Working poor in Western Europe: What is the influence of the welfare state and labour market institutions?

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1. Introduction

Against the background of welfare state reforms aimed at the inclusion of the workless into the labour market the working poor have gained increasing interest in poverty research not only in the US but also in Europe (see e.g. Peña-Casa/Latta 2004, Bardone/Guio 2005).[1] There is large variation in the extent of in-work-poverty in Europe. Though, in contrast to general poverty research which has a long tradition in explaining variation in poverty by differences in the country specific institutional framework, there is not much respective evidence on the working poor. Previous work has regarded the influence of low wages but also the relevance of the household structure (see e.g. Marx/Verbist 1998, Strengmann-Kuhn 2003). However, comparative evidence on the working poor is still scarce.

This paper regards the extent of in-work-poverty in a large number of European countries. It tries to explain differences in the extent of in-work-poverty in a twofold manner. First, it is shown that differences in the structure of personal and household level variables explain a relevant part of the country differences. Second, it is enquired how institutional factors influence the level of in-work-poverty. Here, two different aspects are regarded: welfare state characteristics and labour market institutions. With this approach the paper addresses limitations of past research. Starting off from institutional differences the paper tries to explain variation in in-work-poverty and goes beyond previous research which has mainly offered descriptions of such differences.

Empirical analyses are carried out on the basis of data from the European Community Household Panel (ECHP) and additional macro data on the institutional framework. Apart from Sweden all countries of the European Union (before Eastern enlargement) are regarded for a period of eight years (1994-2001). The paper is organised as follows. The next section discusses the influence of the institutional framework and of economic conditions on the working poor. Section 3 regards poverty risk factors at the individual

[1] In this discussion the 'working poor' are defined as workers who live in a poor household.

level. Data and methods are described in section 4. In Section 5 the results of the empirical analysis are presented. After a brief descriptive overview on the development of in-work-poverty the section discusses which factors explain differences in the level of in-work-poverty. A brief conclusion is given in section 6.

2. Welfare states, labour market institutions and the working poor

In general poverty research it has been argued that welfare states and labour market institutions play an important role in explaining differences in the extent of poverty. The following sections regard to what extent it can be expected that such influences which are observed at the level of poverty in general are relevant also for the explanation of in-work-poverty.

Welfare states and poverty

A general hypothesis is that higher welfare generosity lowers the extent of poverty. On the one hand, a higher level of transfer payments results in a higher degree of poverty reduction.[2] Furthermore, the level of transfer payments can be regarded as an implicit minimum wage and therefore will have an influence on the distribution of earnings, especially at the lower end of the earnings distribution. On the other hand, generous welfare states are assumed to stimulate labour demand and to invest in the skills of the labour force which should as well result in higher earned incomes and lower poverty.

However, particularly from a neoclassical economic perspective it has been argued that the decommodifying effect of welfare states results in negative economic work incentives (see OECD 1996). In other words: welfare states discourage people from working which results in lower employment rates, higher social expenditure and - as a consequence - lower growth rates which results in lower earned incomes and a higher degree of

[2] One might argue that the relationship is weaker for the working poor since the influence of welfare states on earned incomes is less direct than on incomes in general. However, also the redistributive effect of taxes on earned incomes is influenced by welfare states. Furthermore, also for the working poor transfers make up an important source of income. E.g. recent results from France show that only half of the income of the working poor is earned income (Lagarenne/Legendre 2000a).

poverty. This view is partly supported by results by Moller et al. (2003) who find that higher welfare generosity is related to higher pre-tax/pre-transfer poverty. However, these results are not robust and furthermore they find a clear positive relationship between welfare generosity and poverty reduction. Since the data used in this paper does not allow for pre-tax/pre-transfer measurements it is not possible to differentiate between a potential negative effect of welfare states on growth rates and the positive effect on poverty reduction. While the existence of the first influence is rather contested, there is clear empirical evidence for the latter (see Atkinson/Mogensen 1993, Kenworthy 1999). Therefore, a positive influence of welfare generosity is assumed.

Combining work and family

Families are among the groups most affected by poverty. This is explained by the fact that children increase the needs of a household and set restrictions on potential working time due to childcare obligations. Welfare states offer – in broad terms - two different solutions for this problem. On the one hand, dual-earner support is offered via public childcare and other measures aimed at making it possible to combine family and work. On the other hand, general family support is provided in form of cash benefits or tax deductions in order to compensate for higher needs and employment restrictions of families (see Gornick et al. 1997, Korpi 2000).

Empirical studies analysing the relationship between these specific welfare state provisions and poverty are scarce. However, there is a number of recent studies on the poverty-reducing effect of female employment (Becker 2002, Maître et al. 2003, Büchel et al. 2003). Since most studies on the working poor show that in particular single-earner households are affected by poverty (Marx/Verbist 1998, Iacovou 2003), one can hypothesise that higher female employment rates lower the share of single-earner households and thus the number of working poor. As work by Maître et al. (2003) shows incomes from women's work on average lower the poverty rate by about 50 percent. However, there are apparent country differences. While in Denmark women's incomes

lower poverty by about 90 percent, in the Netherlands - which are characterised by low female employment (especially regarding full-time employment) - poverty reduction amounts only to about 20 percent.[3] How far these differences can be attributed to welfare state provisions is unclear, but the assumption is that there is a relationship between dual-earner support and the share of working poor families.

Labour market institutions and low wages

One of the main topics in the literature on the working poor is the relationship between low wages and poverty. Not surprisingly the risk of being poor is higher for people who earn a low wage. However, the relationship between low wages and poverty is far from perfect. On the one hand, earned incomes are only one source of household income, on the other hand, many low wage workers live in households with other earners (see Marx/Verbist 1998, Marlier/Pointhieux 2000, Ponthieux/Concialdi 2000). Nevertheless, since the extent of low-wage work differs in European comparison, there are also differences in the importance of low-wage as cause for poverty (Strengmann-Kuhn 2001, 2003). Thus, in order to explain differences in the extent of the working poor one needs to look at the mechanisms that influence the share of low-wage workers.

Recent research suggests that labour market institutions play a key role in explaining the extent of low wage work (Lucifora 2000, Robson et al. 1999) as well as the distribution of wages in general (Blau/Kahn 1996, Teulings/Hartog 1997). In particular institutional features like centralised and/or coordinated wage-setting and the strength of labour unions are likely to affect the extent of low wages.

One measure for the strength of labour unions is union density. One would expect stronger unions to be more able to raise wage levels and therefore to reduce the share of low wages and the extent of poverty. This hypothesis gains support from results which

[3] However, Büchel et al. (2003) discuss the problem that predictions of the poverty-reducing effect of rising female employment rates are flawed by a positive selection of women who are already active in the labour market. They argue that inactive women due to their – in comparison to active women – more negative human capital characteristics will realise much lower incomes which will lower the average poverty-reducing effect of female incomes.

show that union density is associated with reduced income inequality and that the upswing in income inequality in recent decades can partly be attributed to ongoing de-unionisation (see Alderson/Nielsen 2002, Freeman 1993). However recent research by Moller et al. (2003) suggests that union density has no significant influence on pre-tax/pre-transfer poverty (which is mainly determined by the distribution of earned incomes) though it has an effect on poverty reduction via taxes and transfers.

It has been argued that union density is a weak indicator for the strength of unions since bargaining coverage is often determined by other factors like bargaining centralization or coordination. Previous results show that – although de-unionization has taken place in many advanced economies – the negative effect on bargaining power is most visible in countries with decentralized bargaining systems like the US or UK (Lucifora 2000, Freeman 1993, DiNardo et al. 1996). Furthermore the distribution of wages is not only a function of union power but of the power balance between unions and employers' organizations mediated by governments. Therefore the strength of corporatist arrangements is regarded as more convincing in explaining the influence of wage bargaining on wage inequality. The results of Moller et al. (2003) show that wage coordination which is used as indicator of corporatism has a clear influence on the extent of pre-tax/pre-transfer poverty as well as on the degree of poverty reduction.[4] Thus, it is hypothesised that a higher level of bargaining centralisation lowers the number of the working poor.

In addition to the bargaining system minimum wages have been discussed as an institutional feature aiming at the reduction of poverty. In a certain sense this discussion parallels the discussion on the relationship between low wages and poverty. It is argued that only a certain share of low wage earners who benefit from (rising) minimum wages live in poor households implying that minimum wages have only a limited impact on

[4] See Kenworthy (2003) for an extensive discussion of indicators of wage coordination, wage bargaining centralisation and other indicators of corporatism.

poverty (see for the US: Burkhauser/Finegan 1988).[5] Similar results can be found in recent studies which accompanied the introduction of national minimum wages in the UK and Ireland (see Nolan 2000, Sutherland 2001, Manning/Dickens 2002). However, if there is an influence of (higher) minimum wages on the working poor it is assumed to be positive.

3. Individual and household-related poverty risks

Country differences are not only explained by differences in the institutional framework. As previous research on poverty has shown, differences in aggregate poverty rates are, at least partly, explained by differences in the population composition (see e.g. Jäntti/Danziger 1994, Frick et al. 2000). The higher the share of people which belong to groups with a high poverty risk, the higher the total poverty rate. Thus, controlling for such differences gives not only insights in the causes of poverty but also in how countries would differ given the same population composition.

Poverty research has established a number of factors which influence the risk of being poor. In broad terms these can be classified as factors related to 'needs' and to 'resources'. Needs are imposed by a given household structure as already discussed in the case of children in the section above. In general terms a larger household size is related to larger needs whereby these needs differ by age. Further, the risk of being poor is structured by resources a person has at its command. Crucial are resources which allow for a successful participation in the labour market such as education, labour market experience and occupation. In addition to 'needs' and 'resources' there are 'restrictions' for labour market participation such as care obligations for children or the elderly. These

[5] I will only discuss the direct distributional effects of minimum wages. There is a broad literature on the effects of minimum wages on employment and economic growth which might have indirect distributional effects (see for an overview Bazen 2000).

constraints are strongest for single-earner families which belong to the groups who are most affected by poverty.[6]

By controlling for the relevance of certain risk groups in a given country the fact that the incidence of poverty risk factors is not exogenous must be taken into account. Regarding the welfare state two aspects are of specific relevance. First, it has been argued that the composition of households is influenced by the level of welfare state generosity. Insufficient social security or unemployment benefits result in a need for the workless to live together with working family members and therefore have an influence on the size and structure of households. Workless grown-ups who live with their parents are the prime example for this pattern. As previous work has shown this pattern is more frequent in residual welfare states, for instance in the Southern European countries (see Gallie/Paugam 2000, Iacovou 2004). Second, as discussed above, welfare state measures which aim at combining work and family have an influence on the labour market decisions of women and, thus, on the average number of workers per household.

In a similar manner the assumed influence of labour market institutions can be regarded. As argued above labour market institutions are assumed to have an influence on the extent of low-wage work which is one of the causes of in-work-poverty. This influence can be observed either indirectly at the aggregate level of labour market institutions or at the individual level by analysing the poverty risk of low-wage workers (see Lucifora 2000, Strengmann-Kuhn 2003). In the following analysis such influences will be regarded both from the perspective of individual characteristics and from the perspective of institutional differences. One crucial question in this analysis is if influences of the institutional framework remain significant after controlling for the composition of households, labour market participation and other characteristics at the individual level.

4. Data, indicators and methods

[6] Of course there are other factors which negatively influence the income situation of single-parent households. Probably the most important is that gender-specific division of labour is functional during marriage only and turns out dysfunctional after a relationship breaks down.

Poverty and the working poor

The paper regards country differences in the extent of poverty and in particular in-work-poverty of the population in working age (over 16 and below 65 years). The analysis uses the European Community Household Panel (ECHP) which contains data on 15 EU-countries for the years 1994 to 2001.[7] The measurement of poverty is based on equivalised[8] net household income using a relative income poverty threshold which is defined as 60 percent of the median income in a given country. Information on the institutional framework and economic conditions is taken from different sources, mainly from OECD and EUROSTAT databases. The following subsections will give a brief description of these macro indicators and the expected influences on in-work-poverty (if not discussed above). For detailed sources and definitions of indicators see the appendix. Apart from the information on child care coverage the indicators vary over time, mostly annually, at least bi-annually.

Welfare state

General social security variables include welfare state generosity and the level of unemployment benefits. Welfare state generosity is defined as total social expenditure as a percentage of GDP. The level of unemployment benefits is measured as net replacement rates. The replacement rates used indicate the percentage of income replacement by unemployment benefits compared to an average wage (calculation based on different earnings levels and household types).[9] Since time-varying indicators on childcare are not available for all countries a constant measure has been used indicating places in childcare per 100 children under 4 years in the first half of the 1990s (Künzler et al. 1999).

[7] Data availability if not for all years: Luxembourg/Austria: 1995-2001, Finland: 1996-2001, Sweden: 1997-2001.
[8] To compute equivalised household income the so-called non-modified OECD-scale has been used which weights other adults in a household by the factor 0.7 and children by the factor 0.5.
[9] Average and Marginal Effective Tax Rates (AETRs and METRs) which are commonly used to describe the strength of economic work disincentives are available for recent years only (see e.g. OECD 2004).

Labour market institutions

Indicators which are assumed to influence earnings from employment include union density, the level of wage bargaining and the existence of a national minimum wage. Information on wage bargaining is taken from the Golden-Wallerstein-Lange dataset which contains a large collection of different indicators on corporatism and wage bargaining (see Golden/Wallerstein/Lange 2002). One of these indicators differentiates between five levels of centralisation: 1. plant-level wage setting, 2. industry-level wage-setting without sanctions, 3. industry-level wage-setting with sanctions, 4. central wage-setting without sanctions, 5. central wage setting with sanctions. This has been used to construct a dichotomous variable which just differentiates between plant-level wage setting and other – more centralised types of wage setting. This variable has been combined with information on the existence of minimum wages (see Clare/Paternoster 2003). Hence, three different groups of countries have been distinguished: countries with plant-level wage setting, countries with other types of wage setting without minimum wage, countries with other types of wage setting and minimum wage. A residual group of countries has been constructed which includes all countries which are not classified in the Golden-Wallerstein-Lange dataset.

Controlling for unemployment and economic development

Previous research has shown that economic growth reduces poverty since it is associated with increasing material wealth in general and therefore less people will live in poverty although this relationship has weakened from the late 1970s onwards (Gottschalk/Danziger 1984, Blank 1997, Formby et al. 2001). This influence is not regarded explicitly in this paper. However, economic growth and also the extent of unemployment are included in a number of models as control variables. Economic growth is measured by the percentage change in per capita GDP, unemployment by standardised unemployment rates.

Individual and household related poverty risks

As discussed above needs, resources and restrictions structure the poverty risk of individuals. In the following analyses different needs are represented by a set of variables which count the number of persons living in the individuals' household by age group (0-2, 3-5, 6-14 and 15+ years). To control for the specific risk of single parents and women after separation marital status (dummy variable indicating separation or divorce) and gender are included in the models. Education and occupation influence the ability to generate income through labour market participation. Education is included as a set of dummy variables (ISCED 0-2/3/5-7). Occupational variables differentiate between 8 different occupational groups. Furthermore, three different groups of workers are differentiated: low-wage workers, other workers and the self-employed or unpaid family members. A low-wage worker is a person who earns less than 67 percent of the median hourly wage. The computation of the low-wage threshold is based just on dependent workers since earnings data on self-employed workers is regarded as being less accurate.[10] Thus, three dummy variables (low-wage worker, non-low-wage worker, self-employment/unpaid family member) control for differences in employment status and the level of remuneration. Furthermore, working time is included to control for income differences between dependent full-time and other workers. Since earned income from other household members is expected to be crucial to prevent poverty some models control for the number of employed household members. The respective variables count the number of additional workers in a person's household (apart form the person him/herself), partly differentiated by working time.

Individual and country-level data

The ECHP provides data over a range of up to 8 years from 15 countries. The analyses are based on data pooled over all waves and all countries. Two difficulties arise with this type of data. First, more than one observation per unit of analysis at the individual level is included. Observations are not sampled independently and thus it is likely that the

[10] As previous research has shown that the self-employed are more likely to be poor. As Strengmann-Kuhn (2003) shows by comparing deprivation- and income-based poverty rates this result is – at least in the Northern and Middle European countries – driven by the underestimation of income within the group of self-employed.

assumption of independent error terms is not satisfied. The latter is due to the fact that there is a unit-specific component a_i of the error-term which captures all unobserved, time constant factors that affect the dependent variable. Since this unobserved effect is constant over time for each unit of analysis – person in this case - the error term causes serial correlation. Different solutions have been developed for analyses of data of this type (for a discussion see Wooldridge 2002). The solution chosen here is the estimation of random effects models (REM) which – however - assume that the unobserved effect is uncorrelated with all independent variables.

Second, information on the institutional framework and on economic conditions refers to countries instead of individuals. As the literature on multilevel modelling points out (see e.g. Snijders/Bosker 1999) in standard models this fact is likely to result in biased estimates and an underestimation of standard errors. Since individuals live in different contexts which might change over time, country as well as time would need to be regarded as separate levels. However, this would require a longer observation period (for some countries there is only information on 5 or 6 years). Furthermore, neither the sample of points in time nor the sample of countries is drawn randomly which would be a general prerequisite for such a modelling strategy. Therefore this strategy is not followed. Instead two different types of models are estimated. In a first step panel regression models are estimated where country differences are just reflected by dummy variables. By adding different explanatory variables at the micro level it is tried to show how much of these country differences is explained just by differences in the composition of the population regarded. In a second step macro variables are introduced which provide evidence on the influence of the institutional framework and of economic conditions on in-work-poverty. Since the data includes only a rather low number of independent observations (14 countries) macro variables have been introduced in a rather parsimonious manner. As argued above it cannot be ruled out that these estimates are biased, however, given the restrictions of the data no other solution seems feasible.

5. Results

Extent of in-work-poverty

Before we move to the multivariate analysis three questions will be regarded in a descriptive perspective. What is the extent of in-work-poverty compared to poverty in total? How do poverty rates differ by country? And: How do countries differ with respect to the composition of individual and household-related poverty risks? Figure 1 gives an overview on poverty rates in 2001. Rates for three different groups are reported: the working population, the population in working households (i.e. households with at least one worker) and the total population. All rates regard the working age population (17-64 years).

<figure 1: poverty rate by country>

In every country the poverty rate is lowest for the working population and highest for the total population. Rates for the population in working households lie in between. Though, in many countries differences are not strong, e.g. in Luxembourg, Austria and the Netherlands. Thus in many cases work does not protect against poverty. The extent of in-work-poverty ranges from 4.6 percent to 12.0 percent, poverty rates for the population in working households range from 5.6 percent to 16.1 percent, for the total population from 6.9 to 20.1. Although the correlation between poverty and in-work-poverty is high there are some marked exceptions. An example is Ireland where the share of poor workers is rather low while it belongs to the countries with a high total poverty rate.

A general explanation for differences in the extent of poverty is the level of welfare state generosity. As figure 2 indicates - which shows the poverty rate of the working population by level of welfare generosity – at least at a bivariate level this holds true also

for the working poor. The higher the level of welfare generosity, the lower is the level of in-work-poverty (r=-.38). Ireland is – again – the strongest outlier. Given the low level of social expenditure and the rather high level of poverty in general the extent of in-work-poverty is remarkably low. The influence of institutional factors will be regarded more closely in the multivariate analysis.

Population composition

As discussed in section 3 not only institutional factors are expected to have an influence on the extent of in-work-poverty but also the composition of the working population and the households they live in. Table 1 shows that there are large differences regarding household size and the labour market attachment of household members. Households are much bigger in Southern Europe, Ireland and Austria. In general, the differences in the number of adults are more important than the differences in the number of children (Ireland is the only country with an exceptional high number of children per household). As expected the size of households differs strongly by welfare state characteristics. Figure 3 shows that households are largest in countries where welfare state generosity is low which can be regarded as one indicator for the importance of families in less encompassing welfare states (r=-.77).

<figure 2: poverty rate by welfare generosity>

<table 1: characteristics of working population>

<figure 3: average hh-size by welfare generosity>

Differences can be also observed regarding the number of working household members. A ratio has been computed dividing the number of earners among the household members by the number of persons older than 15 years to take into account the differences in the average size of households. This ratio is highest in Denmark and lowest in Italy, Greece and Spain and mirrors to a large extent the variation in female employment rates. Strong differences can also be observed in the importance of self-

employment and agricultural occupations (see also table 1). Self-employment is most frequent in Southern European countries. Greece and Portugal are the countries with the highest share of agricultural workers. However, this share is also rather high in Austria. As discussed above it can be expected that these differences explain part of the variance in the level of in-work-poverty in Europe.

Explaining country differences by individual and household-related characteristics

As seen from the figure above there are large differences in the extent of in-work-poverty between the countries regarded. These differences are the starting point for the multivariate analysis. A series of logit models on the probability of being working poor have been estimated. The sample includes just the working population (17-64 years). The results from these models are reported in table 2, figure 4 and 5. Model 1 contains just one dummy variable per country. Denmark which has the lowest poverty rate has been chosen as reference category. As the results show, the differences in the level of in-work-poverty are always significant.[11]

<table 2: regression on poverty, model 1 and 2>

Before these country differences are further regarded, individual risk factors will be discussed. The size of the coefficients in Model 2 shows which groups of the working population are affected strongest by poverty. The results are mostly in line with results from general poverty research. There are differences between age groups, by gender, education and marital status. Regarding age we find a U-shaped influence. The risk of being working poor is lowest for the middle age groups. Higher education lowers the risk of being poor. There are no significant differences between working men and women. However, the coefficient changes depending on whether or not one is controlling for employment variables (such as working time, low-wage work and occupation). Without controlling for these factors working women are less likely to be poor than men (results

[11] The effects do not match exactly the results presented in figure 1 since the model is based on a pooled dataset using all panel waves available.

not reported). The fact that separation or divorce is often accompanied by economic strain is reflected by a higher poverty risk of this group.

The household context strongly influences the risk of being working poor. The larger a person's household the more likely s/he is to be poor. Differences between children of different age groups are rather small. While the number of household members reflects the needs of a household and – in the case of small children – potential restrictions for labour market participation additional workers in a household are likely to lower the risk of poverty. Not surprisingly this effect is strongest for additional full-time workers. But also workers living together with part-time workers (<15h, 15-29 h) are less likely to be poor.

As for additional workers the working time of the worker him/herself influences the risk of being poor. Part-time workers face a higher risk of poverty than full-time workers. Not surprisingly low-wage workers are more likely to be poor. However, the poverty risk of (employed) low-wage workers does not differ largely from that of self-employed workers. To what extent this can be attributed to an underreporting of earnings from self-employment cannot be differentiated on the basis of these results. Regarding occupations agricultural workers (who are often self-employed) are at highest risk of being poor. Apart from this there are clear differences between highly and lowly skilled workers. Professionals and other members of the service class are least likely to be poor.

<figure 4: regression on poverty, model 1 and 2 (country coefficients)>

We will now return to the question of country differences. Regarding the country variables in model 2 one comes to different conclusions compared to the results seen in model 1 (see figure 4). In many cases the size of the country coefficient is largely reduced. This holds true in particular for Greece, Portugal and Italy. Hence, differences in the extent of in-work-poverty between these countries and the country with the lowest

poverty rate (Denmark) can be accounted for the different distribution of the variables discussed above. However, there are also cases where the differences have not been reduced but turned to the opposite (change of sign of the coefficient). The working population in Ireland and Spain appears to have – controlling for all other variables in the model – the lowest risk of being working poor.

To explore which variables cause most of these changes a number of less complex models have been estimated which contain just subsets of the variables discussed above (model 2). The results from five of these additional models are reported in figure 5 which shows the absolute change in the country coefficients by including additional variables. [12] The figure contains for each of these models a separate graph. In addition a respective graph is included on the basis of the results from model 2. Although there are also changes in the variables themselves these are not reported. However, none of the coefficients changes its sign and most of the changes are rather small (but see the changes in the influence of gender discussed above).

<figure 5: regression on poverty, model 2-7 (change in country coefficients)>

All models reported contain subsets of the variables of model 2. Model 3 contains just age, gender and education. Model 4 contains information on the composition of the household a person lives in. Model 5 adds to model 4 information on working time and labour market participation of the household members. Model 6 controls for employment status and low-wage work. Model 7 contains just information on the present occupation.

In most cases household composition and employment (model 5) have the strongest impact on the change of the country coefficient.[13] It is particularly strong in the case of

[12] An example how to read figure 2: The absolute difference between the coefficients of model 1 and 2 for the Netherlands is .840-.437=.403 (see table 2). This difference is plotted in the first graph of model 2. The respective difference for Spain is .947-(-.845)=1.792.

[13] Also Akaike and Bayesian information criteria (AIC/BIC) indicate that this model fits best in comparison to all other models compared in this section (of course the best fit is obtained with the full set of variables – model 2).

Ireland and Spain but it is also strong in Greece and Italy. As seen in the descriptive analysis these countries are characterised by rather large households and a rather low participation of additional household members in the labour market. Controlling for these factors the differences in the risk of being poor in comparison to Denmark are largely diminished. There are few countries in which the variables in model 5 do not have the strongest impact on the country coefficient. Greece and Portugal are the only countries where other factors are clearly more important. Controlling for employment status, the extent of low wages and the occupational structure reduces differences even more. This reflects the high share of self-employed and agricultural workers in these countries. In the case of Portugal socio-demographic variables which include education result in a strong change of the country effect. The influence of education can be observed in a number of other countries too (Spain, Italy and Ireland). However, in these countries household composition and labour market participation explain more of the differences compared to Denmark. The latter does not hold true for Portugal. Since female labour market participation is high and the share of part-time workers rather low controlling for employment patterns even gives the impression of larger differences between Denmark and Portugal (comparing model 4 and 5). Compared to other Southern European countries this is rather exceptional.

Influence of the Institutional framework

In a first step we have shown that much of the country differences in the extent of in-work-poverty are explained by individual characteristics and by characteristics of the household a person lives in. It can, however, be argued that differences are not exogenous but at least partly explained by differences in the institutional framework. For instance social security or unemployment benefits lower the need for the workless to fall back on their family.

<table 3: regression on poverty, models 1a-2c>

In this section we will look directly at influences of the institutional framework. Table 3 contains the results from a number of models which contain country level variables as well as individual level variables. At the macro level the models 1 a-c regard the influence of the welfare state on the probability of in-work-poverty. The models 2 a-c contain indicators on labour market institutions. Some of the models control for economic growth and unemployment. For each set of variables three different models have been estimated (a/b/c). Model a and b differ by the individual characteristics included. Model a contains age, gender, number of children in the household (under 3/6 years), marital status and year. Model b contains the full set of variables which are used in the models discussed in the section above. Model c adds to model b variables on economic conditions.

The result of model 1a fully confirms the expectations. More generous welfare states, higher replacement rates and higher child care coverage lower the risk of being working poor. Thus, welfare state generosity does not only protect the workless against poverty but also the working population. The picture changes when further variables at the individual level are included (model 1b). Just the effect of replacement rates keeps its negative sign. Social expenditure and child care seem to have a positive influence on the risk of being poor. How can this be explained? As shown above controlling for factors like household composition, labour market participation and education explains already a large part of the country differences. What is picked up by the coefficients in model 1B are the remaining differences after controlling for such variables. Thus, potential positive effects of the welfare state on the structure of households or on female employment have been already taken into account. What seems to remain are potential adverse effects of the welfare state. However, it can be shown that the change in sign from model 1a to 1b is largely driven by Ireland and Spain. When leaving these countries out of the estimation the positive influence of the welfare state can be observed in all models. The general tendency of these results is not altered by controlling for economic growth and unemployment (model 1c).

Models 2 a-c regard the influence of labour market institutions on the level of in-work-poverty. Higher union coverage is related to lower poverty rates within the working population. However, there is not the expected influence of wage bargaining and minimum wages. The risk of being poor is not higher in countries with decentralised bargaining. It appears to be even higher in countries with industry-level or central bargaining but without minimum wage. The picture looks different when moving to model 3b which controls for the full set of variables discussed above. Here, the risk of being poor is highest in countries with decentralised bargaining system (reference). It is especially low when higher-level bargaining is combined with a minimum wage. The change in the results is mainly due to the inclusion of variables which control for the occupational structure and the extent of self-employment. Thus, given a comparable occupational structure and a comparable share of self-employment bargaining centralisation and minimum wages reduce the extent of in-work-poverty. Controlling for economic growth and unemployment changes the size of such coefficients but not their sign.

6. Conclusion

In this paper it has been argued that a country's institutional framework – welfare state characteristics and labour market institutions - has a crucial influence on the extent of in-work poverty. In fact it could be shown that poverty rates among workers are lower when welfare generosity is high. This is usually attributed to the poverty reducing effect of transfers or to implicit minimum wages set by the level of replacement rates. However, the empirical analysis has further shown that there is a strong interplay between welfare state characteristics and the composition of households and the labour market involvement of household members. These factors already explain to a large

extent country differences in poverty rates. This is in particular the case when comparing Spain, Greece, Italy and Ireland against other European countries.

However, also differences in the occupational structure, the relevance of self-employment and the general level of education have a strong influence on the extent of in-work-poverty. Again the differences are largest between the Southern European and other countries (but regarding occupations and self-employment also in Austria which is characterised by a large agricultural sector). As could be expected low-wage work is positively associated with in-work-poverty. However, in comparison to the factors already discussed the extent of low-wage work contributes to the explanation of country differences only to a rather limited extent.

While the first part of the empirical analysis was based on individual and household-related characteristics the second part regarded the influence of institutional characteristics at the macro level. It could be shown that the influence of macro variables highly depends on which factors of the composition of the population are taken into account at the individual level. The poverty-reducing effect of welfare state measures is strongly related to differences in the composition of households and the labour market attachment of the household members. The expected influence of labour market institutions does not come out when the differences in the occupational structure and the extent of self-employment are ignored. One can conclude that the paper has shown the influence of the welfare state and labour market institutions on in-work-poverty. However, the results at the macro level are altered strongly depending on which factors are taken into account at the micro level.

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Table 1: Characteristics of working population (17-64 years) and their households by country

	share of self-employed %	share of agricultural workers %	household-size no (Ø)	no of working hh-members no (Ø)	share of working hh-members (>=15 y.) %
DK	0.068	0.024	2.3	0.574	0.639
NL	0.068	0.014	2.5	0.467	0.466
BE	0.136	0.015	2.9	0.532	0.427
FR	0.094	0.039	2.8	0.490	0.421
IRL	0.172	0.068	3.6	0.589	0.357
IT	0.262	0.034	3.3	0.565	0.335
GR	0.407	0.147	3.3	0.581	0.344
ES	0.225	0.058	3.4	0.500	0.277
PT	0.254	0.104	3.4	0.860	0.504
AT	0.129	0.073	3.0	0.689	0.506
FIN	0.132	0.048	2.5	0.481	0.515
DE	0.089	0.014	2.5	0.504	0.499
LUX	0.076	0.018	2.7	0.387	0.344
UK	0.112	0.010	2.6	0.572	0.528

Source: ECHP 1994-2001, own calculations.

Table 2: Coefficients (log-odds) from random-effects logit models on probability of being poor (working population, 17-64 years)

		M1		M2	
country (ref.: DK)					
	NL	0.840	***	0.437	***
	BE	0.288	***	-0.186	*
	FR	1.296	***	0.505	***
	IRL	0.920	***	-1.013	***
	IT	1.374	***	0.060	
	GR	1.934	***	0.234	**
	ES	0.947	***	-0.845	***
	PT	1.853	***	0.369	***
	AT	0.616	***	-0.403	***
	FIN	0.696	***	0.057	
	DE	0.655	***	0.235	***
	LUX	0.727	***	-0.173	*
	UK	0.817	***	0.317	***
age					
	in years			-0.096	***
	in years squared			0.001	***
gender (ref.: male)					
	female			-0.034	
education (ref.: ISCED 0-2)					
	ISCED 3			-0.489	***
	ISCED 5-7			-0.899	***
no of children/persons in hh					
	0-2 years			0.812	***
	3-5 years			0.788	***
	6-14 years			0.856	***
	15+ years			0.979	***
marital status (ref.: married, never married, widowed)					
	divorced/seperated			0.612	***
working time					
	< 15h			0.615	***
	15-29h			0.728	***
no of workers in household (by working time)					
	< 15h			-0.336	***
	15-29h			-0.910	***
	30+ h			-1.439	***
employment status (ref.: employee, non-low wage)					
	self-employed/family member			1.233	***
	low-wage worker			1.099	***
occupation (ref.: professional)					
	serv_cl1			0.613	***
	tech			0.293	***
	serv_cl2			0.652	***
	service worker			1.078	***
	agriwork			2.456	***
	worker			1.256	***
	elementary occupations			1.627	***
year (ref.: 1994)					
	1995			0.040	
	1996			-0.047	
	1997			0.000	
	1998			0.087	**
	1999			0.115	***
	2000			0.140	***
	2001			0.215	***
	intercept			-4.297	***
	rho	0.573		0.476	
	N (observations)			440313	
	N (persons)			104885	

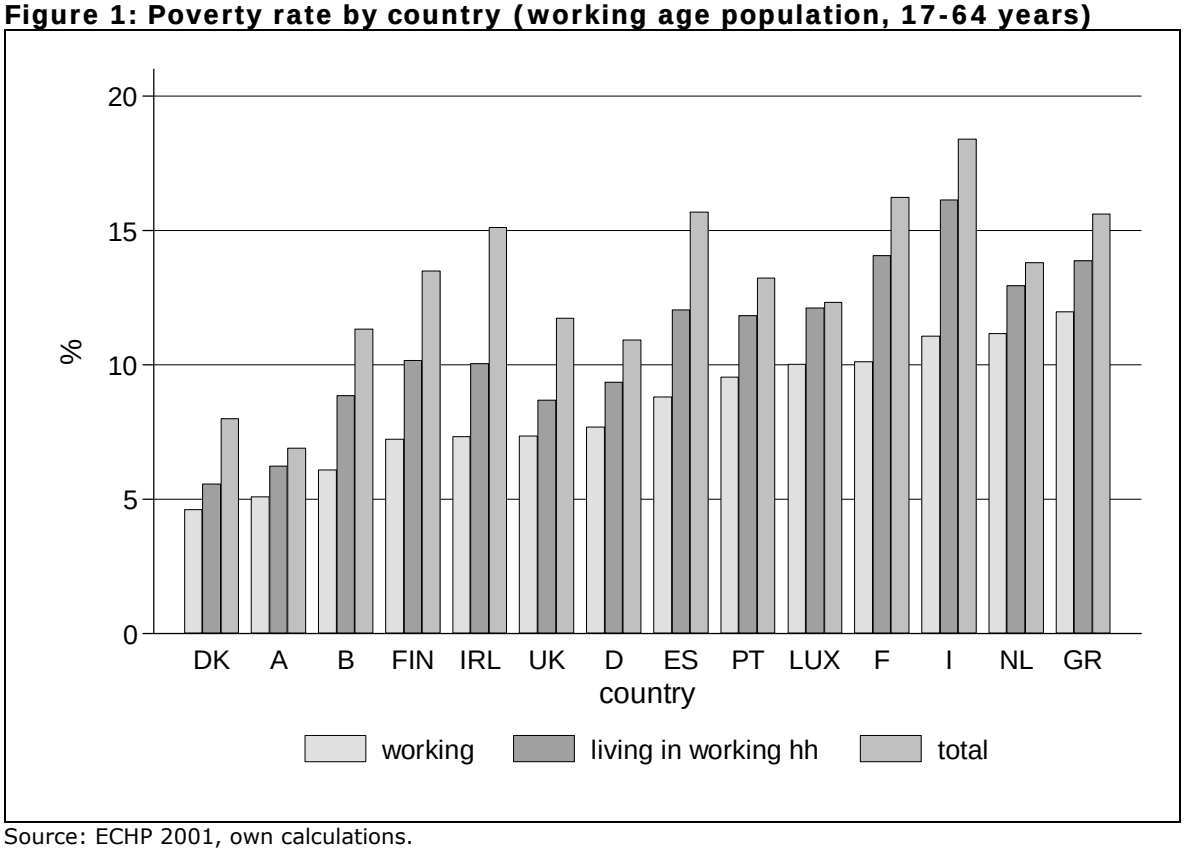
Source: ECHP 1994-2001, own calculations. Notes: significant at p < 0.1 (***), < 1 (**), < 5 (*).

Table 3: Coefficients (log-odds) from random-effects logit models on probability of being poor (working population, 17-64 years)

	M1a	M1b	M1c	M2a	M2b	M2c
welfare state						
social expenditure	-0.018 ***	0.062 ***	0.044 ***			
replacement rate (unemployment)	-0.013 ***	-0.004 ***	-0.008 ***			
child care	-0.004 **	0.002 +	0.007 ***			
labour market institutions (ref.: plant-level barg.)						
centralised bargaining				0.259 ***	-0.164 ***	-0.166 ***
centralised bargaining + min. wage				-0.074 +	-0.468 ***	-0.228 ***
union coverage				-0.018 ***	-0.009 ***	-0.006 ***
economic conditions						
economic growth (GDP)			-0.048 ***			-0.091 ***
unemployment			-0.068 ***			-0.058 ***
N (observations)			440313			
N (persons)			104885			

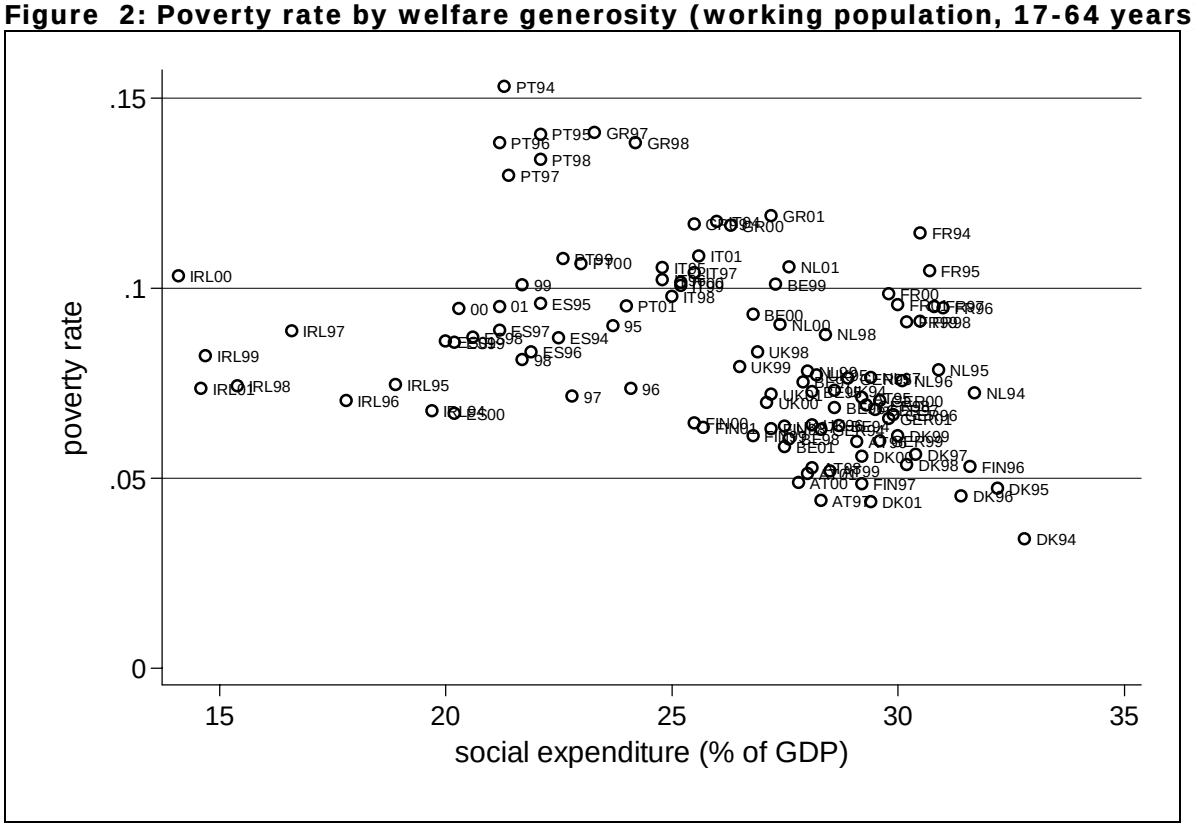
Source: ECHP 1994-2001, macro indicators see appendix, own calculations. Notes: significant at p <0.1 (***), <1 (**), <5 (*), <10(+). MXa: controlling for age/age-squared, sex, no of children in hh (under 3/6 years), marital status, year, MXb/c: additionally controlling for education, no of children (under 15 years), no of persons 15+ years, working time, working time of household members (instead of no of additional workers in hh), occupation.

Figure 1: Poverty rate by country (working age population, 17-64 years)



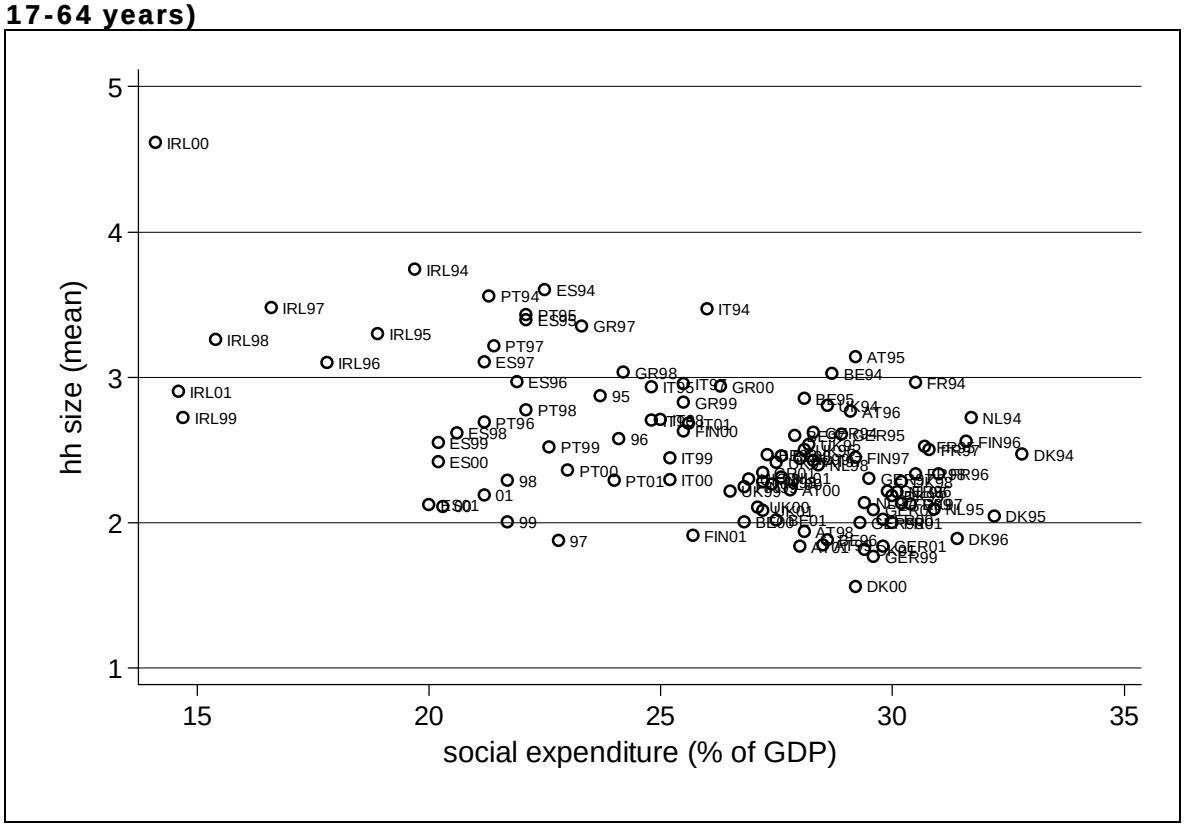
Source: ECHP 2001, own calculations.

Figure 2: Poverty rate by welfare generosity (working population, 17-64 years)



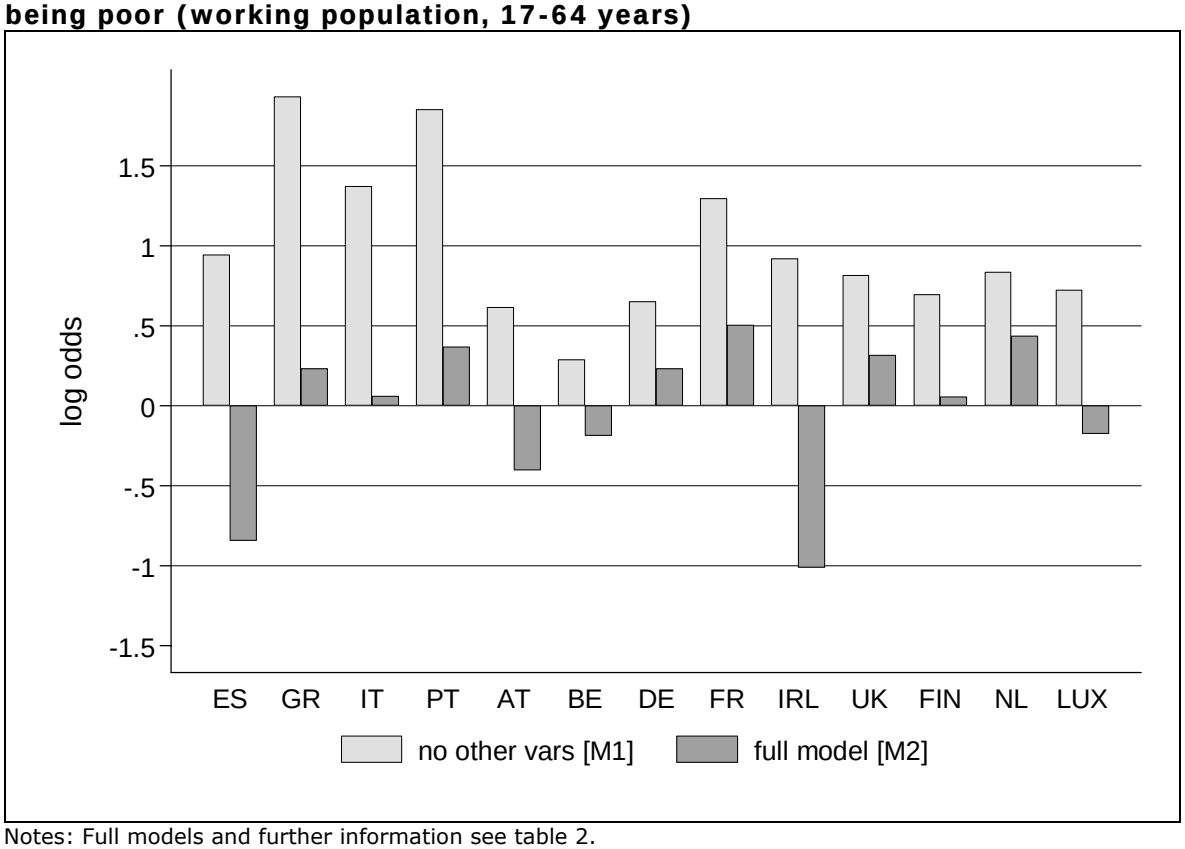
Source: ECHP 1994-2001, macro indicator see appendix, own calculations.

Figure 3: Average household size by welfare generosity (households of workers, 17-64 years)



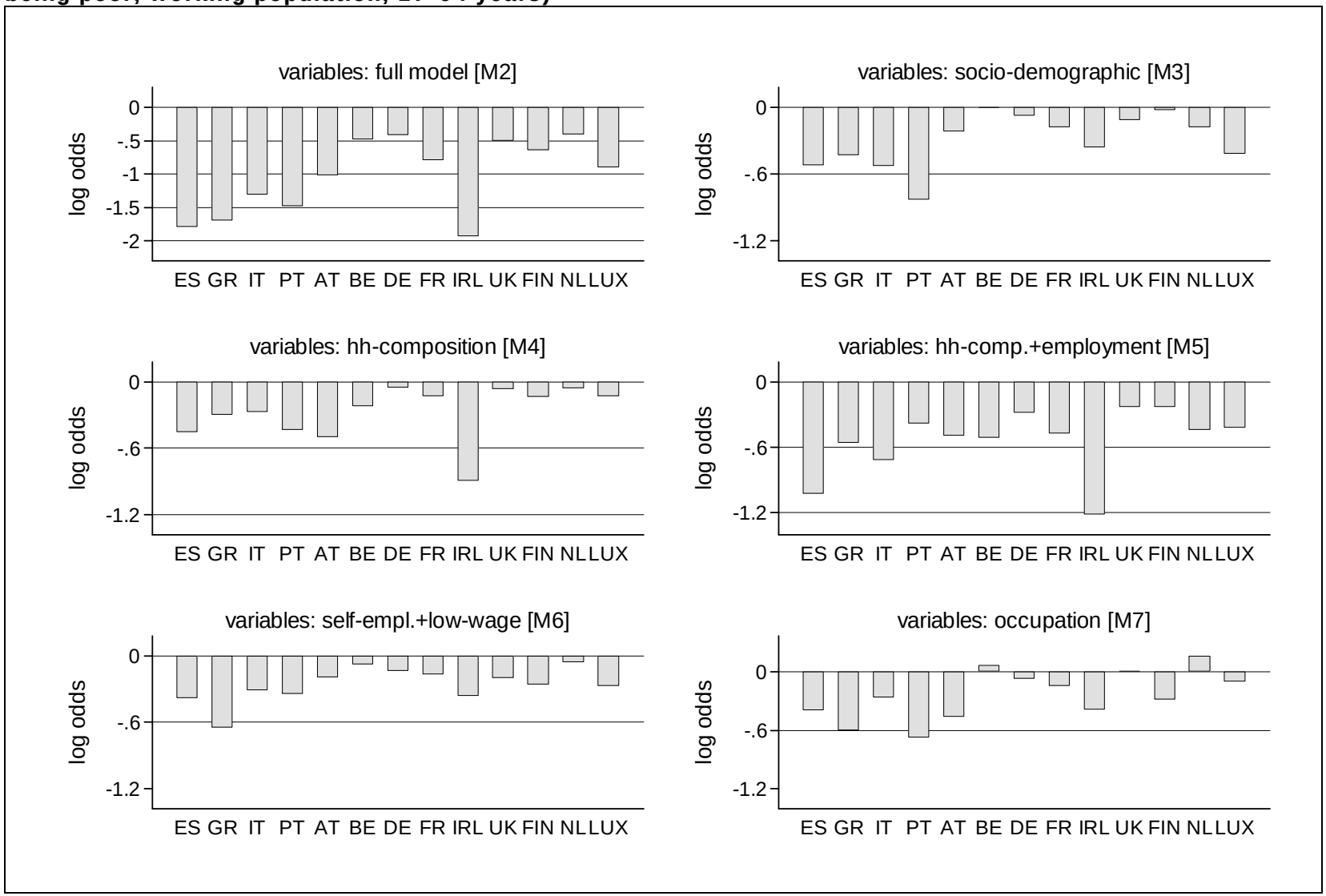
Source: ECHP 1994-2001, macro indicator see appendix, own calculations.

Figure 4: Country coefficients from random effects logit models on probability of being poor (working population, 17-64 years)



Notes: Full models and further information see table 2.

Figure 5: Absolute change in country coefficients in comparison to model 1 (random effects logit models on probability of being poor, working population, 17-64 years)



Notes: Information on full model (M2) see table 2. Results from other models not reported.

Appendix:

Sources and definitions of macro indicators

II. Labour market institutions

1. Union density
   - Definition: Number of union members as a percentage of all employees (administrative data, UK: survey data).
   - Source: OECD Labour Force Surveys (2004).
2. Centralisation of wage bargaining
   - Definition: Bargaining level, five categories: 1. plant-level, 2. industry-level w/o sanctions, 3. industry-level with sanctions, 4. central wage-setting w/o sanctions, 5. central wage-setting with sanctions.
   - Source: Golden/Wallerstein/Lange 2002
   - Comments: includes information on 1994-2000 only; Greece, Ireland, Luxembourg and Portugal missing.
3. National minimum wage
   - Definition: Dummy variable indicating existence of national minimum wage legislation (0=no, 1=yes).
   - Source: Clare/Paternoster 2003

→ centralisation and minimum wage collapsed into one variable (see text).

II. Welfare state

1. Social expenditure
   - Definition: Total social expenditure as a percentage of GDP (based on information in current prices in ECU/Euro).
   - Source: Eurostat (2004), New Cronos database.
2. Unemployment benefit replacement rates
   - Definition: Net unemployment benefits as a percentage of average wage level, unweighted average over two wage levels [average of a production worker (apw)-wage-level and 67% of apw-wage-level], four family types [single, married couple, married couple with two children, single parent with two children] and two different durations of unemployment [1 month, 60 months].
   - Sources: Own calculations based on OECD Benefit Systems and Work Incentives / Wages and Benefits (OECD 1998, 1999, 2002, 2004).
   - Comments: a) Information available only for 1995, 1997, 1999 and 2001, for other years figures of previous year have been used. b) Italy 1997: Figures of 1995 have been used for long-term-unemployed due to deviating calculation of replacement rates in 1997.
3. Child care
   - Definition: Children under 4 years in child care per 100 children.
   - Source: Künzler et al. (1999, figures for first half of the 1990s).

III. Economic conditions

1. Economic development
   - Definition: Yearly change of gross domestic product (GDP) [basis: price levels and purchasing power parities of 2000 (US dollars)].
   - Source: OECD (2004), Annual National Accounts for OECD Member Countries.
2. Unemployment
   - Definition: Standardised unemployment rates.
   - Source: OECD (2004), Employment Outlook.