EMPLOYMENT TRANSITIONS IN 13 EUROPEAN COUNTRIES. LEVELS, DISTRIBUTIONS AND DETERMINING FACTORS OF NET REPLACEMENT RATES

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Abstract

This paper utilises a multi-country microsimulation tax-benefit model for Europe, EUROMOD, to simulate the distribution of net replacement rates for 13 European countries. We look at different types of labour market transitions by comparing household incomes in the current state with simulated in-work/out-of-work counterfactuals. In particular we compare how the importance of household composition and different income sources varies across countries and for different replacement rate bands. We also show which individual and household characteristics are associated with observed replacement rate levels.

JEL Classification: H31, J65, E60, C81.

Keywords: net replacement rate, unemployment benefits, work incentives European Union, microsimulation.

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1. INTRODUCTION[1]

It has been argued that the structure of tax-benefit systems in OECD countries has been the cause of labour market problems (for instance OECD, 1997a). In particular, there is a concern that tax-benefit systems create incentives that negatively affect the behaviour of both employees and firms. On the demand side, high tax burdens can increase the cost of labour while on the supply side, high marginal tax rates reduce the reward for additional work efforts at the intensive margin. At the extensive margin, generous out of work benefit payments are seen to lead to reduced efforts to seek gainful employment or remain in work (Snower, 1997). These disincentives have been named as one of the main causes of slack economic growth and unemployment (European Commission, 2000).

Using a new EU-wide microsimulation model, it is possible to compare across countries the combined effects of taxes and benefits on household incomes both in and out of work. While Immervoll (2002) has analysed distributions of marginal and average effective tax burdens faced by employees, the present paper focuses on the role of taxes and benefits on household incomes during transitions into and out of work. In particular, we provide detailed measures of so-called net replacement rates (the ratio of out of work income to in work income).

Net replacement rates (NRRs) provide a useful starting point for identifying to what extent workers are protected from income loss due to unemployment. This is important in order to evaluate whether benefit systems provide households with a sufficient amount of resources during periods of employment transitions. At the same time, NRRs allow us to address the question whether the financial gains to employment may be insufficient and, importantly, why this may be the case. By relating NRRs to information recorded in rich mico-data sets, we can analyse the factors behind observed NRR levels (such as wage and benefit levels or household composition).

To address these questions, a micro-based analysis is essential. However, calculations based on average or "typical" households often provide a useful first step in any comparative analysis. For instance, the OECD provide regular assessments of both gross and net replacement rates across OECD countries for a range of family types (e.g., OECD, 2002). Another useful background to the present analysis is the series of studies (OECD, 1997a, 1997b) highlighting the significance of the so-called unemployment trap.

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This paper extends the developmental work carried out for four EU countries in Immervoll and O'Donoghue (forthcoming (a)) that quantified the distribution of NRRs for a selected number of individual and household characteristics and Immervoll and O'Donoghue (forthcoming (b)) that developed a method for decomposing NRRs into the factors that drive them. These papers documented the extent to which younger people, women, households with more than one adult and households with children in general had higher NRRs and highlighted the impact different income sources have on the distribution of NRRs in these countries. In this paper we extend the analysis to 13 countries of the EU.

We first derive NRR averages and distributions for employment transitions into and out of work. The microsimulation model is used to compute the counterfactual income situations (out-of-work benefits for the transition out of work; in-work earnings for the transition into full-time employment). Any knock-on effects on other taxes and benefits received by the person whose status changes as well as other household members (such as lower income taxes in the out-of-work situation) are taken into account. NRRs are derived by comparing the counterfactual with the original situation observed in the micro-data.

In a second step, we take a closer look at what causes observed NRRs. This is done by first looking in detail at all relevant income components and how they might change following employment transitions. In addition, we formulate a simple regression model where NRRs are regressed on a set of individual and household characteristics in order to identify and compare associations between them.

While NRRs are one manifestation of the tax-benefit rules which influence labour supply incentives and while microsimulation models can provide very detailed information on the budget sets used as an input for labour supply models, this paper does not try to determine whether and to what extent these financial incentives determine behaviour. Instead, we report the size and distribution of NRRs along with factors that influence them. It is a matter for labour micro-econometricians to evaluate the quantitative importance of any associated work incentives.

The paper is structured as follows. In section 2 we briefly summarise the most important measurement issues related to quantifying replacement rates. The microsimulation model and data are also described here. Section 3 presents the main characteristics of the 13 tax-benefit systems in terms of the structure of taxes and benefits as well as their distributional impact. NRR simulation results and decompositions are presented in section 4 and discussed in section 5. Section 6 concludes.

2. METHODOLOGY

Replacement rates are a measure of the degree to which an individuals' (and their households) standard of living while in work is maintained during periods of unemployment. The higher a household's replacement rate, the more protected they are from the impact of losing work income. At the same time, however, high replacement rates may reduce peoples' efforts to secure employment. The labour market opportunities that unemployed people face may be such that accepting jobs offered to them would not result in any or little financial gain. This may be particularly true for low-skilled people. Similarly, those currently employed (particularly on low wages) may not lose much by entering (spells of) unemployment.

Obviously unemployment benefits play an important role in this.[2] In addition to unemployment benefits, many other features of the tax-benefit system will determine the difference between incomes in and out of work. A progressive tax system can dampen the income loss by making net incomes less variable than gross incomes. For example, progressive income taxes on earnings combined with a favourable tax treatment of benefits mean that replacement rates before taxes are markedly lower than NRRs, which are measured net of tax and contribution payments (OECD 1997a). Benefits that do not depend on income or the employment status also smooth income differences between in- and out of work. On the other hand, benefits (or tax rebates) that are conditional on employment or a certain minimum number of working hours can serve to increase the difference between in-work and out-of-work incomes. NRRs capture all these influences by taking into account all relevant tax- and benefit changes following an employment transition.

Immervoll and O'Donoghue (2001b and forthcoming (b)) describe in some detail the analytical choices faced in calculating replacement rates (see also Atkinson and Micklewright, 1991). The two basic dimensions that are relevant in this context are (1) which income components to include in the numerator and the denominator of the replacement rate and for whom; and (2) which direction of labour market transition to compute the replacement rate for.

In measuring the degree of income maintenance, we have two main alternatives regarding the definition of income. If we see out of work benefits as an insurance system then one could be interested in measuring the degree to which in-work incomes are insured. In this case, the numerator would be (net) out of work benefit income and the denominator would be (net) income from work. Only incomes of the one person whose labour market status changes would be taken into account while incomes of any other household members would be disregarded. Or one could be interested in the living standard out of work as opposed to in work. In this case, both numerator and denominator would also include all other incomes including, for example, income from capital and benefits that are independent of work status. Also, given the interest in living standards, a household concept will usually be appropriate so that incomes of all other household members should be included as well.

We adopt the latter type of calculation since we regard the question of relative living standards the more interesting one. The definition of income considered is disposable income, defined as market incomes (employment plus other market incomes) plus benefits minus social insurance contributions minus income taxes. Since for twelve of the thirteen countries we are looking at, our data contain annual incomes (the exceptions are the UK and Ireland where data are weekly), we have chosen the year as the relevant period.

The existence of other household members, will influence NRR results in two ways. First, the larger the number of other household member with incomes, the smaller will be the income difference if one person changes between work and unemployment. In comparing results across countries one will therefore have to bear in mind differences such as the number of

[2] In this context, the generosity of unemployment benefit systems can be relevant even if benefits are not paid when unemployment is judged to be 'voluntary': Employers may use the unemployment insurance to smooth over demand cycles by laying off people when demand is weak and re-employing them when business is stronger. There has been some evidence that such temporary layoffs are important phenomena especially in the US but also in some European countries. See Jensen and Westergard-Nielsen (1989).

two-earner couples or adult children living with their parents.[3] A second influence will be due to the tax-benefit system: the employment status and income of one person may affect taxes and benefits of other household members and, thus, total household incomes in- and out of work.

In order to compute the counterfactual income situation for a household, we have to decide for which of the household members we want to simulate the employment transition. The individuals we consider for the transition are those of working age (18-59). We exclude civil servants since they frequently do not face the same unemployment risks and would thus complicate comparisons across countries. People in education are also excluded. Of course we need to also decide on the type of transition which, in turn, will depend on the person's original employment status observed in the micro-data. For people who are observed to be out of work, we will simulate a transition into work as the counterfactual income situation and *vice versa*. Many studies of replacement rates have focused exclusively on the unemployed and have computed their current income as a fraction of the prospective income they would earn if entering employment (e.g., Salomäki and Munzi, 1999 and O'Donoghue and Utili, 2000). In the present analysis we consider the following three labour market states: (A) employed or self-employed; (B) unemployed; (C) out of work other than unemployed. The transitions we simulate are: (1) from A to B (we will call this replacement rate RR_{ab}), (2) from B to A (RR_{ba}) and (3) from C to A (RR_{ca}). The sample size for each transition will therefore depend on the number of working age people in labour market states A, B and C. Table A2 in the annex shows the resulting sample sizes for each transition across countries.[4]

RR_{ab} is the "in work" NRR for somebody currently in employment or self-employment (perhaps part-time) and moving into full-time unemployment. RR_{ba} and RR_{ca} represent what we call "out of work" NRRs. RR_{ba} is the replacement rate for a transition into *full-time* employment applying to those who are currently receiving unemployment benefits or who classify themselves as being 'unemployed' and seeking work in our data. RR_{ca} denotes the level of current (net) income relative to the prospective (net) *full-time* employment income of someone currently out of work but not 'unemployed'. It is, in other words, the out of work replacement rate faced by working age individuals who receive neither income from work nor unemployment benefits (e.g., 'inactive' people; those engaged in unpaid care or domestic work; recipients of pensions, disability benefits, social minimum benefits, etc). It is an advantage that we can investigate the 'inactive' group separately, however one must be very cautious in drawing conclusions for this group as a whole as it is very heterogeneous. As a result, our analysis will mainly focus on RR_{ab} and RR_{ba}.

The transition is assumed to take place at the start of the fiscal year (with the employment status remaining unchanged thereafter). As mentioned above, we compare income situations in- and out of work over a full year. As a result, we do not currently take into account any changes in benefit levels that may occur after a period longer than 12 months following the

[3] In computing one measure for the entire household, we implicitly assume equal sharing of resources within the household. Where this is not appropriate (e.g., in cases where two family units share one physical household) our replacement rate results will tend to underestimate the change in living standards due to employment transitions.

[4] Note that, in cases where micro-data record annual income information, the sample sizes of the three groups will generally not sum up to the total number of working age persons because, frequently, people have more than one labour market status during the year. In these cases, we simulate all relevant transitions for this person. See Immervoll and O'Donoghue (2001b) for details.

transition.[5] In particular, RR_{ab} measures the *initial* unemployment benefit that people currently in work would receive if they became unemployed relative to current in-work income. For all transitions, all income components other than the simulated taxes and benefits remain unaffected for members of households whose labour market status does not change. In addition, we assume that all other household characteristics remain unchanged so that any behavioural adaptations (such as the use of childcare services or altering housing decisions) to the new employment situation are ignored.

EUROMOD

Simulations are run for 13 EU countries (Finland and Sweden are excluded at present). The micro data sets underlying the simulations are shown in table A1.[6] The model used to simulate replacement rates is EUROMOD, an integrated European tax-benefit model. EUROMOD provides us with a Europe-wide perspective on social and fiscal policies that are implemented at European or national level. It is also designed to examine, within a consistent comparative framework, the impact of national policies on national populations or the differential impact of co-ordinated European policy on individual Member States. Within the context of the present paper, the most relevant feature of EUROMOD is that it can provide conceptually consistent and, thus, comparable output for different countries. See Immervoll and O'Donoghue (2001a) and Sutherland (2001) for details about the model and underlying data.

The simulations are based on the systems of tax and benefit rules current in June 1998 and all monetary variables in the micro-data are updated from their original value to 1998 using the most appropriate uprating index available for each type of variable.[7] In computing total disposable incomes, income components that do not lend themselves to simulation ar etaken directly from the data (e.g. pensions). The standard tax-benefit instruments simulated in EUROMOD and relevant for this exercise are income taxes, social insurance contributions, child benefits and other family benefits, and income- or means-tested benefits.[8] Detailed

[5] Relevant benefit changes during the 12 months period (such as waiting periods or the expiration of Job Seekers Allowance in the UK after, at most, 6 months) are fully taken into account.

[6] EUROMOD relies on micro-data from 11 different sources for fifteen countries. The data sources used for the current study are the European Community Household Panel (ECHP) made available by Eurostat; the Austrian version of the ECHP made available by the Interdisciplinary Centre for Comparative Research in the Social Sciences; the Living in Ireland Survey made available by the Economic and Social Research Institute; the Panel Survey on Belgian Households (PSBH) made available by the University of Liège and the University of Antwerp; the Income Distribution Survey made available by Statistics Finland; the Enquête sur les Budgets Familiaux (EBF) made available by INSEE; the public use version of the German Socio Economic Panel Study (GSOEP) made available by the German Institute for Economic Research (DIW), Berlin; the Survey of Household Income and Wealth (SHIW95) made available by the Bank of Italy; the Socio-Economic Panel for Luxembourg (PSELL-2) made available by CEPS/INSTEAD; the Socio-Economic Panel Survey (SEP) made available by Statistics Netherlands through the mediation of the Netherlands Organisation for Scientific Research - Scientific Statistical Agency; and the Family Expenditure Survey (FES), made available by the UK Office for National Statistics (ONS) through the Data Archive. Material from the FES is Crown Copyright and is used by permission. Neither the ONS nor the Data Archive bear any responsibility for the analysis or interpretation of the data reported here. An equivalent disclaimer applies for all other data sources and their respective providers cited in this acknowledgement.

[7] A new "wave" of EUROMOD data is currently being added to the model and is often "closer" to 1998 than the first data available for the model.

[8] In the current exercise, we assume full benefit take-up and no tax evasion.

descriptions of the tax-benefit rules built into the model are provided in the "EUROMOD country reports" (available through www.econ.cam.ac.uk/dae/mu/emod.htm).

For the present study and as explained above, we also simulate unemployment benefits (for the transition out of work).[9] Unemployment benefits in a number of the countries depend upon previous income. When simulating the transition from work to unemployment, we utilise existing in-work income in the data as previous income. Also some individuals are ineligible for unemployment benefits because they were self-employed. Our simulations take this into account. However, having no full information on the reasons for unemployment or the time in work prior to unemployment, we assume that unemployment is *involuntary* and that people satisfy any contribution requirements (having started work no earlier than at age 18). In this sense, the computed RR_{ab} can be seen as an upper boundary estimate in cases where unemployment benefits depend on contribution records. On the other hand, we abstract from any early retirement provisions which, in comparison with the unemployment benefit system, may provide more generous out-of-work benefits in some countries.

For transitions into work (RR_{ba}, RR_{ca}) we know people's out-of work benefits and instead need to simulate in-work earnings (along with all related taxes and benefits) as the counterfactual situation. The goal here is not a very precise prediction of potential earnings for each individual but to capture the essential features of the distribution of potential entry wages reflecting the labour market opportunities of out-of-work people. We use a standard (log) earnings model to estimate in-work income for those currently out of work, utilising the Heckman (1979) procedure to account for sample selection bias.[10] This method "adjusts" coefficients of explanatory variables to account for the possible selection bias associated with the fact that we only observe earnings for those who work in data. We estimate separate models for men and women. The estimated coefficients and standard deviations are reported in table A3. The results of estimating the earnings of the unemployed from these equations (for 1998) generally show that they have a lower earnings potential on average than those in work. At the same time, there tends to be a smaller proportion of the unemployed with high earnings potential than in the case of those who are actually in employment and a larger proportion with relatively low earnings potential.[11]

3. TAX-BENEFIT SYSTEMS

The thirteen countries we consider represent very different welfare state regimes in Europe. As a background to the replacement rate results it is therefore useful to take a brief look at some of the main features of countries' tax-benefit systems. Table 1 reports the importance of different instrument groups as a percentage of household disposable income and the amount of redistribution in the tax-benefit system as measured by the change in the Gini coefficient. In what follows we discuss these indicators in relation to an often-used typology of welfare states:

[9] Immervoll and O'Donoghue (2001) describe in more detail the assumptions underlying the simulation of unemployment benefits

[10] We thus assume that the selection bias is the same for all 'out of work' groups whereas it may be more conceptually appropriate to treat different 'out of work' groups such as involuntary unemployed differently from other out-of-work groups such as home-workers. However, for cross-country studies like the present one, the use of a single participation equation seems preferable to us on transparency grounds.

[11] Further details on the earnings equation as well as a comparison of predicted earnings and actual earnings is provided in Alphametrics and Microsimulation Unit (2002).

- "Universal": Denmark, (Netherlands);
- "Conservative": Austria, Belgium, France, Germany, Luxembourg, (Netherlands);
- "Southern": Greece, Italy, Portugal, Spain;
- "Liberal": Ireland and the UK.

Relative Size of Benefit Expenditures and Tax Revenues

We see from table 1 that countries with Universal or Conservative welfare states tend to have benefits and benefits exceeding 30% of total disposable income with Liberal and Southern Welfare states with benefits expenditure less than 30% of disposable income. Italy is an exception due to relatively high public pensions and social assistance (mainly the social minimum components of public pensions). The Netherlands, on the other hand, has lower total benefits than other countries in the Universal or Conservative group. The importance of private provision for retirement pensions is a decisive factor here. The reliance on private pensions is particularly pronounced for Ireland and the UK resulting in low total benefit expenditures.

Except in the case of Ireland, where means-tested social assistance benefits dominate, expenditures on contributory pensions (the main part of the "other benefit" category) are highest. While in a few countries such as Austria early retirement pensions are frequently substitutes for unemployment benefits, pensions will generally only have a limited impact upon working age replacement rates and will have no impact at all on NRRs computed for transitions out of work (RR_{ab}).

Denmark and Belgium have the largest expenditure on social insurance unemployment benefits, followed by Germany, France and the Netherlands. The remaining countries have low unemployment benefit expenditure for a variety of reasons such as low unemployment, low benefit payments, low coverage or duration. Although unemployment insurance benefits in most countries are earnings related benefits, Ireland and the UK have flat rate benefits. Duration of receipt is also an issue. For example in the UK, unemployment benefits are payable only for at most 6 months. Durations are also short in the Southern countries. In many countries coverage of these benefits is limited to employees, with the self-employed excluded. This is also true for the Southern countries and Irleand where a higher proportion of self-employed tends to reduce unemployment benefit coverage.

Turning to the minimum income benefits heading, we the largest shares in Liberal countries. Ireland stands out in particular. Means-testing there is important because of a combination of factors such as the lack of earnings related benefits, coverage gaps and low durations of insurance benefits. After the short entitlement to unemployment benefits in the UK, unemployed individuals living in low-income household become eligible to Income Support. Income Support in the UK can also top up family incomes to the social minimum while in receipt of (flat amount) unemployment benefits. In most other countries, individuals exhausting their entitlement to social insurance unemployment benefits also become eligible for means tested unemployment (Austria, Germany and the Netherlands) or social assistance benefits. The maximum durations of insurance benefit receipt as well as the profile of benefit amounts over time are however quite different across countries (see OECD, 2002). In Spain,

certain older workers and those with children may be eligible for unemployment assistance, but entitlement is generally quite limited. In Italy there is no entitlement once unemployment benefits are exhausted. Much of the social assistance payments in the Southern countries as well as in some other countries are also targeted at elderly people and so may be seen as a substitute for pensions rather than unemployment benefits. In some countries, another important determinant of income when out of work (or in low-paid jobs) are means tested housing benefits, especially in the UK, Denmark and France. As an expenditure group, they are not significant in other countries.

In 7 countries out of 13, family benefits are the second most important expenditure group and are highest Luxembourg, Belgium, Denmark and Austria. Because they are generally not income related, they serve to smooth income transitions into and out of work.[12]

On the revenue side, we classify three types of instruments: income taxes and social insurance contributions paid by employees (or benefit recipients) and employers. As a percentage of disposable incomes, in Belgian total taxes are clearly highest in Belgium and Denmark with Belgium (but not Denmark) also having the largest relative benefit expenditures. "Conservative" countries are all in the 50-60% range, the Southern countries mainly in the 40-50% range and Greece, Spain and the UK around or below 30%. At around one fourth of disposable income the smalles tax share is found for Ireland.

The structure of revenue raising instruments varies a great deal across countries. There is also little consistency within similar "welfare systems" groups. Income taxes in Ireland and the UK are large but social insurance contributions are very low. The highest income taxes are paid by Danes. Income taxation is also the most important instrument in Germany, Italy, Luxembourg and Spain. Employer social insurance contributions are the most important (direct tax) revenue-raising instrument in four countries. As the income base for income taxes is wider, there may, for a given revenue raised, be less of an upwards pressure upon replacement rates than for social contributions. On the other hand, the more progressive the a tax, the larger will be its (upwards) influence on replacement rates.

Different designs of income taxation are in use across countries. One aspect that matters in particular when analysing replacement rates is whether incomes are assessed separately for each individual or jointly. While most countries operate individual based tax systems, a number of countries tax couple (or family) income. (see O'Donoghue and Sutherland, 1999). These include, France, Germany, Ireland, Luxembourg, Portugal and Spain. Yet, even in countries where tax schedules are formally "individual" there can be sizable "joint" elements (e.g., due to tax free allowances that are transferable between spouses) so that the employment status and earnings of one spouse can have important implications for the tax liability of the other.

Redistribution

The degree of redistribution within a tax-benefit system depends not only on the size of the an instrument, but also on the degree of targeting or progressivity. In the second part of the table, we report the Gini measure of inequality for three different income definitions, gross market

[12] In a number of countries, family benefits are, to varying degrees, income related (Austria, France, Germany, Italy and Spain).

income, including all market source of income, before employer contributions are deducted, gross total income (gross market income plus benefits), and disposable income (total income minus taxes). The difference between the Gini for gross market and gross total incomes corresponds to the redistribution (including any reranking) due to the benefit system in each country and the difference between gross and disposable incomes corresponds to the redistribution due to the tax and social insurance contribution systems.

For pre tax-benefit (gross market) income we typically find Gini coefficients of between 50 and 60%. Inequality of gross market incomes is lowest in Austria and the Netherlands. Although not exclusively so, the "Conservative" and Universal welfare states tend to have lower inequality of market incomes due to higher education levels, greater union power and/or other policies that promote equality in society. Ireland and the Southern Welfare states have amongst the highest inequality in market income. Belgium, despite having one of the lowest inequality levels in terms of disposable income has the highest inequality in market income. Clearly, the Belgian tax-benefit system is very redistributive.

For all countries, we see that benefit systems reduce inequality by more than taxes. Tax-benefit systems in Southern (Conservative) welfare states tend to be least (most) redistributive with Liberal welfare regimes coming between. Outside this general pattern, we find Austria and the Netherlands with relatively low redistribution and Spain with rather large changes in Gini coefficients. In the first two countries, inequality of market incomes is already low and so there is less a role for benefits. In Spain, the high pension related expenditures have a strong redistributive effect.

4. RESULTS

Distribution of Net Replacement Rates

Table 2 presents, for the 13 countries, average NRRs as well as the proportion of people with replacement rates of less than 40%, 40-80% and 80% or higher for each of the three types of transition. The top section shows the distribution of replacement rates for those currently in work (RR_{ab}). The countries with the highest replacement rates (of over 80% on average) are primarily either those with Conservative welfare states (Austria, France and the Benelux countries) or Universal welfare states (Denmark). With an average of less than 70% and a minimum of 57% the lowest in-work NNRs are found in Southern welfare states and the UK. Germany, Ireland and Spain come in-between with average replacement rates in the 70-80% range.

Turning to the second part of table 2 and to those who are currently unemployed (RR_{ba}), we find a different distribution of replacement rates. There is less variability across countries than for in-work NRRs (RR_{ab}). In particular we notice that Portugal, and to a lesser extent Greece and Italy, now has substantially higher replacement rates. The opposite is true for Belgium and, particularly, the Netherlands.

The third type of replacement rates we examine concerns those who are currently "inactive" (RR_{ca}, bottom part of table 2). Again, we compare net household incomes in the current (out of work) situation with net household incomes that would result if the inactive individual were to move into work. Italy moves from having the lowest average replacement rate to having one of the highest average replacement rates. Replacement rates are also higher for

Austria where relatively large numbers of people in early retired and generous disability benefits play a role. Average replacement rates are also higher for Greece but much lower than for the in work group for the Benelux countries, Denmark, France and Germany.

The role of taxes, benefits and other household incomes

To enable us to interpret these results and related them to relevant tax-benefit characteristics, it is useful to break down the various influences. To do this, we now try to explain the difference in the distribution of NRRs rates with reference to the income sources that contribute to them. We disaggregate total out of work income (i.e., the numerator of the NRR) utilising the decomposition elaborated in Immervoll and O'Donoghue (forthcoming (b)):

$$RR = \frac{\Delta Benefit + Benefit_{IW} - \Delta Tax - Tax_{IW} + Other\ Household\ Income}{Disposable\ Income_{IW}} \times 100 \qquad (1)$$

where $\Delta Benefit$ is the change in benefits when moving out of work, $Benefit_{IW}$ is the benefits received by the household when the individual is in work (this includes, but is not limited to, employment conditional or "in-work" benefits), ΔTax is the change in taxes and contributions when moving from out of work, Tax_{IW} is the sum of taxes and contributions paid by the household when the individual is in work and $Disposable\ Income_{IW}$ is household disposable income when the individual is in work. *Other Household Income* is the sum of all other household incomes (which is the same in the in work and out of work situations).

In tables 3 (a-c) we report respectively the decomposition of NRRs by income source for the in-work sample (RR_{ab}), for the unemployed sample (RR_{ba}) and the "inactive" sample (RR_{ca}). For convenience, each component is written as a percentage of the average replacement rate for the group.

Characteristics of Individuals with High Replacement Rates

As a final analytical step we now consider the types of characteristics that influence the distribution of replacement rates considering the in work NRR (RR_{ab})[13] and the unemployed samples (RR_{ba}) only. Because of the number of countries and dimensions involved, we use a regression model, regressing individual replacement rates on characteristics in an attempt to describe how replacement rates vary across different types of individuals and households. The "explanatory" variables and estimated coefficients are reported in table 4. A regression along these lines can be somewhat heroic (as indicated by very low R2 for some countries, particularly Denmark and the Netherlands). But as a descriptive tool it allows us to conveniently compare across countries. In addition, the estimated coefficients capture any interactions between different characteristics which would not be obvious from simple cross tabulations.

5. DISCUSSION

Which characteristics are associated with the various replacement rate levels? We see from table 4 that women's replacement rates are higher than men's in all countries. There are a

[13] For comparability purposes we include only those who are in full-time work.

number of reasons for these differentials. Firstly, it is important to note that they are not due to more generous benefit regimes for women. Rather, women are likely to have lower earnings, both in terms of their hourly wage rates and because of shorter working hours, increasing replacement rates. In addition, and as we shall see below, household composition plays an important role, with working women having a high probability of living with partners who have higher earnings. If the husband's earnings are the main source of household income then income will, in relative terms, not fall by very much if the woman loses her job. The (household based) replacement rate she is facing will therefore be relatively high – with possible implications for work incentives.

Young people tend to have higher replacement rates for similar reasons. Firstly, younger people will have lower (actual and potential) in-work earnings than older people and thus have higher replacement rates as unemployment benefits typically provide minimum payments ("floors") that younger people are more likely to benefit from. Secondly, they are more likely to live at home with other earners. The importance of household structure is also confirmed by the positive coefficients for household size (which increases the likelihood of other earnings in the household) and negative coefficients for the number of children (which do not provide additional earnings).

The "unemployment rate" variable represents the out of work rate (by gender five year age band). Although in general it has a positive sign, it may be capturing the fact that younger people and women have both higher replacement rates and out of work rates.

Comparing results for the different transitions

In most countries, fewer unemployed have high replacement rates (≥ 80%). There are a number of reasons for this. Firstly in-work replacement rates (RR_{ab}) measure the replacement rate in the first year of unemployment assuming that people are in fact entitled to unemployment insurance benefits. As the duration of entitlement to unemployment benefits (UB) is normally limited, those who are currently out of work and have been unemployed for longer may cease to be eligible for these benefits. They may then become eligible for lower valued unemployment- or social assistance benefits or nothing as in the case of many unemployed in Southern European countries. In Denmark, where membership in the unemployment insurance scheme is voluntary, those who are observed to be unemployed in the data and are not members of the insurance scheme will not be receiving any unemployment benefits at all (in cases where family income is "low", they would receive social assistance instead). Secondly, UB may fall in value over time as in the case of France. Consequently, even for those in the RR_{ba} sample who are still in receipt of UB, benefit levels may be lower than those received immediately after becoming unemployed (as in the calculation of RR_{ab}). In the UK and Ireland, benefits become means tested after a period of time and may thus also fall in value. In short, because the duration of unemployment will often be higher for the unemployed sample (RR_{ba}) than those who are "made" unemployed in our simulations (RR_{ab}), institutional factors such as duration dependent eligibility and benefit amounts will result in lower replacement rates for the sample of unemployed compared with the sample of working individuals.

On the other hand, the earnings we predict for those moving into work (RR_{ba}) will be an important factor. Potential earnings of the unemployed going into work will often be lower than earnings of those currently in work. The unemployed will typically have lower education

levels and/or frequently be younger on average than the population in work. These factors influencing potential earnings will be picked up by our earnings model. Compared to observed earnings, predicted entry wages for the currently unemployed will on average be lower. This will result in a lower denominator and thus higher NRRs.

The two effects therefore run in opposite directions, with the "earnings" effect being relatively stronger in Greece, Italy and Portugal and the "institutional factors" dominating in most other countries where welfare provision is generally better (both in terms of coverage and benefit amounts) and so has more of an impact. For the "inactive" group (RR_{ca}), results depend strongly on the composition of this groups which is very heterogeneous across countries. It will include early retirement pensioners (who may receive relatively generous benefits and will thus have high NRRs such as in Austria and Italy) as well as home-workers or discouraged workers who withdrew from the labour force and do not receive any benefit (and whose NRRs can therefore be quite low as in Belgium or Germany). Invalidity benefits will play a similar role as early retirement pensions and may combine with the "earnings" effect and with family support to produce larger numbers of individuals facing high NRRs than are found for the other types of transition (Greece, Italy).

Low Replacement Rates

When considering issues related to work disincentives, one is often particularly interested in high replacement rates. However, we notice at least 10% of the in-work population (RR_{ab}) with replacement rates of less than 40% for the Southern and Liberal welfare state countries. Indeed, more than 20% of Greek and Italian workers fall into this group. There is a similar if less extreme picture for RR_{ba} (those who are currently unemployed) and RR_{ca} (those who are currently "inactive") groups.

Considering firstly those with replacement rates below 40% in table 3, we notice that the contribution of marginal benefits (the extra benefit the household receives when the individual moves out of work) to NRRs is very low compared to other factors. In particular, the lower taxes paid when out of work as opposed to in work are much more important. They almost entirely offset in-work taxes showing that these people live in very low income household where, if they lose their job, almost no taxes are paid at all. In some of the countries with large numbers of low RR_{ab}, marginal benefits are particulary low which points to the lack of in-work income insurance as a main cause of insuffient resources when out of work.

Benefits in work may be universal benefits (such as family benefits), means-tested benefits in households ("working poor") or unemployment benefits paid to other individuals in the household who are out of work. In countries operating in-work benefits (in 1998 Ireland and the UK) they will also include benefits that are conditional upon employment and are thus *only* paid when in work. The *Benefits in work* component is typically the highest in the Southern countries. One of the reasons for this is that household sizes in Southern countries are typically larger than other countries containing elderly relatives in receipt of pensions for example, many with a single main breadwinner. If this breadwinner loses his or her job, then low other incomes and benefits together with low replacement benefits results in low RRs. This is confirmed by relatively high poverty rates and gaps in these countries, when the main breadwinner in a family loses their job.

The remaining component of the replacement rate is the influence of other household income, either non-employment income of the individual who makes the transition or any type of market income of other individuals living in the same household. In Greece, Italy and Portugal, other incomes are on average the most important compared with other countries. For some groups in other countries, these incomes are important, but typically there are very few people in non-southern European countries with NRRs this low.

Medium and High Replacement Rates

We now consider together the groups of individuals with replacement rates of 40-80% and 80+%. Comparing with the low NRR group, we see that as NRRs are rising, the share of marginal benefits is falling. However, this does not mean that benefits are less relevant for higher replacement rates. Indeed, for the 40-80% NRR group we see that, because the contribution of other components is falling as well, that marginal benefits are very important. Yet, for the >80% group we clearly see the importance of marginal benefits drop far below that of other household incomes. Even though other household income was the most important for the low replacement rate group, this income component increases in importance as one ascends the RR distribution, resulting in the conclusion that the existence of other income, mainly the income of spouses and parents act as the most important income source in maintaining living standards when out of work.

6. CONCLUDING REMARKS

In this paper, we have used the EUROMOD tax-benefit model to derive distributions of replacement rates in 13 EU countries and to decompose the effect of different income sources on the distribution of net replacement rates.

We noticed that patterns of incomes of different types of individuals (currently in work, unemployed or inactive) with high replacement rates were very different. This highlights the importance of using micro-based simulation methods when trying to measure replacement rates or when quantifying the elasticity of labour supply resulting from these replacement rates. Averages will not suffice particularly when one is concerned, as is often the case, with the more "unusual" cases at the fringes of the labour market.

Using the tax-benefit model, we are able to isolate the influence of social and fiscal policy factors and other incomes that determine the level of out of work income versus income when in work. In general the tax-benefit system is not in fact the main "preserver" of household income. The presence of income from parents, spouses or other individuals in the household is likely to have a stronger impact on income maintenance and thus on the existence of high replacement rates than tax–benefit instruments. Because of this, replacement rates may not necessarily be the best indicator of the isolated impact of taxes and benefits on income replacement. They are essential, however, for understanding the context in which employment transitions take place. While it is desirable to break down replacement rates to separately show the factors that drive them, it would be misleading to focus on any one of those factors in isolation. For instance, marginal effective tax rates computed for transitions into work[14] can show very clearly the effective gain from employment. But since they do not relate this to the

[14] This measure has also been called "Average Effective Tax Rate" (OECD, 2002), "Participation Tax Rate" (Immervoll et al, 2003) or "Tax-Benefit to Earnings Ratio" (Immervoll and O'Donoghue, 2001b).

original level of household resources, it is not clear what financial difference a transition into work would make to the household as a whole.

Future work in this area could attempt to address some of the asymmetries that exist between the simulation of the various transitions. For transitions out of work, for instance, it would be desirable not to restrict the reference time period to one year. Instead one could utilise empirical distributions of unemployment durations (as measured in Labour Force Surveys) and assume that expected unemployment durations are distributed the same way. This would permit a more realistic weighting of the various benefit levels available during a period of unemployment and may thus better capture the true financial trade-off people are facing when making labour supply choices.

REFERENCES

Alphametrics and Microsimulation Unit, 2002. "Analytical and statistical tools for monitoring EU tax-benefits systems. Report of a study funded by DG Employment and Social Affairs, European Commission", Royston: Alphametrics Limited.

Atkinson, A.B. and J. Micklewright, 1991. "Unemployment compensation and labour market transitions: A critical review", *Journal of Economic Literature*, v29, pp. 1679-727.

European Commission, 2000. *Employment in Europe 2000*. Brussels.

Heckman, J., 1979. "Sample selection bias as a specification error", *Econometrica*, v47, pp. 153-161.

Immervoll, H., H.J. Kleven, C.T. Kreiner and E. Saez, 2003. "Welfare Reform in European Countries. A Microsimulation Analysis.", mimeo.

Immervoll, H., 2002. "The Distribution of Average and Marginal Effective Tax Rates in European Union Member States", EUROMOD Working Paper no. 2/02, available through www.econ.cam.ac.uk/dae/mu/emod.htm.

Immervoll, H. and C. O'Donoghue, 2001a. "Towards a Multi-Purpose Framework for Tax-Benefit Microsimulation: A Discussion by Reference to EUROMOD, a European Tax-Benefit Model", EUROMOD Working Paper no. 2/01, available through www.econ.cam.ac.uk/dae/mu/emod.htm.

— and —, (2001b). " Welfare Benefits and Work Incentives, An Analysis of the Distribution of Net Replacement Rates in Europe using EUROMOD, a Multi-Country Microsimulation Model ", EUROMOD Working Paper no. 4/01, available through www.econ.cam.ac.uk/dae/mu/emod.htm.

— and —, forthcoming (a). "What Difference does a Job Make? The Income Consequences of Joblessness in Europe", in Gallie D. (ed.) *Resisting Marginalisation: Unemployment Experience and Social Policy in Western Europe*. Oxford: Oxford University Press

— and —, forthcoming (b). "Decomposing Replacement Rates", *IZA Discussion Paper.*

—, — and H. Sutherland, 1999. "An Introduction to EUROMOD", EUROMOD Working Paper no. 0/99, available through www.econ.cam.ac.uk/dae/mu/emod.htm.

Jensen, P. and N. Westergard-Nielsen, 1989. "Temporary Layoffs", *Labour Economics Group Working Paper*, University of Aarhus and Aarhus School of Business, 89-2.

O'Donoghue, C. and H. Sutherland, 1999. "For richer, for poorer?: The treatment of marriage and the family in European income tax systems", *Cambridge Journal of Economics*, Vol. 23, No. 5.

O'Donoghue, C. and F. Utili, 2000. "Micro-Level Impacts of Low Wage Policies in Europe", Salverda W., B. Nolan and C. Lucifora (eds.), *Policy Measures for Low-Wage Employment in Europe*. London: Macmillan.

OECD, 2002. "Benefits and Wages. 2002 Edition", Paris: OECD.

—, 1997a. *Making work pay. Taxation, benefits, employment and unemployment.* Paris: OECD.

OECD, 1997b. "Making Work Pay" in *Employment Outlook*, Paris: OECD.

OECD, 1994. *The OECD Jobs Study*. Paris: OECD.

Salomäki, A. and T. Munzi, 1999. "Net replacement rates of the unemployed: Comparisons of various approaches", *EC DG ECFIN Economic Papers*, No 133.

Snower, D.J., 1997. "Evaluating unemployment policies: What do the underlying theories tell us?", in D.J. Snower and G. De La Dehesa (eds.), *Unemployment policy: Government options for the labour market*, Cambridge: Cambridge University Press, pp. 15-53.

Sutherland, H., 2001. "Final Report. EUROMOD: An integrated European benefit-tax model", EUROMOD Working Paper EM9/01, available through http://www.econ.cam.ac.uk/dae/mu/emod.htm.

TABLES AND FIGURES

Table 1. Characteristics of Tax-Benefit Systems: 1998

Country	AT	BE	DK	FR	GE	GR	IR	IT	LU	NL	PT	SP	UK
As a % of Disposable Income													
Benefits													
Unemployment Benefits (1)	1.2	4.1	7.9	2.3	2.7	0.2	1.2	0.4	0.3	2.5	1.5	1.5	0.2
Means Tested Minimum Income Benefits (2)	1.5	2.4	1.0	1.1	2.3	1.8	11.4	4.0	0.6	2.2	0.7	3.1	5.5
Means Tested Housing Benefits (3)	0.2	0.0	1.6	1.5	0.9	0.1	0.1	0.0	0.1	0.7	0.0	0.1	2.8
Family Benefits (4)	3.2	4.5	3.4	2.7	2.9	0.7	2.4	1.3	4.7	1.8	1.6	0.6	1.9
Other Benefits incl. Pensions (5)	31.0	28.0	19.3	25.5	23.1	19.6	6.3	25.0	26.0	18.1	19.2	22.3	11.0
Total Benefits (6)	37.2	38.9	33.2	33.1	31.9	22.4	21.4	30.7	31.7	25.3	23.0	27.6	21.4
Taxes													
Employer SICs (7)	20.7	35.7	3.2	28.2	17.2	6.3	3.0	18.0	10.3	15.3	19.6	13.1	6.3
Income Tax (8)	17.9	25.8	51.5	11.0	20.6	12.2	17.6	23.2	17.5	15.8	15.3	15.4	20.0
Employee SICs (9)	16.7	11.0	13.6	19.7	17.2	9.9	3.8	8.3	10.2	24.3	10.6	5.2	5.5
Total Taxes (10)	55.3	72.5	68.3	58.9	55.1	28.4	24.4	49.5	38.0	55.4	45.4	33.7	31.9
Redistribution (Gini)													
Gross Market Income [Market Income plus (7)]	49.4	59.5	52.9	54.5	53.7	55.6	57.4	54.2	53.2	45.9	58.2	57.7	53.9
Gross Income [Gross Market Income plus (6)]	32.8	33.0	33.5	32.9	33.9	40.2	39.2	37.9	33.4	31.1	43.0	37.7	36.3
Disposable Income [Gross Income less (10)]	26.6	25.7	25.7	28.3	26.3	36.7	33.1	33.9	26.5	26.4	38.2	33.1	31.8

Source: EUROMOD. Benefit and tax totals are shown in relation to total cash household disposable income before housing costs and other forms of "committed expenditures". Gini coefficients relate to per-capita incomes and counting each individual; any negative income values enter as zero values. The equivalence scale used for deriving per-capita values is of the "modified OECD" type (with weights 1 for the first adult, 0.5 for further adults and 0.3 for children aged under 14).

Table 2. Distribution of Net Replacement Rates: 1998

	At	Be	Dk	Fr	Ge	Gr	Ir	It	Lu	Nl	Pt	Sp	UK
RR_{ab} – In work to Unemployment Transition													
< 40	3	3	2	0	6	25	12	24	2	2	13	12	15
40- 80	35	40	40	15	56	51	44	60	26	32	65	32	59
80+	61	56	58	84	39	25	44	16	73	65	22	56	25
Total	100	100	100	100	100	100	100	100	100	100	100	100	100
Average Replacement Rate	81	79	81	87	71	58	72	57	84	83	68	74	63
RR_{ba} –Unemployment to In Work Transition													
< 40	2	7	7	5	12	14	5	16	9	12	7	12	13
40- 80	38	56	42	35	50	52	54	60	31	47	45	41	63
80+	61	38	51	59	39	34	40	24	60	41	48	47	24
Total	100	100	100	100	100	100	100	100	100	100	100	100	100
Average Replacement Rate	84	73	81	84	71	66	72	63	87	71	84	77	64
RR_{ca} –Inactive to In Work Transition													
< 40	1	14	7	7	12	7	3	5	2	8	14	11	8
40- 80	40	58	60	58	58	50	61	39	47	54	59	51	67
80+	58	28	33	35	30	43	36	56	51	38	27	39	25
Total	100	100	100	100	100	100	100	100	100	100	100	100	100
Average Replacement Rate	91	68	70	72	67	75	73	84	81	72	65	71	67

Source: EUROMOD.

Table 3(a) Out of Work Components of Replacement Income as Percentage of In-work Income (RR_{ab} – In work to Unemployment Transition): 1998

RR_{ab}	Decomposition	At	Be	Dk	Fr	Ge	Gr	Ir	It	Lu	Nl	Pt	Sp	UK
< 40	Marginal Benefit	58	78	52	145	51	21	66	31	96	74	33	68	44
	Benefits in work	14	9	7	5	16	28	13	19	5	13	17	18	8
	Marginal Tax	343	306	421	278	148	206	115	176	202	358	149	167	117
	In-Work Tax	-350	-333	-469	-349	-155	-217	-118	-197	-229	-388	-169	-187	-132
	Other Household Income	35	40	90	21	40	62	24	71	25	44	70	33	63
	Average RR	22	27	25	31	29	15	25	22	26	23	28	19	27
40- 80	Marginal Benefit	39	49	62	95	42	23	31	11	67	100	14	56	19
	Benefits in work	14	16	12	5	13	11	17	22	11	8	17	9	8
	Marginal Tax	50	54	66	38	66	25	30	30	29	30	36	21	27
	In-Work Tax	-69	-76	-118	-60	-83	-45	-40	-61	-58	-64	-62	-38	-50
	Other Household Income	66	58	79	22	61	85	62	98	51	26	96	52	97
	Average RR	67	66	66	74	64	63	62	63	69	72	57	64	60
80+	Marginal Benefit	27	26	44	39	18	20	14	3	42	41	7	30	11
	Benefits in work	20	19	14	12	12	17	11	22	17	10	19	15	10
	Marginal Tax	13	13	14	15	20	9	6	8	4	8	7	4	4
	In-Work Tax	-39	-42	-80	-38	-56	-28	-24	-47	-27	-48	-36	-21	-31
	Other Household Income	80	84	108	71	106	81	93	114	64	89	103	71	106
	Average RR	92	91	91	89	89	88	92	87	90	90	83	91	89

Source: EUROMOD

Table 3(b) Out of Work Components of Replacement Income as Percentage of In-work Income (RR_{ba} –Unemployment to In Work Transition): 1998

RR_{ba}	Decomposition	At	Be	Dk	Fr	Ge	Gr	Ir	It	Lu	Nl	Pt	Sp	UK
< 40	Marginal Benefit	20	62	62	66	66	10	81	-4	56	56	13	40	60
	Benefits in work	0	18	22	13	15	27	18	56	8	13	29	30	8
	Marginal Tax	149	235	274	159	239	113	124	141	85	272	134	101	120
	In-Work Tax	-179	-252	-309	-171	-245	-125	-124	-160	-100	-301	-143	-108	-131
	Other Household Income	110	36	50	33	25	75	1	66	52	60	68	37	43
	Average RR	33	31	29	28	30	22	28	24	36	25	25	27	29
40- 80	Marginal Benefit	12	32	40	37	38	1	36	4	39	24	12	18	28
	Benefits in work	19	20	36	17	19	19	33	33	33	12	18	28	15
	Marginal Tax	35	57	60	37	67	14	21	23	19	46	23	17	29
	In-Work Tax	-59	-79	-111	-55	-86	-31	-25	-53	-31	-83	-38	-31	-47
	Other Household Income	93	70	75	63	62	97	35	93	41	101	86	68	76
	Average RR	67	61	65	62	63	65	64	63	66	62	64	62	62
80+	Marginal Benefit	12	36	40	31	34	0	17	8	39	30	52	19	21
	Benefits in work	16	20	26	21	14	13	28	25	21	15	9	21	15
	Marginal Tax	8	8	6	8	24	3	5	4	0	5	4	2	8
	In-Work Tax	-38	-36	-70	-29	-50	-24	-17	-41	-16	-48	-19	-18	-33
	Other Household Income	102	72	97	69	78	107	66	104	56	97	54	76	88
	Average RR	93	96	97	98	93	88	89	91	99	92	115	96	87

Source: EUROMOD

Table 3(c) Out of Work Components of Replacement Income as Percentage of In-work Income (RR_{ca} –Inactive to In Work Transition): 1998

RR_{ca}	Decomposition	At	Be	Dk	Fr	Ge	Gr	Ir	It	Lu	Nl	Pt	Sp	UK
< 40	Marginal Benefit	11	32	9	17	61	11	61	15	17	23	20	10	48
	Benefits in work	29	30	62	19	19	34	18	34	28	25	23	30	13
	Marginal Tax	116	240	267	107	226	96	80	128	123	250	115	118	115
	In-Work Tax	-135	-251	-303	-130	-231	-113	-81	-166	-133	-281	-137	-130	-128
	Other Household Income	78	49	66	88	25	71	22	88	65	84	79	72	51
	Average RR	33	29	25	31	28	25	31	25	32	28	26	24	29
40- 80	Marginal Benefit	6	15	20	6	14	3	13	14	6	12	6	4	21
	Benefits in work	23	29	46	20	20	16	23	25	23	17	18	21	15
	Marginal Tax	22	51	58	28	53	13	17	22	23	46	27	17	25
	In-Work Tax	-57	-77	-100	-57	-84	-32	-28	-51	-41	-84	-57	-33	-46
	Other Household Income	106	82	78	103	97	100	75	90	89	110	106	92	85
	Average RR	67	63	66	64	64	66	67	67	67	62	56	63	63
80+	Marginal Benefit	23	25	8	9	14	8	5	22	14	16	21	6	24
	Benefits in work	27	22	40	17	16	11	11	22	19	14	11	15	19
	Marginal Tax	2	11	16	9	18	3	7	3	5	7	3	4	9
	In-Work Tax	-38	-53	-79	-40	-54	-29	-28	-38	-30	-54	-34	-26	-31
	Other Household Income	87	93	115	106	106	107	105	91	92	116	99	102	79
	Average RR	98	93	88	90	88	91	87	98	90	90	93	91	88

Source: EUROMOD

Table 4 Characteristics that Influence Replacement Rates

Country	At		Be		Dk		Fr		Gr		Ir	
	Coef	p	Coef	p	Coef	p	Coef	p	Coef	p	Coef.	p
In-Work Sample	-0.059	0.00	0.064	0.00	-0.061	0.26	0.099	0.00	0.049	0.08	-0.015	0.03
Male	-0.052	0.00	-0.053	0.00	-0.121	0.01	-0.036	0.00	-0.079	0.02	-0.063	0.00
Aged <= 25	0.030	0.02	0.127	0.00	-0.034	0.52	0.023	0.00	0.021	0.54	0.079	0.00
Unemp. Rate	0.143	0.00	0.077	0.10	0.133	0.72	-0.001	0.94	0.203	0.01	0.229	0.00
Married	0.014	0.17	0.020	0.15	-0.068	0.15	-0.013	0.00	-0.098	0.00	0.018	0.03
Cohabiting	0.005	0.77	0.078	0.00	-0.039	0.42	-0.002	0.66	-0.004	0.96		0.00
# Ch. Aged 0-5	-0.039	0.00	-0.001	0.94	-0.029	0.42	-0.015	0.00	-0.040	0.04	-0.037	0.00
# Ch. Aged 6-10	-0.032	0.00	-0.009	0.40	-0.035	0.38	-0.018	0.00	-0.046	0.01	-0.040	0.00
#Ch. Aged 11-17	-0.050	0.00	-0.018	0.08	-0.026	0.51	-0.021	0.00	-0.045	0.00	-0.044	0.00
No. Pers. in HH	0.063	0.00	0.033	0.00	0.039	0.15	0.033	0.00	0.064	0.00	0.053	0.00
Home Owner	0.020	0.18	-0.023	0.15	-0.167	0.10	-0.014	0.62	-0.043	0.19	0.011	0.48
Home Owner (with Mortgage)	0.008	0.60	-0.024	0.08	-0.154	0.00	0.010	0.00	-0.017	0.68	-0.016	0.28
Social Renter	0.033	0.02	0.002	0.92	-0.114	0.05	0.005	0.18	0.034	0.72	-0.029	0.07
Housing Costs	0.000	0.06	0.000	0.19	0.000	0.05	0.000	0.00	0.000	0.60	0.000	0.10
Constant	0.538	0.00	0.609	0.00	1.109	0.00	0.700	0.00	0.441	0.00	0.488	0.00
No. Observations	2257		1430		1738		8022		3178		2458	
R2	0.219		0.113		0.024		0.165		0.072		0.391	

Country	It		Lu		Nl		Pt		Sp		UK	
	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p	Coef.	p
In-Work Sample	0.032	0.00	0.139	0.00	0.080	0.00	-0.075	0.00	0.066	0.00	0.009	0.54
Male	-0.158	0.00	-0.041	0.00	-0.076	0.00	-0.084	0.00	-0.093	0.00	-0.119	0.00
Aged <= 25	0.072	0.00	-0.028	0.00	0.040	0.00	0.029	0.02	0.063	0.00	0.096	0.00
Unemp. Rate	-0.063	0.00	-0.033	0.07	-0.100	0.02	0.050	0.20	0.104	0.00	0.060	0.18
Married	-0.053	0.00	-0.009	0.16	0.010	0.36	-0.017	0.10	-0.049	0.00	0.031	0.01
Cohabiting	-0.020	0.56	0.026	0.00	0.030	0.02	-0.009	0.73	-0.011	0.66	0.044	0.00
# Ch. Aged 0-5	-0.066	0.00	0.007	0.17	-0.029	0.00	-0.010	0.22	-0.025	0.00	-0.061	0.00
# Ch. Aged 6-10	-0.076	0.00	-0.022	0.00	-0.059	0.00	0.004	0.62	-0.044	0.00	-0.057	0.00
#Ch. Aged 11-17	-0.073	0.00	-0.011	0.06	-0.050	0.00	-0.018	0.01	-0.052	0.00	-0.059	0.00
No. Pers. in HH	0.064	0.00	0.041	0.00	0.037	0.00	0.050	0.00	0.037	0.00	0.083	0.00
Home Owner	0.032	0.16	-0.029	0.00	0.014	0.54	-0.004	0.68	-0.041	0.00	-0.035	0.08
Home Owner (with Mortgage)	0.036	0.13	-0.032	0.00	0.013	0.32	-0.001	0.96	0.015	0.24	-0.044	0.00
Social Renter	0.035	0.00	-0.020	0.67	0.043	0.00	0.000	0.99	0.027	0.34	0.042	0.02
Housing Costs	0.000	0.16	0.000	0.00	0.000	0.00	0.000	0.27	0.000	0.00	0.000	0.36
Constant	0.469	0.00	0.668	0.00	0.680	0.00	0.604	0.00	0.633	0.00	0.456	0.00
No. Observations	6194		2013		2611		2809		4884		5077	
R2	0.293		0.240		0.080		0.171		0.137		0.104	

Source: EUROMOD

Note: the "in-work sample" variable is a dummy whose value is one for people currently in work (individuals included in the RR_{ab} sample) and zero otherwise (i.e., for those included in the RR_{ba} sample).

Table A.1. Data Sources

Country	Base Dataset for EUROMOD	Date of collection	Reference time period for incomes
Austria	European Community Household Panel, Austrian version	1999	annual 1998
Belgium	Panel Survey on Belgian Households (W6)	1997	annual 1996
Denmark	European Community Household Panel (W2)	1995	annual 1994
Finland	Income distribution survey	1997	annual 1996
France	Budget de Famille	1994/5	annual 1993/4
Germany	German Socio-Economic Panel (W15)	1998	annual 1997
Greece	European Community Household Panel (W3)	1996	annual 1995
Ireland	Living in Ireland Survey (W1)	1994	month in 1994
Italy	Survey of Households Income and Wealth	1996	annual 1995
Luxembourg	PSELL-2 (W5)	1999	annual 1998
Netherlands	Sociaal-economisch panelonderzoek (W3)	1996	annual 1995
Portugal	European Community Household Panel (W3)	1996	annual 1995
Spain	European Community Household Panel (W3)	1996	annual 1995
UK	Family Expenditure Survey	1995/6	month in 1995/6

Table A.2. Sample Sizes (individuals)

	At	Be	Dk	Fr	Ge	Gr	Ir	It	Lu	Nl	Pt	Sp	UK
RR_A – In work to Unemployment Transition													
< 40	86	58	50	17	466	864	407	1440	42	76	259	577	932
40- 80	950	754	800	1342	4636	1760	1518	3651	622	1201	1280	1539	3625
80+	1647	1052	1151	7399	3210	854	1495	967	1767	2420	445	2706	1544
Total	2684	1863	2001	8759	8312	3479	3420	6058	2431	3697	1984	4822	6101
RR_B –Unemployment to In Work Transition													
< 40	5	24	38	70	151	104	51	263	5	113	7	173	76
40- 80	108	204	234	474	645	395	517	992	18	442	44	580	366
80+	174	138	287	793	503	261	383	398	36	378	47	676	140
Total	288	367	559	1337	1299	761	951	1653	59	933	98	1429	582
RR_C –Inactive to In Work Transition													
< 40	13	75	16	258	191	174	63	245	16	56	134	369	173
40- 80	354	317	139	2139	890	1331	1270	1826	445	374	572	1748	1413
80+	508	153	76	1294	461	1156	746	2629	488	263	256	1344	534
Total	875	545	231	3692	1542	2661	2079	4700	948	693	962	3461	2120

Source: EUROMOD.

Table A.3. Earnings Model

	Male	AT		BE		DK		FR		GE		GR		IR		IT		LU		NL		PT		SP		UK	
		Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\	Coeff	Std. De\
Earnings Equation																											
Years In Education	yrsed m	0.0561	0.0065	0.0596	0.0061	0.0355	0.0086	0.0747	0.0024	0.0273	0.0019	0.0503	0.0081	0.0181	0.0057	0.0501	0.0035	0.0616	0.0065	0.0497	0.0043	0.0621	0.007	0.0562	0.0055	0.0405	0.0041
Years of Experience	t m	0.0316	0.0041	0.0372	0.0054	0.0499	0.0069	0.0347	0.0046	0.0371	0.003	0.0272	0.0119	0.0471	0.004	0.0265	0.0031	0.0444	0.0089	0.0583	0.0038	0.0028	0.0092	0.0494	0.0082	0.0436	0.004
Years of Experience^2	t2 m	-3E-04	9E-05	-2E-04	0.0001	-8E-04	0.0002	-2E-04	1E-04	-3E-04	6E-05	-2E-04	0.0002	-7E-04	8E-05	-2E-04	6E-05	-5E-04	0.0002	-7E-04	9E-05	0.0002	0.0002	-5E-04	0.0002	-7E-04	9E-05
Region 1	reg1 m	0	0	0	0	0	0	0.1098	0.1391	0.0778	0.0428	0.0435	0.048	0.1559	0.024	0	0	-0.037	0.0323	0	0	-0.021	0.0437	-0.046	0.0658	0.1482	0.0776
Region 2	reg2 m	-0.061	0.0253	0.023	0.0279	0	0	-0.003	0.1456	0.1066	0.0565	0.1144	0.0508	0.1251	0.023	0	0	0	0	0	0	0.0138	0.0439	0.1366	0.0628	0.0674	0.0735
Region 3	reg3 m	-0.016	0.0259	-0.025	0.0424	0	0	-0.074	0.1444	0.1179	0.0341	0.1729	0.047	0	0	0.0684	0.0405	0	0	0	0	0.2869	0.0505	0.1963	0.0675	0.0969	0.0726
Region 4	reg4 m	0	0	0	0	0	0	-0.023	0.1432	0.1316	0.0665	0	0	0	0	0.0752	0.0628	0	0	0	0	0.0899	0.0508	0.0061	0.064	0.0599	0.0746
Region 5	reg5 m	0	0	0	0	0	0	-0.096	0.1439	0.1337	0.0333	0	0	0	0	0.0186	0.0465	0	0	0	0	0.0367	0.052	0.0628	0.0609	0.087	0.0733
Region 6	reg6 m	0	0	0	0	0	0	-0.102	0.146	0.1565	0.0375	0	0	0	0	0.0412	0.0533	0	0	0	0	0.0627	0.045	-0.17	0.0623	0.0765	0.0794
Region 7	reg7 m	0	0	0	0	0	0	-0.104	0.1457	0.1061	0.0383	0	0	0	0	-0.08	0.0511	0	0	0	0	0	0	0	0	0.3428	0.0733
Region 8	reg8 m	0	0	0	0	0	0	-0.165	0.1413	0.1647	0.0356	0	0	0	0	0.0723	0.0429	0	0	0	0	0	0	0	0	0.2042	0.0707
Region 9	reg9 m	0	0	0	0	0	0	-0.053	0.1423	0.1228	0.0357	0	0	0	0	-0.002	0.0453	0	0	0	0	0	0	0	0	0.0798	0.0733
Region 10	reg10 m	0	0	0	0	0	0	0.0312	0.1429	0	0	0	0	0	0	-0.109	0.0574	0	0	0	0	0	0	0	0	0.0647	0.0796
Region 11	reg11 m	0	0	0	0	0	0	-0.138	0.147	-0.137	0.0454	0	0	0	0	-0.096	0.0525	0	0	0	0	0	0	0	0	0.0819	0.0742
Region 12	reg12 m	0	0	0	0	0	0	-0.117	0.1416	-0.203	0.0369	0	0	0	0	-0.058	0.0478	0	0	0	0	0	0	0	0	0	0
Region 13	reg13 m	0	0	0	0	0	0	-0.214	0.1425	-0.262	0.0353	0	0	0	0	-0.125	0.0562	0	0	0	0	0	0	0	0	0	0
Region 14	reg14 m	0	0	0	0	0	0	-0.108	0.1455	-0.288	0.0361	0	0	0	0	0.0146	0.0996	0	0	0	0	0	0	0	0	0	0
Region 15	reg15 m	0	0	0	0	0	0	-0.159	0.1423	-0.242	0.0356	0	0	0	0	-0.269	0.0434	0	0	0	0	0	0	0	0	0	0
Region 16	reg16 m	0	0	0	0	0	0	-0.084	0.1427	-0.2	0.0343	0	0	0	0	-0.234	0.0451	0	0	0	0	0	0	0	0	0	0
Region 17	reg17 m	0	0	0	0	0	0	-0.162	0.1534	0	0	0	0	0	0	-0.074	0.0815	0	0	0	0	0	0	0	0	0	0
Region 18	reg18 m	0	0	0	0	0	0	-0.112	0.1402	0	0	0	0	0	0	-0.301	0.0609	0	0	0	0	0	0	0	0	0	0
Region 19	reg19 m	0	0	0	0	0	0	-0.119	0.1478	0	0	0	0	0	0	-0.343	0.0466	0	0	0	0	0	0	0	0	0	0
Region 20	reg20 m	0	0	0	0	0	0	-0.174	0.1441	0	0	0	0	0	0	-0.263	0.0549	0	0	0	0	0	0	0	0	0	0
Region 21	reg21 m	0	0	0	0	0	0	0.0041	0.141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Region 22	reg22 m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Armed forces	occ0 m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6314	0.0678	0	0	0.4249	0.0846
Senior officials/managers	occ1 m	0.4874	0.0492	0	0	0.3511	0.0735	0	0	0.7338	0.019	0.1849	0.0762	0.5331	0.0457	0.6486	0.0591	0.5994	0.0626	-0.077	0.0335	0.9336	0.0904	0.665	0.0863	0.388	0.024
Professionals	occ2 m	0.4905	0.0644	0	0	0.3052	0.0657	0	0	0.9564	0.0339	0.3052	0.067	0.7109	0.0401	0	0	0.6728	0.0624	-0.179	0.0253	1.1217	0.0825	0.7565	0.0638	0.4168	0.0329
Technicians	occ3 m	0.3559	0.0393	0	0	0.2901	0.0629	0	0	0.582	0.0218	0.3241	0.0699	0.4054	0.0408	0.5319	0.0357	0.4451	0.0542	0	0	0.7601	0.0558	0.5412	0.0566	0	0
Clerks	occ4 m	0.2361	0.0445	0	0	0.1891	0.0717	0	0	0.4843	0.0256	0.2676	0.0593	0.2299	0.0433	0.2742	0.0235	0.2458	0.0589	-0.021	0.0234	0.4909	0.0541	0.5741	0.057	0	0
Service and sales workers	occ5 m	0.1581	0.0439	0	0	0.0578	0.072	0	0	0.3702	0.0229	0.144	0.059	0.0818	0.0366	0	0	0.001	0.0652	0	0	0.3018	0.0491	0.2766	0.048	0.0802	0.0269
Skilled agricultural	occ6 m	-0.232	0.0637	0	0	-0.018	0.1093	0	0	0.1776	0.0435	-0.599	0.0947	-0.104	0.0758	0	0	-0.258	0.0982	0	0	-0.344	0.0643	0.0997	0.0898	-0.328	0.0664
Craft and trades workers	occ7 m	0.1833	0.0354	0	0	0.2014	0.0562	0	0	0.4214	0.0128	0.0956	0.0487	0.1901	0.0316	-1.109	0.2394	0.0249	0.05	0	0	0.1469	0.0403	0.3541	0.0392	0.3384	0.0324
Plant and machine operators	occ8 m	0.1112	0.0429	0	0	0.2226	0.0624	0	0	0.4902	0.0475	0.1478	0.056	0.1989	0.0346	0	0	0.1674	0.055	0	0	0.2457	0.0482	0.3431	0.0495	0	0
Part-time	pt m	-0.274	0.0424	-0.538	0.0214	0.0582	0.0788	-9E-04	0.0263	-0.596	0.0134	0.3573	0.065	0.1437	0.0286	-0.316	0.0375	-0.522	0.0555	-0.671	0.0269	-0.086	0.0523	0.3035	0.0736	-0.008	0.0432
Constant	constant m	3.6461	0.0855	4.9696	0.1089	3.4317	0.1745	2.9463	0.1533	1.9897	0.0498	6.1204	0.2289	0.8951	0.1381	1.6541	0.0581	4.8951	0.149	1.9964	0.075	5.5226	0.138	5.1398	0.1571	0.8785	0.1083
Standard Error	sd m	0.5325	0	0.5642	0	0.5853	0	0.5682	0	0.5183	0	0.5636	0	0.4414	0	0.5758	0	0.4888	0	0.5806	0	0.5926	0	0.7437	0	0.437	0
Lambda	lambda m	-0.473	0.0137	-0.775	0.1431	-0.573	0.149	-0.677	0.0508	-0.884	0.1129	-0.486	0.0962	-0.288	0.0934	-0.332	0.0036	-0.279	0.1066	-0.564	0.0063	-0.589	0.0997	-0.664	0.0829	-0.369	0.0615
Participation Equation																											
Marital Status	marr p m	0.4343	0.0846	0.7498	0.0468	0.8154	0.108	0.9122	0.0589	0.4771	0.0346	0.6678	0.0853	0.6493	0.0831	0.6153	0.063	0.5944	0.1263	0.8011	0.0686	0.6777	0.0771	0.9045	0.0675	0.8188	0.0652
Cohabitting	partner p m	0.3835	0.1429	0.337	0.0546	0.3903	0.1035	0.8675	0.072	0.3838	0.0388	0.8215	0.2636	0	0	1.2659	0.5532	0.5962	0.1705	0.696	0.088	0.407	0.1944	0.6407	0.1726	0.5088	0.0866
Years In Education	yrsed p m	0.0856	0.0143	0.0303	0.0124	0.082	0.0146	0.0378	0.0065	0.0528	0.0041	0.0953	0.0114	0.0753	0.0072	-4E-04	0.0061	0.1359	0.0148	0.0565	0.0091	-0.032	0.013	0.0556	0.0071	0.036	0.0098
Years of Experience	t p m	0.1104	0.0111	0.2017	0.0114	0.0502	0.013	0.1506	0.0062	0.0361	0.0066	0.1669	0.0095	0.0343	0.0067	0.1251	0.0065	0.1975	0.0157	0.0723	0.0086	0.1174	0.0097	0.1277	0.0073	0.0654	0.0081
Years of Experience^2	t2 p m	-0.003	0.0002	-0.004	0.0002	-0.001	0.0003	-0.003	0.0001	-0.001	0.0001	-0.004	0.0002	-8E-04	0.0001	-0.003	0.0001	-0.004	0.0003	-0.002	0.0002	-0.003	0.0002	-0.003	0.0002	-0.002	0.0002
Regional Unemp. Rate	REGUNEMP p m	-18.23	6.4621	-4.752	0.9489	0	0	-3.906	0.9281	-0.826	0.4723	-4.407	6.711	-1.524	0.861	-2.232	0.1646	0	.	0	.	-4.876	1.3885	-1.306	0.4684	-4.801	1.315
No. of Chldren (aged - 0 -5)	nch05 p m	-0.006	0.0675	-0.196	0.037	-0.029	0.084	0.0608	0.0461	-0.023	0.032	0.0703	0.0746	-0.076	0.0491	0.2486	0.069	0.2445	0.134	-0.045	0.0563	0.0477	0.0709	-0.023	0.0627	-0.238	0.0426
No. of Chldren (aged - 6-10)	nch610 p m	0.0259	0.0775	-0.115	0.0349	-0.119	0.0926	0.0742	0.0502	0.0488	0.0311	0.0605	0.0716	-0.137	0.0461	-0.01	0.057	0.0456	0.1533	-0.087	0.0505	0.1786	0.0735	0.0467	0.061	-0.16	0.0458
No. of Chldren (aged - 11-17)	nch1117 p m	0.0851	0.0525	-0.239	0.0299	-0.054	0.0795	-0.264	0.0484	0.1442	0.0356	0.0126	0.0815	0.0254	0.0337	0.1704	0.0428	0.0069	0.1102	0.0748	0.0531	0.029	0.0448	-0.435	0.0556	-0.338	0.0526
Constant	constant p m	-0.387	0.2373	-0.923	0.2056	-0.683	0.1962	-0.735	0.1352	0.2868	0.0881	-2.01	0.6918	-0.511	0.2282	-0.448	0.1086	-1.975	0.2071	-0.185	0.1378	-0.066	0.1575	-1.148	0.1374	0.0586	0.191

Note: for NL the occupational categories are 1: mentary; 2: lower; 3: intermediate; 4: higher; 5: scientific occupations

	Female	AT		BE		DK		FR		GE		GR		IR		IT		LU		NL		PT		SP		UK	
		Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev	Coeff	Std. Dev.
Earnings Equation																											
Years In Education	yrsed f	0.0543	0.0079	0.0658	0.0085	0.0412	0.0125	0.0837	0.0037	0.0508	0.0039	0.0925	0.0163	0.053	0.0063	0.0541	0.0083	0.058	0.0103	0.1032	0.0081	0.0133	0.007	0.044	0.0107	0.0488	0.0045
Years of Experience	t f	0.0438	0.0056	0.1324	0.0098	0.0619	0.0078	0.0502	0.0054	0.0475	0.004	0.0953	0.0113	0.0389	0.0032	-0.0008	0.0002	0.0393	0.0081	0.0765	0.0057	0.0455	0.0126	0.0668	0.0094	0.0306	0.0032
Years of Experience^2	t2 f	-0.0005	0.0001	-0.0024	0.0002	-0.0011	0.0002	-0.0006	0.0001	-0.0006	8E-05	-0.0018	0.0003	-0.0008	9E-05	0	0	-0.0004	0.0002	-0.0013	0.0002	-0.0006	0.0003	-0.0008	0.0002	-0.0006	7E-05
Region 1	reg1 f	0	0	0	0	0	0	0.0217	0.1784	0.1292	0.0881	-0.0729	0.069	0.1686	0.0283	0	0	-0.0149	0.0505	0	0	0.2059	0.0581	0.0116	0.0937	0.0067	0.0703
Region 2	reg2 f	0.049	0.0371	-0.0713	0.0623	0	0	-0.1457	0.1866	0.0591	0.1114	-0.0028	0.074	0.044	0.0264	0	0	0	0	0	0	0.0597	0.0574	0.1497	0.0878	0.0261	0.0677
Region 3	reg3 f	-0.0329	0.0338	-0.0086	0.0624	0	0	-0.034	0.1853	-0.0351	0.0722	0.0904	0.0673	0	0	0.0507	0.0559	0	0	0	0	0.2471	0.0604	0.1356	0.0925	0.0104	0.066
Region 4	reg4 f	0	0	0	0	0	0	-0.0581	0.1834	-0.1723	0.1452	0	0	0	0	0.086	0.0827	0	0	0	0	0.0548	0.0698	-0.0033	0.0915	0.0163	0.0675
Region 5	reg5 f	0	0	0	0	0	0	-0.0666	0.1831	-0.0465	0.0674	0	0	0	0	-0.0594	0.0657	0	0	0	0	0.0658	0.0641	0.1353	0.0839	-0.0101	0.0669
Region 6	reg6 f	0	0	0	0	0	0	-0.1724	0.187	0.0321	0.0738	0	0	0	0	0.0912	0.0774	0	0	0	0	0.1262	0.068	-0.0781	0.0891	-0.0304	0.0747
Region 7	reg7 f	0	0	0	0	0	0	-0.1068	0.1856	-0.0676	0.0761	0	0	0	0	-0.073	0.0773	0	0	0	0	0	0	0	0	0.2721	0.0658
Region 8	reg8 f	0	0	0	0	0	0	-0.1747	0.1808	0.0449	0.0695	0	0	0	0	0.0423	0.0569	0	0	0	0	0	0	0	0	0.0947	0.0639
Region 9	reg9 f	0	0	0	0	0	0	-0.1335	0.1826	0.0877	0.0692	0	0	0	0	-0.0312	0.0629	0	0	0	0	0	0	0	0	0.0449	0.0666
Region 10	reg10 f	0	0	0	0	0	0	-0.0482	0.1837	0	0	0	0	0	0	-0.2056	0.0813	0	0	0	0	0	0	0	0	-0.001	0.0726
Region 11	reg11 f	0	0	0	0	0	0	-0.2282	0.1866	-0.1623	0.0962	0	0	0	0	-0.1097	0.0685	0	0	0	0	0	0	0	0	0.0696	0.0674
Region 12	reg12 f	0	0	0	0	0	0	-0.1032	0.1809	-0.2143	0.0848	0	0	0	0	-0.2932	0.0708	0	0	0	0	0	0	0	0	0	0
Region 13	reg13 f	0	0	0	0	0	0	-0.2288	0.1819	-0.303	0.079	0	0	0	0	-0.0713	0.0777	0	0	0	0	0	0	0	0	0	0
Region 14	reg14 f	0	0	0	0	0	0	-0.1196	0.1856	-0.3178	0.0767	0	0	0	0	-0.0999	0.1922	0	0	0	0	0	0	0	0	0	0
Region 15	reg15 f	0	0	0	0	0	0	-0.1781	0.1818	-0.3639	0.078	0	0	0	0	-0.3301	0.0736	0	0	0	0	0	0	0	0	0	0
Region 16	reg16 f	0	0	0	0	0	0	-0.1859	0.1827	-0.3758	0.0716	0	0	0	0	-0.3116	0.0738	0	0	0	0	0	0	0	0	0	0
Region 17	reg17 f	0	0	0	0	0	0	-0.1889	0.1966	0	0	0	0	0	0	0.0286	0.1496	0	0	0	0	0	0	0	0	0	0
Region 18	reg18 f	0	0	0	0	0	0	-0.1646	0.1797	0	0	0	0	0	0	-0.2331	0.0972	0	0	0	0	0	0	0	0	0	0
Region 19	reg19 f	0	0	0	0	0	0	-0.2912	0.1884	0	0	0	0	0	0	-0.2194	0.082	0	0	0	0	0	0	0	0	0	0
Region 20	reg20 f	0	0	0	0	0	0	-0.1527	0.184	0	0	0	0	0	0	-0.2195	0.0879	0	0	0	0	0	0	0	0	0	0
Region 21	reg21 f	0	0	0	0	0	0	-0.0904	0.1803	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Region 22	reg22 f	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Armed forces	occ0 f	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4334	0.1052	0	0	0	0
Senior officials/managers	occ1 f	0.4486	0.0952	0	0	0.3127	0.1084	0	0	1.181	0.0368	-0.1605	0.1554	0.2743	0.0796	0.9002	0.1701	0.2013	0.1647	0.2386	0.0749	0.4066	0.1688	0.4749	0.1696	0.4824	0.0332
Professionals	occ2 f	0.5375	0.0727	0	0	0.3992	0.0707	0	0	1.3412	0.1222	0.666	0.0824	0.7505	0.0455	0	0	0.682	0.0966	0.429	0.0507	1.5088	0.079	1.1138	0.0784	0.6463	0.0579
Technicians	occ3 f	0.4476	0.0536	0	0	0.2268	0.0629	0	0	1.0675	0.0339	0.562	0.0837	0.497	0.0526	0.7391	0.0494	0.4952	0.077	0	0	1.1857	0.0568	0.8614	0.0774	0	0
Clerks	occ4 f	0.3813	0.0476	0	0	0.2869	0.0594	0	0	0.8008	0.0408	0.437	0.0678	0.2579	0.0409	0.4306	0.0365	0.2459	0.0685	0.5074	0.0519	0.5905	0.0562	0.7193	0.0632	0	0
Service and sales workers	occ5 f	0.1762	0.0482	0	0	0.0666	0.058	0	0	0.7951	0.0385	0.1855	0.0697	-0.1158	0.0381	0	0	-0.179	0.0702	0	0	0.0444	0.0499	0.4234	0.0564	0.1005	0.0234
Skilled agricultural	occ6 f	0.054	0.1064	0	0	-0.5552	0.1825	0	0	0.6967	0.1164	-1.0179	0.1706	-0.195	0.3161	0	0	-0.1397	0.2992	0	0	-0.6559	0.11	0.4607	0.2785	-1.8665	0.1978
Craft and trades workers	occ7 f	0.2227	0.0665	0	0	0.2122	0.131	0	0	0.8656	0.0446	0.1154	0.0778	0.1041	0.0903	-1.5208	0.3756	-0.3323	0.1626	0	0	-0.0443	0.0628	0.3021	0.0879	0.4594	0.0305
Plant and machine operators	occ8 f	0.516	0.0897	0	0	0.0914	0.094	0	0	0.9367	0.1257	0.3612	0.1187	0.1523	0.0523	0	0	-0.2294	0.1669	0	0	0.0964	0.0823	0.2235	0.1319	0	0
Part-time	pt f	-0.0702	0.0347	-0.3012	0.0416	0.2178	0.0425	-0.1317	0.0211	-0.385	0.0247	0.3209	0.0578	-0.026	0.0265	0.0029	0.0317	-0.3304	0.0504	-0.3787	0.0395	-0.2348	0.0424	0.3342	0.0503	-0.1263	0.0192
Constant	constant f	3.3449	0.1117	3.6647	0.1832	3.0175	0.2799	2.5527	0.215	0.9888	0.1194	4.1299	0.4096	0.1828	0.1238	1.142	0.2252	4.8842	0.1573	0.529	0.1458	5.1152	0.2802	4.6766	0.2747	0.6621	0.101
Standard Error	sd f	0.638	0	0.6718	0	0.6091	0	0.6374	0	0.6033	0	0.5884	0	0.4433	0	0.6465	0	0.6577	0	0.8169	0	0.6749	0	0.8244	0	0.4397	0
Lambda	lambda f	-0.5111	0.0271	0.0863	0.0655	-0.2709	0.1975	-0.1974	0.0696	-0.1183	0.0585	0.3563	0.1247	0.2165	0.0665	-0.0524	0.106	-0.1848	0.0885	-0.0188	0.0861	-0.137	0.1904	-0.4233	0.1117	-0.0325	0.044
Participation Equation																											
Marital Status	marr p f	-0.1359	0.0605	0.1121	0.0791	0.2967	0.0846	0.004	0.042	-0.0237	0.0528	-0.4454	0.0637	-0.0347	0.0677	-0.3881	0.0501	-0.398	0.0794	0.0876	0.0741	0.1628	0.0548	-0.1565	0.0536	0.3287	0.0489
Cohabitting	partner p f	0.1625	0.1026	0.3194	0.1243	0.1696	0.0895	0.3231	0.0548	0.3023	0.0774	-0.0063	0.2351	0	0	0.1961	0.2626	0.5284	0.1278	0.3802	0.1022	0.2298	0.1545	0.4247	0.1422	0.291	0.0783
Years In Education	yrsed p f	0.0666	0.0118	0.065	0.0133	0.117	0.0125	0.082	0.0049	0.0507	0.0051	0.1605	0.0096	0.0807	0.0078	0.085	0.0054	0.052	0.0112	0.0556	0.009	0.0243	0.009	0.1269	0.0064	0.0737	0.009
Years of Experience	t p f	0.0917	0.0106	0.177	0.0119	0.0531	0.0121	0.1523	0.0056	0.0562	0.0078	0.1276	0.0087	0.0423	0.0074	0.0977	0.0064	0.1013	0.0129	0.0411	0.0091	0.0997	0.0083	0.1416	0.0074	0.0753	0.0077
Years of Experience^2	t2 p f	-0.0026	0.0002	-0.0042	0.0003	-0.0014	0.0003	-0.0033	0.0001	-0.0013	0.0001	-0.0028	0.0002	-0.0015	0.0002	-0.0022	0.0001	-0.0028	0.0003	-0.0018	0.0002	-0.0023	0.0002	-0.0032	0.0002	-0.0019	0.0002
Regional Unemp. Rate	REGUNEMP p f	-6.3169	3.3961	-2.7926	1.0223	0	0	-4.4861	0.6071	0.1987	0.296	-1.9191	0.834	-0.2432	0.911	-2.4006	0.1502	0	.	0	.	-2.3343	0.6121	-0.6493	0.3356	-0.791	1.6696
No. of Chldren (aged - 0 -5)	nch05 p f	-0.6167	0.0509	-0.158	0.0612	-0.3023	0.0596	-0.193	0.0281	-0.7131	0.0407	-0.0242	0.0542	-0.3248	0.0391	-0.0181	0.0424	-0.3649	0.0577	-0.4521	0.0437	-0.0439	0.0484	-0.2801	0.047	-0.6569	0.0367
No. of Chldren (aged - 6-10)	nch610 p f	-0.3643	0.0494	-0.2237	0.0561	-0.0459	0.069	-0.1789	0.0298	-0.2969	0.037	-0.1238	0.0513	-0.2438	0.0404	-0.1826	0.0421	-0.3729	0.0677	-0.3974	0.0445	-0.1126	0.0467	-0.2402	0.045	-0.3411	0.0369
No. of Chldren (aged - 11-17)	nch1117 p f	-0.2251	0.0392	-0.1645	0.0499	0.0108	0.0661	-0.3018	0.0259	-0.1036	0.0325	0.0488	0.0584	-0.1412	0.0288	-0.0659	0.0342	-0.3377	0.0627	-0.1924	0.0395	-0.1664	0.0332	-0.3063	0.0364	-0.2031	0.035
Constant	constant p f	-0.3737	0.2296	-1.1607	0.2481	-1.2426	0.1766	-0.997	0.1164	-0.0994	0.0968	-2.6851	0.2783	-0.8653	0.2025	-1.1081	0.1078	-0.4311	0.1672	0.0138	0.1433	-0.7077	0.1312	-2.2316	0.1492	-0.7424	0.1739

Note: for NL the occupational categories are 1: mentary; 2: lower; 3: intermediate; 4: higher; 5: scientific occupations

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