D_I$, $D_{II}$ is the part of the poverty difference accounted for by differences in the distribution of characteristics. $C_S$ (Shapley) is the average over $C_I$ and $C_{II}$ and $D_S$ is the average over $D_I$ and $D_{II}$.