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Welfare Regimes and Poverty Dynamics: The Duration and Recurrence of Poverty Spells in Europe

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Abstract

This article seeks to evaluate how well the different welfare states of Europe perform in terms of preventing recurrent and persistent income poverty and what household and individual characteristics influence poverty duration. Because we use cross-national data on longitudinal poverty, we are able to increase our understanding of the effect of the institutional context within which poverty occurs. We show that country welfare regimes strongly influence long-run poverty, with social democratic countries reducing the level of persistent and recurrent poverty. Liberal and Southern European regime countries have both higher rates and longer durations of poverty. Despite their dissimilar patterns of poverty duration, European welfare states display rather similar patterns of exit from poverty, once we control for duration. There is some evidence that high initial exit rates from poverty in social democratic and corporatist countries decrease quickly whereas those in liberal and Southern European countries remain high, which could suggest lower levels of incentives in the former.

Introduction

There is now a large corpus of cross-sectional poverty studies, many of which include international comparisons. The best-known and comprehensive programme of research is that of the Luxembourg Income Study (Mitchell, 1991; Smeeding *et al.*, 1990; Atkinson *et al.*, 1995; Deleeck *et al.*, 1992; Van den Bosch *et al.*, 1993), yet it is by now widely recognised that poverty is not a static phenomenon. For example, whether we see the same or different people in poverty across cross-sectional surveys taken at different points in time has important consequences. For example, de Beer (2001) has shown that high levels of economic growth and a large increase in labour market participation in the 1980s and 1990s did not reduce poverty in the Netherlands. However, he also showed that a high turnover rate at the lower end of the income distribution meant that, in general, poverty spells were short in duration and a small minority remained in poverty across the whole period. Apart from the magnitude (the poverty gap) and the

duration (spell-length) of low income, attention should be paid to the extent to which poverty is recurrent (Walker, 1994). The higher income mobility or income volatility during a certain time period and the shorter the spell-duration, the higher the prevalence of poverty in society: that is, the higher the proportion of people experiencing poverty at least once during the period. Similarly, the lower the share of recurrent poverty, the higher the prevalence will be.

This means that, if there is very little income mobility over a given period of time, it is likely that the same individuals will remain poor and the prevalence of poverty over time will equal the cross-sectional poverty rate. If, on the contrary, income mobility is high and poverty is experienced for a short period by a larger proportion of the population, then the probability of being poor is more equally shared. It could be argued that the latter scenario is preferable on the grounds of Rawls's principle of distributional justice (Rawls, 1971). In between these two situations, poverty can be a *revolving door* process in which it is the same group of people who experience poverty, but they do so recurrently in different periods, returning to poverty shortly after their previous exit. Whether or not long spells of poverty are worse than recurrent short spells depends, to a large extent, on the degree of one's aversion towards uncertainty. Risk-averse individuals may prefer low but stable incomes to higher but unstable ones. Thus, for a complete picture, information on the volatility of income positions must complement data on the duration of low-income spells.

What matters, then, is how poverty statuses evolve over time and, because of this, time itself should be part of the definition of poverty. Knowing the length of time that a household has been poor is crucial for understanding the impact of poverty on individuals and households in both the short and long run. Although short spells of poverty are always unwelcome, they do not usually threaten subsistence or damage long-term life chances as individuals and households can reduce expenditure, run down savings or borrow. However, these tactics are unlikely to be sufficient in the long run. Only by using longitudinal data can we understand the processes behind cross-sectional statistics: the events leading individuals into and from poverty and the impact of this poverty on their living standards.

Comparative studies of income and poverty dynamics are now becoming more common, but have been confined to a small number of countries (the US, Germany, Netherlands and the UK) which have long running panel studies.¹ These studies have shown that there is a great deal of turnover in the stock of people living in poverty and that the majority of poverty spells are rather short in duration. However, it is also clear that many of those who have left poverty return relatively quickly and a substantial minority experience persistent poverty. The increasing number of waves available from the European Community Household Panel (ECHP) now makes comparative research of poverty dynamics possible for a number of European Union (EU) countries. In this article, we evaluate how well

the different welfare states of Europe perform in terms of preventing recurrent and persistent income poverty and what household and individual characteristics influence poverty duration. This is assessed on the basis of the first five waves of the ECHP, with panel data on income covering the period 1993–97.

The article unfolds as follows. After detailing theory, hypotheses and data, we use a typology of poverty profiles to examine the differential experience of transient, recurrent and persistent poverty across EU countries and analyse the determinants of this experience. However, these models cannot account for data censoring so we then turn to duration analyses of spells of poverty. In the final section we draw some general conclusions from the findings of the article.

Poverty dynamics and welfare regime theory

In the context of this article, the most crucial issue is how different country institutions and regulations impact on the distribution of poverty over time and duration of poverty events. Different socio-economic structures and welfare regimes may well ‘decommodify’ individuals to varying degrees and smooth income flows (Esping-Andersen, 1990; Gallie and Paugam, 2000) and this may well influence poverty dynamics in ways that can be formalised in terms of theoretical expectations. Welfare regime theory – which has been relatively successful at explaining cross-sectional poverty rates – would predict that where country benefit systems offer universal income support payments at a relatively high replacement rate with a wide entitlement in the population, we should see fewer lower incomes and poverty spells and, where poverty does occur, a quicker exit than in the case where benefits are more difficult to access and are at a lower level (Gallie and Paugam, 2000: 4). Moreover, if the welfare regime is characterised by an emphasis on active, rather than passive labour market policies, this will also decrease transitions into poverty and increase transition rates from poverty (Gallie and Paugam, 2000: 5).

In this article, we make use of the welfare regime typology of Esping-Andersen (1990), which makes a distinction between the corporatist, social democratic and liberal regime types. The typology was, however, extended to include a Southern regime type (see, for example, Ferrera, 1996). Our hypothesis is that the use of four regime types will not lead to a significant loss of information compared to the use of separate country identifiers. Using this framework we expect that social democratic regimes would lead to fewer poverty entries and more exits than corporatist regimes, as, although levels of payment in the latter may be relatively high, entitlements tend to be restricted to ‘core’ groups with a history of employment. The higher levels of active labour market policy in social democratic regimes should also have a negative impact on the probability of experiencing poverty and the spell duration. However, corporatist and social democratic regimes should both have more effective anti-poverty policies than either liberal or Southern European type regimes, which tend to have means

tested, low-level universal benefit systems in the case of liberal and piecemeal or non-existent benefit systems in the case of Southern European regimes. This pattern would be supported by the general absence of active labour market policies in these types of regimes.

However, as has been pointed out in the research on income dynamics (Fritzell, 1990), deriving hypotheses about income and poverty dynamics from welfare regime theory is more difficult than one may imagine. For example, the more generous and higher level benefits available in social democratic regimes have been shown to lead to a lower risk of income poverty but, once in poverty, lower levels of incentives and greater income stability may actually mean that poverty spells are lengthened. In liberal and Southern regimes, less generous and proactive welfare benefit systems may be less effective at initially moving people out of poverty, but higher levels of incentives may actually mean that exit rates remain quite high. However, it is also possible, as Fritzell (1990) has pointed out, that the greater income dispersion in liberal compared to social democratic states may mean lower exit rates from poverty as income ranks are further apart. Therefore, although we may be able to discern different exit patterns across regimes using transition rates, together these different processes may lead to very similar net poverty durations across regimes.

Research questions

In the coming sections we seek to answer four specific questions about the relationship between country institutions and regulations in the form of the welfare regime and poverty dynamics. First, to what extent does the level of recurrent and persistent poverty vary across countries? Second, to what extent is this a function of the distribution of different socio-economic variables in the country rather than the welfare regime?² Third, are transition rates from poverty and average durations of poverty in different countries related to the welfare regime? And, fourth, to what extent is the probability of leaving poverty influenced by particular socio-economic predictors – such as employment status, human capital and the household context – rather than welfare regime type? We test the following hypotheses:

Hypothesis 1: Using the theoretical framework outlined above, we should find that the social democratic countries will have lower rates of both recurrent and persistent poverty compared to corporatist, with the latter having lower rates than liberal and Southern European welfare regime countries.

Hypothesis 2: Disadvantaged groups and particularly those who are unable to participate in the labour market will have a higher risk of recurrent and persistent poverty in all other regime types compared to the social democratic.

Hypothesis 3: The social democratic welfare regime countries will have higher initial exit rates, but lower levels of incentives will lead to sharply falling exit rates

from poverty as duration increases. In liberal and Southern regimes, on the other hand, low initial exit rates compared to corporatist and social democratic countries will be maintained leading to roughly similar poverty durations across different regimes.

The data

The results presented in this article are based on the User Data Base (UDB) containing data from waves one to five (1994 to 1998) of the ECHP. We set our poverty threshold at 60 per cent of median equivalised disposable income using 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. Equivalised income within each household is attributed to each member, assuming a common living standard within the household. Our analysis is carried out using the individual as the unit of analysis.

Our dataset includes a total of 127,253 respondents in 1994 across eleven countries, falling to 107,425 in 1998.³ A total of 85,713 individuals are available for analysis across the five waves from 1994 to 1998. Such attrition has been shown not to affect the reliability of the data (Watson, 2002), which remain representative of the country populations for the years in question.⁴

Profiles of poverty in Europe

A number of different methodologies have been used to examine poverty dynamics and each allows different questions to be examined (Atkinson *et al.*, 2002; Duncan and Rodgers, 1991; Duncan *et al.*, 1993; Layte and Whelan, 2003). Past research has tended to concentrate on poverty persistence and the techniques used do not allow one to examine recurrent poverty in the form of repeated spells across the observation period. Given this, we apply the typology of poverty profiles developed in Muffels (1999) that allows us to examine both the persistence and recurrence of poverty.

We distinguish among four types of poverty profiles:

- The persistent non-poor: never poor during the accounting period;
- The transient poor: poor only once during the accounting period;
- The recurrent poor: poor more than once, but never longer than two consecutive years;
- The persistent poor: poor for a consecutive period of at least three consecutive years.⁵

It may seem that the measure of poverty persistence used is rather arbitrary. However, from empirical research (Bane and Ellwood, 1986; Stevens, 1994, 1999), it is known that the likelihood of escaping poverty diminishes rapidly after having been poor for two or more years. A good understanding of the distribution of poverty over time can be obtained from such poverty profiles, which include

information on the prevalence, periodicity and duration. However, as Ashworth *et al.* (1994) point out, poverty profiles have limitations. Because of left- and right-handed censoring, the estimates of persistent poverty will be biased. This is of concern, especially in short panels such as the one we are using. For this reason, we will complement the analyses with more advanced techniques that allow us to account for censoring.

Table 1 shows how poverty is distributed across the various profiles in the 11 countries for which data are available, using the 60 per cent of median income poverty line. Looking at the results presented in the table, we must conclude that a third of the EU population was found to experience poverty at least once in the 1994–98 period. This is much more than the 17 to 18 per cent found when using cross-sections (see European Commission, 2002: 186). Approximately a third of those ever poor are only poor for a single year, while the others are poor for a longer period of time. Almost 12 per cent of the EU population are found to be persistently poor according to our definition. The differences between countries are, however, substantial. The lowest poverty incidence is found in the Netherlands, but even there 22 per cent of the population experienced poverty in the second half of the 1990s. The highest poverty incidence is found in Greece and Portugal. Both countries also display the highest rate of persistent poverty. Although the country differences are large, it does seem that grouping by welfare regime does make sense. In line with our first hypothesis, we conclude that, overall, the countries of the social democratic type display lower rates of poverty.

TABLE 1. Poverty profiles in Europe, 60% of median income (percentages)*.

	Never poor	Transient poor	Recurrent poor	Persistent poor	Total
Social democratic	77.7	10.6	6.1	5.6	100
Denmark	77.4	13.2	6.0	3.5	100
The Netherlands	77.9	9.6	6.1	6.4	100
Corporatist	70.7	11.0	8.0	10.3	100
Germany	73.4	11.1	7.7	7.8	100
Belgium	63.9	13.4	10.8	11.9	100
France	68.4	10.4	7.9	13.3	100
Liberal	61.6	13.2	11.0	14.2	100
Ireland	63.8	10.7	10.6	14.9	100
UK	61.4	13.4	11.1	14.1	100
Residual	60.8	13.1	13.0	13.1	100
Italy	62.1	12.6	12.3	13.2	100
Greece	58.5	13.9	12.4	15.2	100
Spain	60.0	13.5	15.1	11.4	100
Portugal	58.8	13.7	9.5	18.1	100
Europe	66.2	12.0	10.1	11.7	100

Note: * No attempt has been made here to account for left- and right-censoring when constructing the poverty profiles.

Source: ECHP UDB 1994–8.

The next highest rates are found in the countries of the corporatist type. In countries belonging to the residual and liberal welfare regime, poverty is not only higher but it is also more recurrent and persistent. In the next section, we will see whether the differences found can be explained by differences in household structure, human capital and labour market behaviour.

Determinants of poverty profiles

Previous research suggests that there is an ordering among the profile categories (Muffels *et al.*, 1999; Fouarge, 2004) and, as such, in this article we estimate ordered probit models (see Greene, 2000: 876) to examine the events that trigger membership of the different profiles of poverty. In the models, two types of variables are included which are likely to be important factors predicting these different profiles:

- household formation events (divorce or separation) and
- labour market events (increase or decrease in the number of employed adults in the household or in the number of hours worked).

In addition, a number of control variables were introduced in the models:

- personal and household characteristics (age, sex, marital status, household composition, number of children, marital status);
- socio-economic characteristics (education level, labour market participation at the household level, health situation).

The variables are measured just before the beginning of the poverty spell. Changes in the variables are measured at the time of entry into the poverty profile.⁶ In order to gain a better understanding of the labour market status and events associated with poverty spells, the analyses were limited to individuals living in a household where both the head and the partner – if any – were of working age (aged 25 to 64).

Several models were estimated. Model 1 includes labour market and household status variables just before the start of the poverty spell, as well as variables measuring change in household characteristics and labour market status in the year preceding the poverty spell and the first year of the spell. Because for spells starting at wave 1 we could not observe the variables ('left'-censoring), these spells have been left out of the analysis. In addition to the variables of Model 1, Model 2 also includes country dummies. This enables us to see whether or not, aside from individual and household characteristics, country-specific features influence poverty risk. Model 3 is the same as Model 2 except that the country dummies are replaced with regime type dummies. Using this procedure, we can test whether or not the country groupings suggested above make any sense from an empirical point of view.

Looking at Table 2, it is clear that, compared to couples without children and singles, couples with children – but especially single parents – have a greater probability of experiencing poverty. This, and the positive and significant effect for the number of children, adds to the already available evidence regarding child poverty (see also Vleminckx and Smeeding, 2001; Bradbury *et al.*, 2001). Changes in the number of children – either more or fewer children – are both associated with an increased and decreased poverty risk. At first sight this finding seems contradictory but can be explained through the effect that changes in household composition have on both household income and household needs (see Layte and Whelan, 2003, for a treatment of this issue). A tentative explanation in this context is that young children coming into the household induce an additional financial burden that is generally less than compensated by child benefits. Children leaving the household are generally older and have their own market income, which may have negative consequences on the household's income position. Separation, as we can see from the model estimates, also has a positive effect on the poverty risks.

The model coefficients with respect to the educational level of the household head demonstrate the private returns of investments in human capital in terms of reduced poverty risk, an effect which holds even after correction for labour market status. It is interesting to note that, as Fouarge (2004: 152–153) shows, the effect of low educational attainment on poverty risk is stronger for persistent than for transient poverty. A second indicator of human capital – health status – shows a strong relationship with poverty risk. Other things being equal, living in a household where the head reports bad health increases the probability of being poor.

Turning to the second hypothesis we formulated, we must indeed conclude that households with a weak labour market attachment run a higher risk of being poor. This is particularly the case among couples where none of the partners is employed or when only the female partner is employed, because in these households the 'needs' are relatively high, while the 'resources' are low. Jobless singles also run a proportionally higher risk of poverty. The poverty risk is not only positively affected by unemployment history, but also by changes of labour market status. A job loss by either the household head or their partner tends to increase the poverty risk, while becoming employed has the opposite effect. This illustrates the fact that additional income from the partner's employment can play an important role in the determination of the poverty risk.

The effects just described are rather similar across models. Once we control for the observed characteristics of the individuals and the households, only Italy turns out to have a higher poverty risk than the UK (reference country). Although most of the country dummies included in Model 2 turn out to be significant, their added value in terms of explained variance is limited: the explained variance (pseudo- R^2) increases from 0.147 to 0.152. Replacing the country dummies by

TABLE 2. Results of ordered probit model for poverty profiles, 60% of median income, persons in households where head and partner are aged 25–65.

Reference group: never poor	Model 1		Model 2		Model 3	
	β	Sig	β	Sig	β	Sig
Female head (ref: male)	-0.008	n.s.	0.016	n.s.	-0.012	n.s.
Head aged 40–54 (ref: <40)	0.063	n.s.	0.060	n.s.	0.064	n.s.
Head aged 55–64	-0.190	*	-0.189	**	-0.184	*
Head separated/widowed (ref: married)	-0.068	n.s.	-0.021	n.s.	-0.038	n.s.
Head unmarried	0.231	*	0.273	*	0.254	*
Couple with child (ref: couple, no child)	0.221	**	0.195	**	0.194	**
Single, no child	0.229	**	0.270	**	0.265	**
Single parent	0.857	**	0.831	**	0.840	**
Other household type	-0.047	n.s.	-0.075	n.s.	-0.074	n.s.
Number of adults	0.134	**	0.143	**	0.134	**
Number of children	0.244	**	0.252	**	0.250	**
Head has average education (ref: high educ)	0.260	**	0.304	**	0.296	**
Head has low education	0.680	**	0.658	**	0.653	**
Person reports (very) bad health	-0.076	n.s.	-0.054	n.s.	-0.074	n.s.
Household head reports (very) bad health	0.262	*	0.277	**	0.271	**
Only male employed (ref: both partners empl.)	0.548	**	0.558	**	0.541	**
Only female employed	0.626	**	0.632	**	0.627	**
None employed	1.076	**	1.087	**	1.073	**
Single male working	0.326	**	0.284	**	0.280	**
Single female working	0.396	**	0.338	*	0.358	*
Single male not working	1.376	**	1.350	**	1.337	**
Single female not working	1.258	**	1.187	**	1.200	**
Unemployment spell in past 5 years	0.424	**	0.440	**	0.423	**
Head lost job (ref: no change)	0.257	**	0.257	**	0.255	**
Head found job	-0.354	**	-0.359	**	-0.361	**
Partner loses job (ref: no change)	0.263	**	0.269	**	0.265	**
Partner finds job	-0.383	**	-0.402	**	-0.395	**
Less children (ref: no change)	-0.667	**	-0.671	**	-0.662	**
More children	-0.410	**	-0.430	**	-0.421	**
Separation	0.492	**	0.501	**	0.500	**
Ireland (ref: UK)			-0.207	n.s.		
Denmark			-0.334	**		
The Netherlands			-0.285	**		
Germany			-0.131	*		
Belgium			-0.449	**		
France			-0.063	n.s.		
Italy			0.188	**		
Greece			-0.130	n.s.		
Spain			-0.307	**		
Portugal			-0.309	**		
Social democratic (ref: Liberal)					-0.257	**
Corporatist					-0.194	**
Southern					-0.038	n.s.
α_1	2.389		2.269		2.262	
α_2	2.854		2.738		2.729	
α_3	3.628		3.520		3.506	
N	75,888		75,888		75,888	
Pseudo-R ²	0.147		0.152		0.150	

Note: * significant at 5%; ** significant at 1%; n.s. non-significant.

Source: ECHP UDB 1994–8.

regime type dummies induces a small reduction of the explained variance from 0.152 to 0.150. Hence, we can conclude that replacing the country dummies by regime dummies leads to deterioration of the explanatory power of the model. It should, however, be noted that the effects for most of the regime dummies are significant and conform to our expectations (see hypothesis 1) with the risk of poverty being lowest in the social democratic regime and highest in the Southern and liberal regimes, with the corporatist regime taking an intermediate position. When controlling for background characteristics, the Southern and liberal models display similar levels of poverty incidence. Note, however, that it is possible that the welfare regime variables also capture other effects than merely welfare regime differences, such as differences in business cycle, GDP level, specific institutions or industrial structure. Uunk *et al.* (2003) use the same data and welfare state typology as is used here to study the effect of welfare regimes on the impact of children on female labour supply. They show that the inclusion of childcare supply and GDP in their models alters the welfare regime effects. The inclusion of general economic indicators, as well as of indicators of specific anti-poverty and low-income policies in our analyses, is the subject of ongoing research. However, it can be argued that taking account of specific policies will have less effect on our findings than in the type of analyses performed by Uunk *et al.* (2003). This is because the welfare regime typology used, which is based on social security indicators, is more remote from the issue of children and participation than from the analysis of poverty.

The duration of poverty

The analyses in the last section did not take account of the fact that many of those found in poverty at the end of the observation period may well have remained in poverty for a considerable period after this date ('right' censoring). Such spells were treated in exactly the same manner as a single year of poverty in the middle of the period. To control for such right censoring, we need to move to a duration perspective which identifies spells of poverty and examines their characteristics.

Although there has been some research in the US using components-of-variance models (Lillard and Willis, 1978), it was the now classic article by Bane and Ellwood (1986) which first applied exit probability analyses to poverty spells data derived from panel surveys. This technique naturally controls for right censoring by excluding censored cases from the denominator of the hazard rate function, while making it possible to derive estimates of exit rates at a given spell duration and mean duration for someone entering poverty. The methodology has been extended in papers by Stevens (1994, 1999) and Jenkins and Rigg (2001).

In this section we apply hazard rate techniques to the ECHP using data gathered at interviews in each wave of the panel survey to construct spells, or durations, of poverty. These spells can be no more than approximations of the

true experience of poverty, since the income and the needs of the household in which the person lives may well have fluctuated a great deal between the yearly 'snapshots' of the panel survey and thus they may not have actually been in poverty for the whole period. Nonetheless, the method will provide interesting insights into the factors that determine exit from poverty. Other caveats should be borne in mind. Our estimates of average duration are restricted by the fact that we have only five years of data, and left-censoring in 1994 means that spells which begin in 1994 cannot be used. Unlike in Stevens (1999) but similar to Bane and Ellwood (1986), only the first poverty spell for each individual was used as initial tests showed that the vast majority of second or higher number spells were censored and this led to differential bias in the analysis across countries.

Exit probabilities

One of the central concerns of both researchers and policy makers is the speed at which people leave poverty and thus the resulting duration of poverty spells. We can gain a descriptive picture of the probability of leaving poverty at intervals in the poverty spell and an estimate of average duration using exit probabilities.

Table 3 shows the overall exit probabilities for the ECHP sample of poverty spells at each year of their duration. The figures show that the exit probability falls quickly between the first and second years of poverty from 48 per cent to 34 per cent, but then the decrease slows to around 27 per cent by the third year (remember there are no transitions after the third year to calculate exit probabilities from). There are two interpretations that we could make of these results. First, it may be that it is indeed harder to leave poverty the longer the poverty spell lasts, perhaps because one's ability to get a job decreases as resources wane. However, it could also be that what we observe here is just the result of particular socio-demographic characteristics on the part of some individuals that increase the duration of poverty which are unrelated to poverty duration itself. We will be in a better position to decide between these hypotheses in the next section.

TABLE 3. Exit rates from 60% median income poverty by spell duration 1995–8.

Spell length to date	Exit probability	Standard error	Sample size	95% confid. interval
1	0.484	0.004	15,754	0.476–0.492
2	0.339	0.007	4,621	0.325–0.353
3	0.272	0.010	1,966	0.252–0.292

Source: ECHP UDB 1994–8.

Extrapolating from these results, we can see that around 75 per cent of people just beginning a spell of poverty will have left after three years. Interestingly, these results are reasonably similar to those found by Bane and Ellwood (1986), who

found that the exit probabilities in their US sample were 44.5 per cent in the first year, 28.5 per cent in the second and 24.6 per cent in the third, although the European rates are higher and fall more substantially over the three years. Luckily, Bane and Ellwood (1986) had access to the Panel Study of Income Dynamics (PSID) with 12 years of usable poverty data and so were able to estimate long-run transition rates. Using these data they found that exit probabilities carried on decreasing after the third year, reaching just over 7 per cent by the eighth year.

Exit probabilities across regimes

It is likely that exit probabilities also differ between countries in the EU, so in Table 4 we examine country-specific exit probabilities. Although there are differences in the exit rates in Table 4, the overall spread of rates in the first year is actually quite small, with only 11 per cent separating the highest and lowest rates, and eight of the countries being within 9 per cent of each other. After one year of poverty, the Danish exit rate of 56 per cent is just 1 per cent higher than the next highest rates in Spain and Belgium. At the other end of the scale, Portugal and the UK have the lowest exit rates, 11 per cent behind that in Denmark. However, as the duration of poverty lengthens, the difference in transition rates between countries is somewhat reduced as faster falls in rates in some countries balance out high exit rates in the initial year. For example, the Danish rate falls by 29 per cent between the first and second years of poverty and by 63 per cent between the first and third. In Portugal and the UK, however, the rate in the third year is substantially higher than in the second. Overall, this means that after three years, over 72 per cent of those who entered a spell of poverty will have left in all countries, with almost 79 per cent having left in Denmark compared to 72 per cent in France. Although the UK and Portugal have low rates of exit in the first year, by the third year over 77 per cent will have left poverty in Portugal and 76 per cent in the UK, the fourth and fifth highest totals out of 11 countries. These results are interesting as they suggest that countries may not be that different in their effectiveness at moving individuals out of poverty over a three-year period, although some seem to have substantially more short spells than others.⁷

What implications do these results have for our hypotheses? In many respects the results are congruent with our third hypothesis. Denmark, our prime social democratic country, has the highest initial exit rate and the Netherlands, the other representative of the social democratic regime, is not far behind. However, the Netherlands groups more closely with the corporatist countries of Belgium and Germany which have lower exit rates, but are close to the Danish ones. At the other end of the spectrum, the Southern European and liberal countries of Portugal, Greece, Ireland and the UK tend to have the lowest rates in the first year. Over a three-year period, however, any semblance of a regime order is lost, with Italy, Spain, Portugal and the UK having the highest proportions having left poverty at three years, marginally behind Denmark. France, Ireland, Belgium and

TABLE 4. Exit rates from 60% median income poverty by spell duration 1995–8 and country (standard error in parentheses).

Spell length	Denmark	Netherlands	Germany	Belgium	France	Italy	Greece	Spain	Portugal	UK	Ireland
1	0.557 (0.023)	0.524 (0.016)	0.512 (0.013)	0.548 (0.020)	0.474 (0.013)	0.543 (0.011)	0.471 (0.012)	0.547 (0.011)	0.448 (0.013)	0.448 (0.014)	0.466 (0.016)
2	0.395 (0.049)	0.240 (0.028)	0.346 (0.023)	0.254 (0.034)	0.375 (0.022)	0.414 (0.018)	0.325 (0.019)	0.338 (0.019)	0.341 (0.021)	0.283 (0.022)	0.298 (0.026)
3	0.208 (0.070)	0.280 (0.043)	0.178 (0.029)	0.200 (0.044)	0.158 (0.027)	0.197 (0.024)	0.297 (0.028)	0.277 (0.030)	0.378 (0.030)	0.386 (0.0343)	0.268 (0.036)
% Exited After 3 Years	78.8	74.1	73.8	73.0	72.2	78.5	74.9	78.3	77.4	75.5	72.6

Germany hold up the bottom of the table using the same measure. However, it would be more accurate to say that there is actually very little variation across the countries in exit rates over a three-year period, but this overall similarity stems from different patterns of exit between countries in different regimes.

Duration models

The analyses of exit rates above do not take account of the different distributions across countries of the individual and household characteristics that can contribute to poverty levels and so may not give a good indication of actual exit rates net of these factors. We control for these factors by estimating a set of hazard rate models of exit from poverty conditional on a number of independent predictors, the most important of which in the context of this article is country. However, we will also be testing the hypothesis that it is the type of welfare regime that a country exhibits that is important. In estimating the models we will be using all poverty spells which began after 1994 so we do not estimate exit rates for left-censored cases, but we do not include multiple spells for the same individuals.

Following Stevens (1999) and Jenkins and Rigg (2001) we specify a discrete-time hazard rate model, which estimates the probability of making a transition from poverty and its dependence on time. We thus measure the conditional probability that the transition will occur, given that it has not occurred already up to time t .⁸ In the duration models we use exactly the same independent variables as used in the ordered probit model above. However, here we cannot estimate variables that represent the type of change that occurs in household circumstances, as this would lead to collinearity among right-censored cases.

Given our aim of comparing country hazard rates and doing so while controlling for the distribution of individual and household characteristics in the country, our modelling strategy is first to fit a basic model with variables for time dependence, household and individual covariates. In the second model we include country dummies and examine their significance controlling for other characteristics before fitting a third model using variables representing welfare regime types. Here we test whether regime variables are as effective at predicting exit from poverty as the country variables. If so, we have evidence that welfare regime theory is at least partially correct in its understanding of how country welfare institutions and regulations impact on poverty dynamics.

Moving first to Model 1, Table 5 shows, as did the descriptive findings earlier, that the hazard of exit from poverty decreases with duration, thus each additional period in poverty decreases the probability that the person will leave that state, controlling for a host of individual and household characteristics as well as country. This suggests that the decreasing transition rate found in Tables 3 and 4 was an accurate portrayal of duration dependence.

Looking at the other covariates, we can see that having a female head of household slows down exit from poverty significantly, as does having a head in

TABLE 5. Results of Weibull discrete-time hazard rate models of exit from 60% median income poverty controlling for unobserved heterogeneity, 25–65 years.

Reference group: never poor	Model 1		Model 2		Model 3	
	β	Sig	β	Sig	β	Sig
Logged duration in poverty	-0.94	***	-0.92	***	-0.96	***
Female head (ref: male head)	-0.20	*	-0.19	*	-0.19	*
Head aged 40–54 (ref: head aged < 40)	-0.02	n.s.	-0.03	n.s.	-0.03	n.s.
Head aged 55–64	-0.14	*	-0.15	*	-0.14	*
Head separated/widowed (ref: head married)	-0.13	n.s.	-0.11	n.s.	-0.11	n.s.
Head unmarried	-0.27	*	-0.25	*	-0.25	*
Couple with child (ref: couple, no child)	0.14	n.s.	0.08	n.s.	0.12	n.s.
Single, no child	0.25	n.s.	0.21	n.s.	0.24	n.s.
Single parent	0.14	n.s.	0.12	n.s.	0.13	n.s.
Other	0.20	*	0.17	*	0.18	*
Number of adults	0.04	n.s.	0.03	n.s.	0.03	n.s.
Number of children	-0.07	***	-0.06	***	-0.06	***
Head has average education (ref: high education)	-0.17	**	-0.21	**	-0.18	**
Head has low education	-0.13	**	-0.17	***	-0.17	***
Only male employed (ref: both partners employed)	-0.09	*	-0.09	*	-0.09	*
Only female employed	-0.32	***	-0.33	***	-0.31	***
None employed	-0.26	***	-0.29	***	-0.25	***
Single male working	-0.10	n.s.	-0.11	n.s.	-0.10	n.s.
Single female working	0.30	*	0.28	n.s.	0.28	*
Single male not working	-0.18	n.s.	-0.22	*	-0.18	n.s.
Single female not working	0.05	n.s.	-0.01	n.s.	0.03	n.s.
Unemployment in past 5 years	-0.08	*	-0.10	*	-0.08	*
Ireland (ref: UK)			0.11	n.s.		
Denmark			-0.12	n.s.		
Netherlands			0.09	n.s.		
Belgium			-0.27	**		
France			-0.01	n.s.		
Italy			0.16	*		
Greece			-0.19	*		
Spain			0.11	n.s.		
Portugal			-0.05	n.s.		
Germany			-0.11	n.s.		
Social democratic (ref: Liberal)					-0.03	n.s.
Corporatist					-0.13	*
Southern					0.02	n.s.
Constant	-0.12	n.s.	0.01	n.s.	-0.05	n.s.
Observations (Person Periods)	21050		21050		21050	
Observations (Individuals)	14374		14374		14374	
Log-Likelihood	-13335.31		-13301.579		-13329.965	
Standard Deviation of σ_v	0.410		0.412		0.625	
$\rho = \sigma_v / (1 + \sigma_v)$	0.670		0.681		0.422	
Significance of ρ	*		**		*	

Note: * significant at 5%; ** significant at 1%; n.s. non-significant.

Source: ECHP UDB 1994–8.

the oldest age group (55–64). Less favourable employment conditions for these groups or depreciated stock of human capital are possible explanations for this finding. Interestingly, although being a single parent does not seem to impact on exit, not being married does seem to be significant and negative. Although the number of adults in the household is not a significant influence, each additional child slows exit. The effect for the number of children is not unexpected, as much work shows that in many countries (although France is an exception) larger numbers of children are associated with a greater poverty risk. As expected, the educational qualifications of the household reference person has a significant impact, with those with average or low levels of qualifications leaving poverty more slowly than those with higher levels of qualifications. Again, even after controlling for the current employment status, the level of human capital does seem to have an important pay-off in terms of poverty exit.

Moving on to the employment situation of household members, we see that unemployment and non-participation are strongly associated with a slower exit from poverty with the effect being particularly pronounced in households with married or cohabiting partners, neither of whom work, or with single non-working individuals. This finding is in line with hypothesis 2. Lastly, there is a significant negative effect associated with a household head having a history of unemployment. This is not unexpected as past unemployment would contribute to both higher levels of debt in the present and lower earning capacity, decreasing the probability that the person would exit from poverty.

In Models 2 and 3 we turn to the examination of whether the differences between countries can be represented as differences between welfare regimes, as we suggest in hypothesis 3. We hypothesised that the overall hazard of exit between countries controlling for duration would be rather similar because of the different processes involved, and this seems largely true except for negative effects for Belgium and Greece and a positive coefficient for Italy in Model 2. None of these effects would have been predicted before, even taking into account the results of the descriptive analyses in Table 4. The negative coefficient for Belgium in Model 2 is translated into a negative coefficient for the corporatist regime in Model 3. Overall, there is no significant difference between the exit rates of the Southern European regime countries, the social democratic countries and liberal regime countries. Despite the differences in poverty persistence among welfare state regimes (see discussion of Table 2), these results reinforce the findings from the descriptive analyses in Table 4 that different patterns of exit from poverty lead, over the medium term, to roughly similar rates of exit from poverty for countries with different welfare regimes.

Conclusion

In this article, we used the first five waves of the ECHP – covering the years 1994 to 1998 – to examine the structure of spells, their average duration and the

determinants of duration. We have sought to evaluate how well the different welfare states of Europe perform in terms of preventing income poverty and how household and individual characteristics influence poverty duration.

We have shown that even in the richest countries of Europe poverty is still a widespread phenomenon: a third of the EU population were poor at least once in the 1994–98 period. Most of these people escaped poverty, though some more quickly than others, but almost 12 per cent did experience persistent poverty. It is clear that singles, and especially single parents, are more likely to be persistently poor and have a lower probability of exiting poverty. Other things being equal, additional children or adults – by adding to the needs of the household – increase the poverty risk. Joblessness is also associated with an increased risk of long-term poverty and a decreased likelihood of poverty exit, suggesting that the reintegration of the unemployed is still relatively poor in European countries. Education was found to have a significant impact on the poverty risk, even when we control for employment status. This demonstrates the importance of private returns to investment in human capital in terms of reduced poverty risk.

We have argued that the institutional context within which poverty occurs matters and have found evidence supporting this view. The use of welfare regime dummies only leads to a minor loss of explanatory power compared to using country variables. This suggests that EU welfare states do cluster around more broadly defined welfare regimes and these welfare regimes strongly influence the extent of long-run poverty. In particular, countries in the social democratic tradition do a better job of preventing both short- and long-term poverty. Countries in the liberal tradition and Southern European countries display much higher rates of poverty and longer durations of poverty spells, while countries in the corporatist tradition take an intermediate position. Despite their dissimilar patterns of poverty duration, European welfare states display rather similar probabilities of exit from poverty, once we control for duration, though these similar rates may be the result of very different processes with social democratic and corporatist countries having high exit rates that decrease quickly whereas liberal and Southern European countries have moderately high rates that remain more constant over time. This could suggest lower levels of incentives in the former. It will be interesting to see if the patterns that we have observed here are replicated when the full eight years of the final ECHP are used.

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Notes

- 1 See Duncan *et al.* (1993), Headey *et al.* (1997), Goodin *et al.* (1999), Leisering and Leibfried (1999), Jenkins (2000) and, more recently, Layte and Whelan (2003) and Jenkins and Schluter (2003).
- 2 It should be borne in mind that the distribution of different socio-economic statuses is not unrelated to the welfare state structure. To take a basic example, the very different distributions of unemployment across the population among countries are to a substantial extent the result of different employment protection regimes in these countries.
- 3 This article is restricted to those countries that contributed respondents to the data file in each year between 1994 and 1998. We thus drop Luxembourg, Austria, Finland and Sweden from the analyses.
- 4 For the poverty profiles, we use a balanced panel of 'survivors' who remained in the sample from 1994 to 1998, and use the 1998 'base weight' for this group as specified by Eurostat. Unfortunately, this weighting regime is not possible in the duration analyses. We deal with attrition here by using independent variables in the models to adjust for the factors that are used in the Eurostat weights to control for the distribution of these factors within countries (see Eurostat, 2003).
- 5 The definition is based on the length of the longest poverty spell in the period. Note that the poverty profile depends on the time window in which measurement is made. Extending the observation period changes the distribution of the poverty profiles.
- 6 We use information from the last wave and changes between the first and the last wave in the case of the reference category 'never poor'.
- 7 The higher proportion of short spells in some countries could also suggest that the income data upon which these analyses are based could also vary in quality across countries.
- 8 To take account of unobserved heterogeneity, an individual specific error term ε_i with zero mean and normal (Gaussian) distribution is added to the models. The two bottom rows of Table 5 show that unobserved heterogeneity is indeed a significant factor in all models.

References

- Ashworth, K., Hill, M. and Walker, R. (1994), 'Patterns of childhood poverty: new challenges for policy', *Journal of Policy Analysis and Management*, 13: 658–680.
- Atkinson, A., Rainwater, L. and Smeeding, T. (1995), 'Income distribution in advanced economies: the evidence from the Luxembourg Income Study (LIS)', LIS Working Paper Series, Working Paper No. 120, Luxembourg.
- Atkinson, A., Cantillon, B., Marlier, E. and Nolan, B. (2002), *Social Indicators: The EU and Social Inclusion*, Oxford: Oxford University Press.
- Bane, M. J. and Ellwood, D. T. (1986), 'Slipping into and out of poverty: the dynamics of spells', *Journal of Human Resources*, 21: 1–23.
- Beer, P. de (2001), *Over werken in de postindustriële samenleving*, Den Haag: Sociaal en Cultureel Planbureau.
- Bradbury, B., Jenkins, S. and Micklewright, J. (2001), *The Dynamics of Child Poverty in Industrialised Countries*, Cambridge: Cambridge University Press.
- Buhmann, B., Rainwater, L., Schmaus, G. and Smeeding, T. (1988), 'Equivalence scales, well-being, inequality, and poverty: sensitivity estimates across ten countries using the Luxembourg Income Study (LIS) database', *Review of Income and Wealth*, 34: 115–142.

- Deleeck, H., Van den Bosch, K. and De Lathouwer, L. (1992), *Poverty and the Adequacy of Social Security in the EC*, Aldershot: Avebury.
- Duncan, G. and Rodgers, W. (1991), 'Has children's poverty become more persistent?', *American Sociological Review*, 56: 538–550.
- Duncan, G., Gustafsson, B., Hauser, R., Schmauss, G., Messinger, H., Muffels, R., Nolan, B. and Ray, J. -C. (1993), 'Poverty dynamics in eight countries', *Journal of Population Economics*, 6: 3, 215–234.
- ECHP User Database (1994–8), Eurostat, Luxembourg.
- Esping-Andersen, G. (1990), *The Three Worlds of Welfare Capitalism*, Cambridge: Polity Press.
- Eurostat (1999a), 'ECHP data quality', European Commission, 108/99, Luxembourg.
- Eurostat (1999b), 'The effects of attrition on the structure of the ECHP sample', European Commission, 119/99, Luxembourg.
- Eurostat (2003), 'Construction of weights in the ECHP', European Commission, 165/2003–06, Luxembourg.
- Ferrera, M. (1996), 'The "Southern Model" of welfare', *Social Europe*, 6: 1, 17–37.
- Fouarge, D. (2002), *Poverty and Subsidiarity in Europe: Minimum Protection from and Economic Perspective*, Cheltenham: Edward Elgar.
- Fritzell, J. (1990), 'The dynamics of income distribution and economic mobility in Sweden in comparison with the United States', *Social Science Research*, 19: 17, 17–49.
- Gallie, D. and Paugam, S. (2000), *Welfare Regimes and the Experience of Unemployment in Europe*, Oxford: Oxford University Press.
- Goodin, R., Heady, B., Muffels, R. and Dirven, H.-J. (1999), *The Real Worlds of Welfare Capitalism*, Cambridge: Cambridge University Press.
- Greene, W. (2000), *Econometric Analysis*, 4th edn, Upper Saddle River, NJ: Prentice-Hall.
- Headey, B., Goodin, R., Muffels, R. and Dirven, H. -J. (1997), 'Welfare over time: three worlds of welfare capitalism in panel perspective', *Journal of Public Policy*, 17: 329–359.
- Layte, R. and Whelan, C. T. (2003), 'Moving in and out of poverty: the impact of welfare regimes on poverty dynamics in the EU', *European Societies*, 5: 2, 167–191.
- Leisering, L. and Leibfried, S. (1999), *Time and Poverty in Western Welfare States: United Germany in Perspective*, Cambridge: Cambridge University Press.
- Lillard, L. and Willis, R. (1978), 'Dynamic aspects of earnings mobility', *Econometrica*, 46: 985–1012.
- Jenkins, S. (2000), 'Modelling household income dynamics', *Journal of Population Economics*, 13: 4, 529–567.
- Jenkins, S. and Rigg, J. (2001), *The Dynamics of Poverty in Britain*, London: Department for Work and Pensions, p. 157.
- Jenkins, S. and Schluter, C. (2003), 'Why are child poverty rates higher in Britain than in Germany? A longitudinal perspective', *Journal of Human Resources*, 38: 2, 441–458.
- Mitchell, D. (1991), *Income Transfers in Ten Welfare States*, Aldershot: Avebury.
- Muffels, R., Fouarge, D. and Dekker, R. (1999), 'Longitudinal poverty and income inequality: a comparative panel study for the Netherlands, Germany and the UK', European Panel Analysis Group (EPAG) Working Paper 1, University of Essex, Colchester.
- Rawls, J. (1971), *A Theory of Justice*, Cambridge, MA: Belknap Press.
- Smeeding, T., O'Higgins, M. and Rainwater, L. (1990), *Poverty, Inequality and Income Distribution in Comparative Perspective*, London: Harvester Wheatsheaf.
- Stevens, A. (1994), 'The dynamics of poverty spells: updating Bane and Ellwood', *American Economic Review*, 84: 2, 34–7.
- Stevens, A. (1999), 'Climbing out of poverty, falling back in: measuring the persistence of poverty over multiple spells', *Journal of Human Resources*, 34: 3, 557–588.
- Uunk, W., Kalmijn, M. and Muffels, R. (2003), 'The impact of young children on women's labor supply: a reassessment of institutional effects in Europe', *Acta Sociologica*, 47: 4.
- Van den Bosch, K., Callan, T., Estivill, J., Hausman, P., Jeandidier, B., Muffels, R. and Yfantopoulos, J. (1993), 'A comparison of poverty in seven European countries and regions using subjective and relative measures', *Journal of Population Economics*, 6: 3, 235–259.

- Vleminckx, K. and Smeeding, T. (2001), *Child Well-Being, Child Poverty and Child Policy in Modern Nations*, Bristol: The Polity Press.
- Walker, R. (1994), *Poverty Dynamics: Issues and Examples*, Aldershot: Avebury.
- Watson, D. and Healy, M. (1999), 'Sample attrition between waves 1 and 2 in the European Community Household Panel', European Commission, 118/99, Luxembourg.
- Watson, D. (2002), 'Sample attrition between wave 1 and 5 in the European Community Household Panel', The Economic and Social Research Institute, Dublin.
- Whelan, C. T., Layte, R., Maitre, B. and Nolan, B. (2000), 'Poverty dynamics: an analysis of the 1994 and 1995 waves of the European Community Household Panel', *European Societies*, 2: 4, 505–531.