



# UNEMPLOYMENT REPLACEMENT RATES DATASET AMONG 34 WELFARE STATES, 1971-2009

AN UPDATE, EXTENSION AND MODIFICATION OF THE  
SCRUGGS' WELFARE STATE ENTITLEMENTS DATA SET

OLAF VAN VLIET

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## Abstract

This data set provides data on unemployment benefit schemes in 34 welfare states. The data set updates, extends and modifies Scruggs' dataset (2005). The current data set includes all 27 member states of the European Union (EU) and 7 non-EU OECD countries for the period 1971-2009. The codebook contains descriptions of the variables included as well as country-specific sources and notes. Descriptive analyses show that replacement rates in EU15 countries have been increased and converged, while the trend for New Member States is downward sloping.

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### 1. Introduction

#### 1.1 Aim and origin of the idea

Discussions on how to organize the labour market are probably one of the key public policy issues of today. Questions for research range from the purely empirical ones, such as the exploration of the modes of labour market management (Van Vliet, 2010), to policy-orienting debates on how “good” or “bad” the EU labour markets are. Especially the US labour market is often given as the benchmark for job creation efficiency. Investigating the underlying assumptions of the models will inform us about accurate indicators to measure the cross national variation and changes through time.

In the welfare state literature, there is a lively debate going on about the selection of the measures to compare welfare states with. This issue is known as the ‘dependent variable problem’ (Clasen and Siegel, 2007). Differences across countries in expenditure ratios do not always reflect social policy or the generosity of welfare systems. They may also reflect differences in unemployment rates or demographic structure across countries. Expenditure ratio’s can thus only be considered as rough indicators of welfare state policies. Comparative studies of social security systems have increasingly turned to the use of replacement rates as measures of the level of benefits in different countries and therefore of the degree of social protection offered by different welfare systems (Caminada and Goudswaard, 2001 and 2002). Moreover, in exploring the causes and effects of welfare state generosity in the developed world, the literature has increasingly moved towards more disaggregated measures of social policy, an enterprise in which the *Unemployment replacement rates dataset among 34 welfare states 1971-2009*, with its detailed data on net unemployment benefits, offers a rich source of information. Using replacement rate data has the advantage of allaying some of the concerns that apply to social expenditure data; see among others Allan and Scruggs (2004); Caminada and Goudswaard (2001 and 2002); Castles (2002 and 2004); Scruggs (2006); Scruggs and Allan (2006). More importantly, it is also more clearly how changes in the welfare state have impacted upon the life chances of ‘typical’ individuals in the labour market (Allan and Scruggs, 2004: 501).

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\* Olaf van Vliet and Koen Caminada are both at Leiden University. Excellent research assistance was provided by Jimmy Hagenaar. This data set is produced within (and for) Work Package 6 of NEUJOBS, a research project financed by the European Commission, under the 7<sup>th</sup> Framework Programme (grant agreement 266833). The dataset is available from the authors and published at the website [www.hsz.leidenuniv.nl](http://www.hsz.leidenuniv.nl).

International comparisons of institutional arrangements have gained importance with the economic integration in Europe. Of particular interest are the institutional arrangements affecting the labour market (Swank 2011; Van Vliet and Koster, 2011). This report provides new and more complete information on the income entitlements of unemployed. The generosity of the unemployment compensation partly determines the search behaviour of the unemployed and moreover it decides the fall-back position of employed persons. Through that mechanism the unemployment compensation influences wage formation and the flexibility of the labour market. The problem of unemployment has given rise to a vast literature on its causes, consequences and remedies. Within that debate, much prominence has been given to the potential role of unemployment benefits and related social welfare benefits as determinants of unemployment. Several different theories of unemployment lead to the following prediction: the 'generosity' of unemployment and related welfare benefits is one potential determinant of the natural rate of unemployment. Moreover, a replacement rate defines a minimum reservation wage, below which no one is willing to accept a job. In fact, for most people the minimum reservation wage may be even higher than that: When they decide to work they not only require a compensation for the lost special benefits but also for the time lost for leisure and for working at home or even for the loss of black market income. The higher the replacement rate, the better is the insurance protection, but the lower is the number of jobs which employers are willing to provide, given the skill distribution of the unemployed (Feldstein, 1976 and 1978).

Theoretical and empirical work and the policy implications which flow from them depend crucially on the ability to measure relatively accurate 'replacement rates', i.e. the proportion of income from work which is replaced by unemployment and related welfare benefits. The aim of this report is to construct indicators for unemployment benefits. These indicators are based on data from OECD and Eurostat databases and on the *Welfare State Entitlements Data Set* from Scruggs (2005). We have collected new data in order to update, extend and modify the latter database and to take the expansion of the EU into account. For example, we supplement the dataset with Central and Eastern European countries.

Subsequently, with our dataset a number of hypotheses from the political economy literature on labour market policy reform can be examined. Labour market policies in Eastern Europe are generally under-researched. A challenging question is whether the existing insights in the political economy literature also apply to the new member states of the EU (Draxler and Van Vliet, 2010; Koster et al, 2011). As such, the dataset provides a basis for the empirical analyses that will be carried out in the research papers to be delivered as part of NEUJOBS. In addition to case studies on labour market policy reforms in Central and Eastern European countries (Beblavy et al, 2011), the data set can be used to analyze the cross national variation in net unemployment replacement rates in a large number of countries.

Furthermore, the replacement rate data can be useful for research on the convergence of welfare states (Cornelisse and Goudswaard, 2002; Caminada et al, 2010; Van Vliet, 2010). An explicit objective of the EU is convergence of social protection objectives and policies in European member states. Earlier research has shown that there has indeed been a tendency of convergence of social protection levels over the last decades. However, comparative studies frequently use indicators which may not be representative as measures of the welfare state. In this report we'll undertake several

convergence tests with the most recent data on net unemployment replacement rates. This indicator provides a picture of the evolution of social protection. We still find convergence of net replacement rate in EU15-countries over a longer period. Replacement rates of unemployment benefits converged to a higher level. However, this trend seems to have stagnated in recent years. The evidence is mixed for the new member states and other OECD countries.

The *Unemployment replacement rates dataset among 34 welfare states 1971-2009* allows researchers and public policy analysts to compare generosity of unemployment benefits across developed countries over the last three decades. Research may employ these data in addressing several important research issues. Among the most commonly addressed questions in the empirical literature on the welfare state concerns the sources of variation across countries and over time in the extent and nature of generosity of welfare states arrangements. Changes (in the generosity) of welfare states can be linked to (changes in) the fiscal redistribution. Best-practice among countries can be identified and analyzed in more detail.

Our data allow researchers to employ all kind of cross-national analyses, e.g. to analyze differences in labour market approaches of countries (Europe versus the United States). The assembled dataset of replacement rates can be used by scholars and policy analysts to study the effects of different kind of unemployment benefits programs on labour market outcomes, income adequacy, and the distribution of economic well-being generally.

This data set collection provides systematic data on net unemployment replacement rates. Its purpose is to provide an essential *complement* to program spending data that is available from international sources like the OECD's Social Expenditure Database. It should however be noted that also replacement rates can only be seen as limited indicators of the generosity of benefit systems (Whiteford, 1995). E.g. replacement rates are based on entitlement rules and often represent only the maximum payment available in the circumstances specified. Furthermore, the focus on a single program, namely unemployment benefits, tends to ignore the interaction between different programs. In the Netherlands in the 1980s for instance, disability arrangements have been used for the unemployed.

## 1.2 Origin of the idea

*Unemployment replacement rates dataset among 34 welfare states 1971-2009*, assembled by Olaf van Vliet and Koen Caminada (Version 1.0, January 2012), presents net unemployment benefit replacement rates for 34 countries for the period 1971-2009. This database updates, extends and modifies Lyle Scruggs' *Welfare State Entitlements Data Set* (2005).

In this dataset we have computed four indicators, namely both gross and net unemployment replacement rates for single persons, and for a one earner family with two children (see for a specification Section 1.3 and 2. Codebook).

The Codebook contains details on replacement rates, each providing information about different institutional features of national unemployment insurance programs in 34 welfare states. General information about each variable is provided in separate sections

of the codebook. Country-specific sources and notes are provided in the last section of the Codebook.

The data file is presented in a Microsoft Excel 2003 spreadsheet file to be found at the website [www.hsz.leidenuniv.nl](http://www.hsz.leidenuniv.nl). Each tab contains a country and each tab includes two parts, for each family type one. The file is organised to be printer friendly.

Table 1. A comparison of two datasets

	<b>Welfare State Entitlements Dataset</b>	<b>Unemployment Replacement Rates Dataset</b>
Assembled by	Lyle Scruggs	Olaf Van Vliet & Koen Caminada
Launch / Year	June 2005	January 2012
Last update	February 2006, version 1.2	January 2012
# Countries	18	34
Countries	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and United States.	Australia, Austria, Belgium, Bulgaria, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Lithuania, Latvia, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, and United States.
Time-series	1971 - 2002	1971-2009
Replacement Rate Datasets	<ul style="list-style-type: none"> <li>o Unemployment</li> <li>o Sickness</li> <li>o Minimum Public Pension</li> <li>o Standard Public Pension</li> </ul>	Unemployment
# Observations of unemployment replacement rates: - net, single person - net, one earner couple - gross, single person - gross, one earner couple	1,110  555 555	4,026  1.003 1.005 1.011 1.007
Income level	Average Production Worker	<ul style="list-style-type: none"> <li>o Average Production Worker</li> <li>o Average Worker</li> <li>o Modified Average Production Worker</li> </ul>

Availability	<a href="http://sp.uconn.edu/~scruggs/">http://sp.uconn.edu/~scruggs/</a>	<a href="http://www.hsz.leidenuniv.nl">www.hsz.leidenuniv.nl</a>
Reference	Lyle Scruggs (2005) "Unemployment Replacement Rate Data Set," Welfare State entitlements Data Set: A Comparative Institutional Analysis of Eighteen Welfare States, Version 1.1, June 2005.	Olaf Van Vliet & Koen Caminada (2012), "Unemployment replacement rates dataset among 34 welfare states 1971-2009", NEUJOBS Special Report No. 2, NEUJOBS project, January 2012.

The original database was initiated by Scruggs (2005). Our dataset updates, extends and modifies his approach. Scruggs included 18 OECD countries for the period 1971-2002. Our dataset covers more countries (34 instead of 18), and is applied to a wider period (up to 2009) using the most recent information available.

The calculations of the replacement rate are in line with Scruggs' (2005) method. This method follows the methods developed by the OECD to a large extent. The OECD assumes a 6-month unemployment spell, which means that the yearly unemployment benefits are calculated as two times an unemployment spell of 6 months. This means that when a country scheme implies changes after six months, these changes are not incorporated in the data. One difference between Scruggs' data set and the OECD data set is the treatment of housing assistance. In the OECD approach of calculating replacement rates, housing assistance is included, in Scruggs' data not. Including the housing assistance leads to higher replacement rates. On this point, we follow Scruggs' approach. The reason is that this results in consistent time series for 1971-2009.

### 1.3 Net unemployment replacement rates: definition

For individuals, one of the most important indicators of the generosity of unemployment benefit programs is the replacement rate, or the fraction of current income which the social unemployment benefit system provides to a person if he or she does not work (Esping-Andersen, 1990; cf. Whiteford, 1995; Korpi and Palme, 2003; Allan and Scruggs, 2004; OECD Benefit & Wages, several editions). Replacement rates provide an indication of the level of lost income from work that is compensated by income transfer programs.

The net replacement rate varies according to the type of household, employee, sector of industry, wage and salary group and the reasons for not working. Hence, there is no such thing as *the* replacement rate in any country, rather there is a myriad of replacement rates corresponding to the specific personal and family characteristics of the unemployed, their previous history of work and unemployment, and the different structures and entitlements of unemployment insurance and social assistance systems in countries and the ways in which these systems interact with tax systems. Once one tries to grapple with these complexities in order to compute replacement rates for the purpose of international comparisons, the task becomes a daunting one. The aim of this report is to describe these data and illustrate preliminary results of our dataset.

We define net replacement rate as:  $(\text{Cash Benefits} - \text{Taxes})_{\text{out of work}} / (\text{Wages} - \text{Taxes})_{\text{in work}}$

where taxes include net social charges (compulsory contributions to social insurance program less cash transfers). The calculations assume a worker, aged 40, who earns the average production worker wage (APW).

We provide unemployment benefit replacement rates for a single worker and for a family, the latter defined as a household with a dependent spouse, two children and a head of household drawing the unemployment benefit. Benefits for families include child benefits, including means tested benefits.

Our dataset calculates net replacement rates for an average production worker in the initial phase of unemployment. This net replacement rate differs from a person in the 30<sup>th</sup> or 60<sup>th</sup> month of benefit receipt. In most countries the net replacement rate at the beginning of unemployment is relatively high for a couple with two children, but lower for someone who is single. There are, of course, differences in the net replacement rate from one country to another.

The calculation of net replacement rates differ in several ways compared to the calculation of gross replacement rates (see OECD 2002; and Scruggs, 2004)). Taxes and social security contributions on earnings and on benefits are taken into account. Moreover, net replacement rates do capture the effect of family-related benefits for children. Figures for gross versus net replacement rates indicate that accounting for taxes and social contributions, and for family and housing benefits, substantially increases the replacement rates. For several countries net replacement rates numbers (nearly) twice the gross replacement rates.

It should be noted that for some recent years a modified wage of the Average Production Worker has been calculated, based on the OECD Taxing Wages editions. The OECD has made a fundamental change in the approach of the average wages. The classical approach of calculating the average wage was the average wage of a production worker. In a historical perspective, the wage level in the production/manufacturing industry gave a good indication of the average wage in a country, since this was often the largest sector in a country. In more recent years, other sectors grew in size and the wage of the production worker was not representative anymore for the average wage level. Therefore, the OECD came up with a new concept for the average wage: the AW, which stands for 'average worker wage'. The differences in the levels of the APW and the AW can be significant for individual countries. The transition from APW to AW started in 2005 and the AW is available from 2000 onwards. The APW data is available for all years up to 2005 and for the year 2007. Hence, there is no consistent time series for the period 1971-2009. In order to have a consistent replacement rate time series, we calculated the APW for the years 2006, 2008 and 2009 based on the growth rate of the AW.

Table 2 presents the replacement rates for the most recent data year available (2009). Levels vary to a large extent across countries. The highest net replacement rates are found for Luxembourg, while rather low levels are found for Australia, Greece, Poland, and the United Kingdom. In most, but not all, countries the replacement rate for single persons lies below the level for one earner couples with two children. Exceptions are Japan, Latvia, Portugal, Slovak Republic, and the United States.

Table 2. Net unemployment replacement rates in 34 countries, 2009

	<b>Single person</b>	<b>One couple earner</b>	<b>Difference</b>
Australia	0.22	0.54	0.31
Austria	0.55	0.68	0.13
Belgium	0.59	0.60	0.01
Bulgaria	0.60	0.66	0.06
Canada	0.59	0.72	0.13
Cyprus (2007)	0.57	0.76	0.19
Czech Republic	0.49	0.52	0.03
Denmark	0.55	0.62	0.07
Estonia	0.45	0.51	0.06
Finland	0.54	0.63	0.09
France	0.69	0.70	0.00
Germany	0.60	0.72	0.12
Greece	0.39	0.44	0.05
Hungary	0.34	0.47	0.13
Ireland	0.36	0.64	0.28
Italy	0.63	0.73	0.10
Japan	0.61	0.56	-0.04
Lithuania	0.51	0.52	0.01
Latvia	0.51	0.47	-0.04
Luxembourg	0.84	0.90	0.07
Malta	0.30	0.49	0.19
Netherlands	0.68	0.72	0.03
New Zealand	0.23	0.47	0.24
Norway	0.67	0.72	0.06
Poland	0.24	0.27	0.03
Portugal	0.78	0.75	-0.03
Romania	0.65	0.68	0.03
Spain	0.49	0.69	0.20
Slovak Republic	0.63	0.57	-0.06
Slovenia	0.65	0.66	0.01
Sweden	0.60	0.64	0.04
Switzerland	0.71	0.83	0.12
United Kingdom	0.17	0.52	0.35
United States	0.57	0.52	-0.05
Mean	0.53	0.61	0.08

## 1.4 Net unemployment replacement rates time series

This section illustrates the main empirical contribution of our *Unemployment replacement rates dataset*: time series data on the unemployment replacement rates in 34 countries between 1971 and 2009. The data are based on comprehensive analyses of international and national sources.

Figures 1 and 2 show net unemployment replacement rate time series for 16 new added countries, for single persons and one earner couples with two children respectively. Information on new added countries is provided for 1979-2009 with the exception that for Eastern European countries information was only available for 1990-2009.

The new added countries to the data set include:

- *EU-15 countries*: Greece, Luxembourg, Portugal, and Spain.
- *Countries that acceded to the EU in 2004*: Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovak Republic and Slovenia.
- *Countries that acceded the EU in 2007*: Bulgaria and Romania.

Figure 3 (for single persons) and Figure 4 (for one earner couples) show net unemployment replacement rate time series for those countries already included in Scruggs' *Welfare State Entitlements Data Set*. For the 18 countries that were originally included in Scruggs' data set, data is added and/or modified for the period 1999-2009. Note that we have to compute a modified wages for the Average Production Worker in order to have a consistent replacement rate time series; see section 1.3.

Net unemployment replacement rates seems to be rather stable over time in the period 1998-2009 across 18 wealth nations, although some countries experienced sharp drops caused by retrenchments or other reasons.

Figure 1. Net unemployment replacement rates, New added countries (16), Single person, 1979–2009

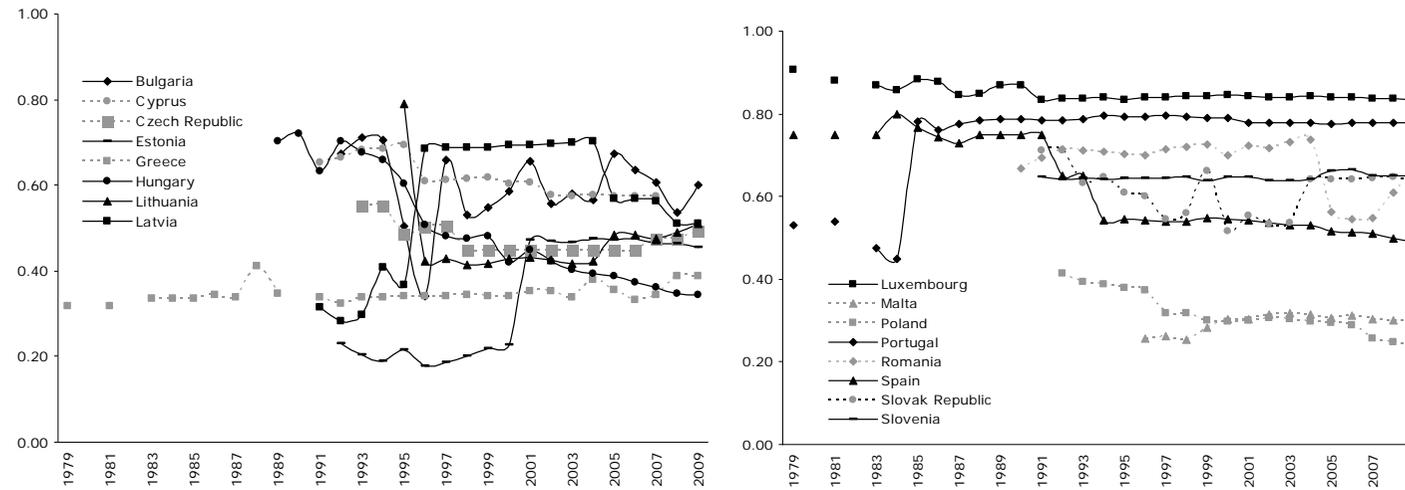


Figure 2. Net unemployment replacement rates, New added countries (16), One earner couple with two children, 1979–2009

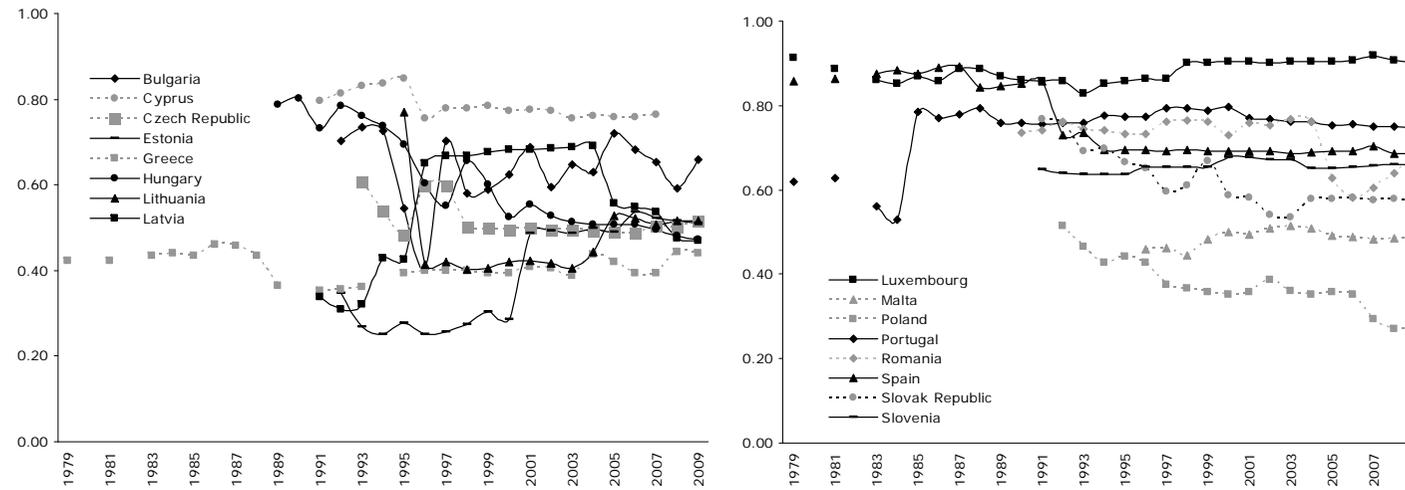


Figure 3. Net unemployment replacement rates, Update for 18 countries, Single person, 1998–2009

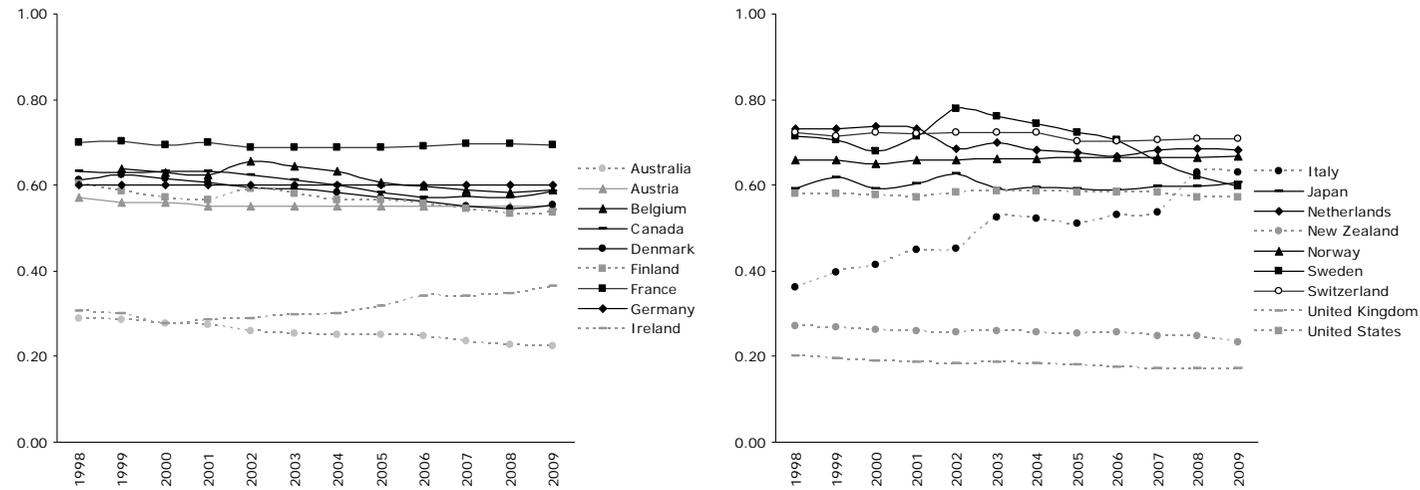
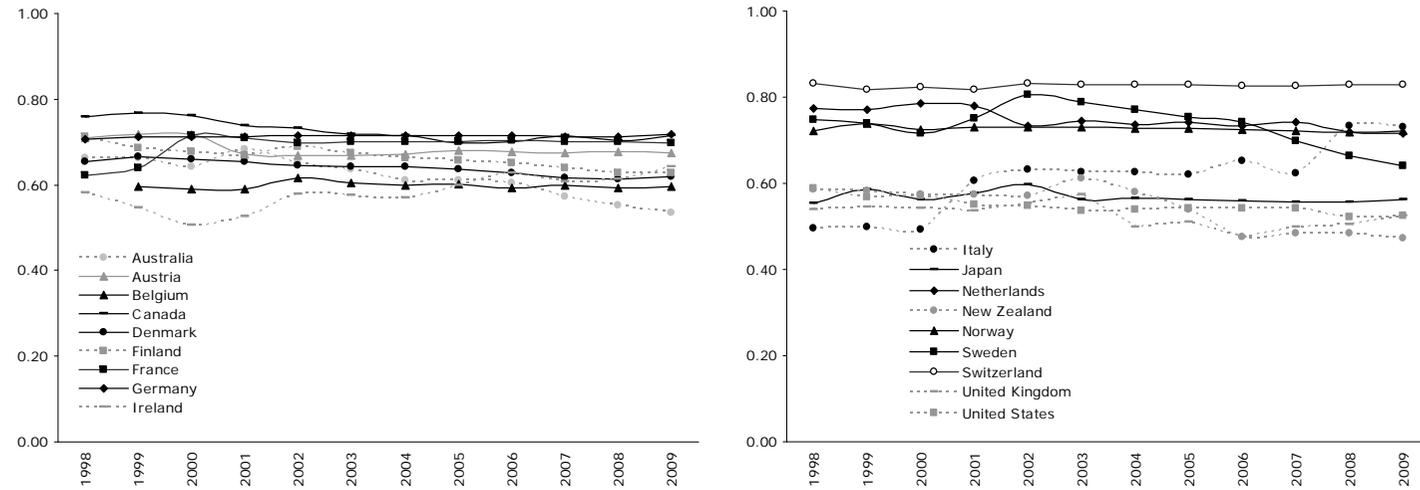


Figure 4. Net unemployment replacement rates, Update for 18 countries, One earner couple with two children, 1998–2009



## 1.5 An application

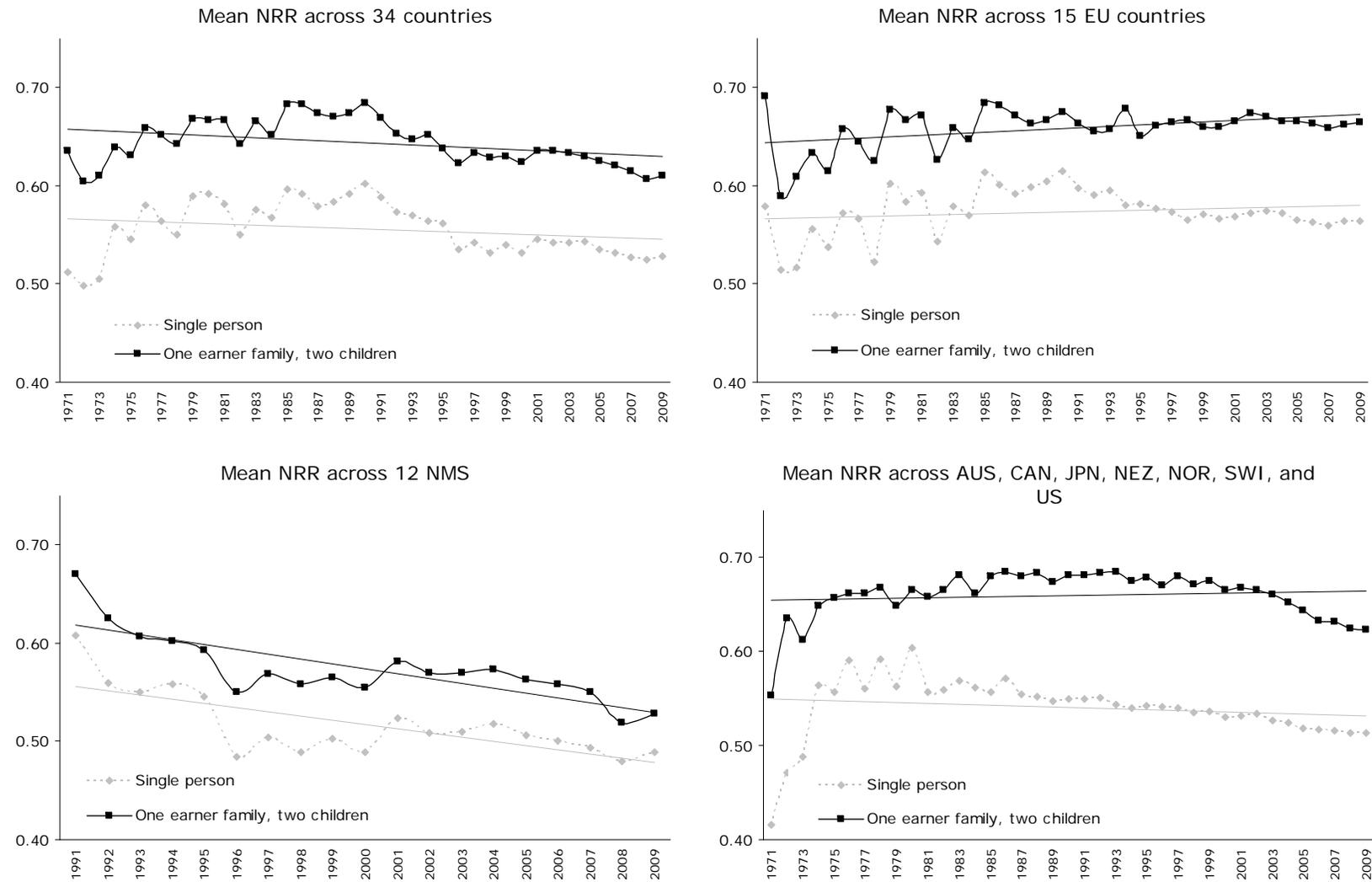
### *Retrenchments*

Has the welfare state become less generous in recent years? Most analyses answering this question are based on social spending indicators. Alternatively, scholars have used net replacement rates to analyze whether (or not) a reduction in the generosity of unemployment benefits for individuals occurred.

For ease of presentation, countries are arbitrarily grouped in Figure 5: EU15 countries, the New Member States and a group of other OECD countries consisting of Australia, Canada, Japan, New Zealand, Norway, Switzerland, and the United States.

Note that mean net replacement rate across 34 countries did not vary that much over time, although a significant retrenchment in benefit generosity can be observed in the majority of the countries since 1991. Moreover, cross-group variance is rather high; see Figure 7 for time series of each individual country. For example, replacement rates for one earner couples with two children in EU15 countries show an increasing trend, while the trend for New Member States is downward sloping. The mean of our mixed group of countries (Australia, Canada, Japan, New Zealand, Norway, Switzerland, and the United States) is rather stable over time, although somewhat decreasing lately; see Figure 5.

Figure 5. Mean of net unemployment replacement rates across (subgroups of) countries, 1971-2009



### *Convergence of divergence?*

From literature it can be concluded that theory does not clearly tell us whether economic integration leads to more or less social protection and whether there will be spontaneous convergence of social protection systems (Caminada et al, 2010).

Scholars may test the convergence hypothesis using net unemployment replacement rates to that end. Earlier research has shown that there has been a tendency of rather strong convergence of social protection systems in the EU countries over the last decades (Cornelisse and Goudswaard, 2002). However, the indicators used in earlier studies - mostly public expenditure on social benefits - may not be representative for the social security system at large.

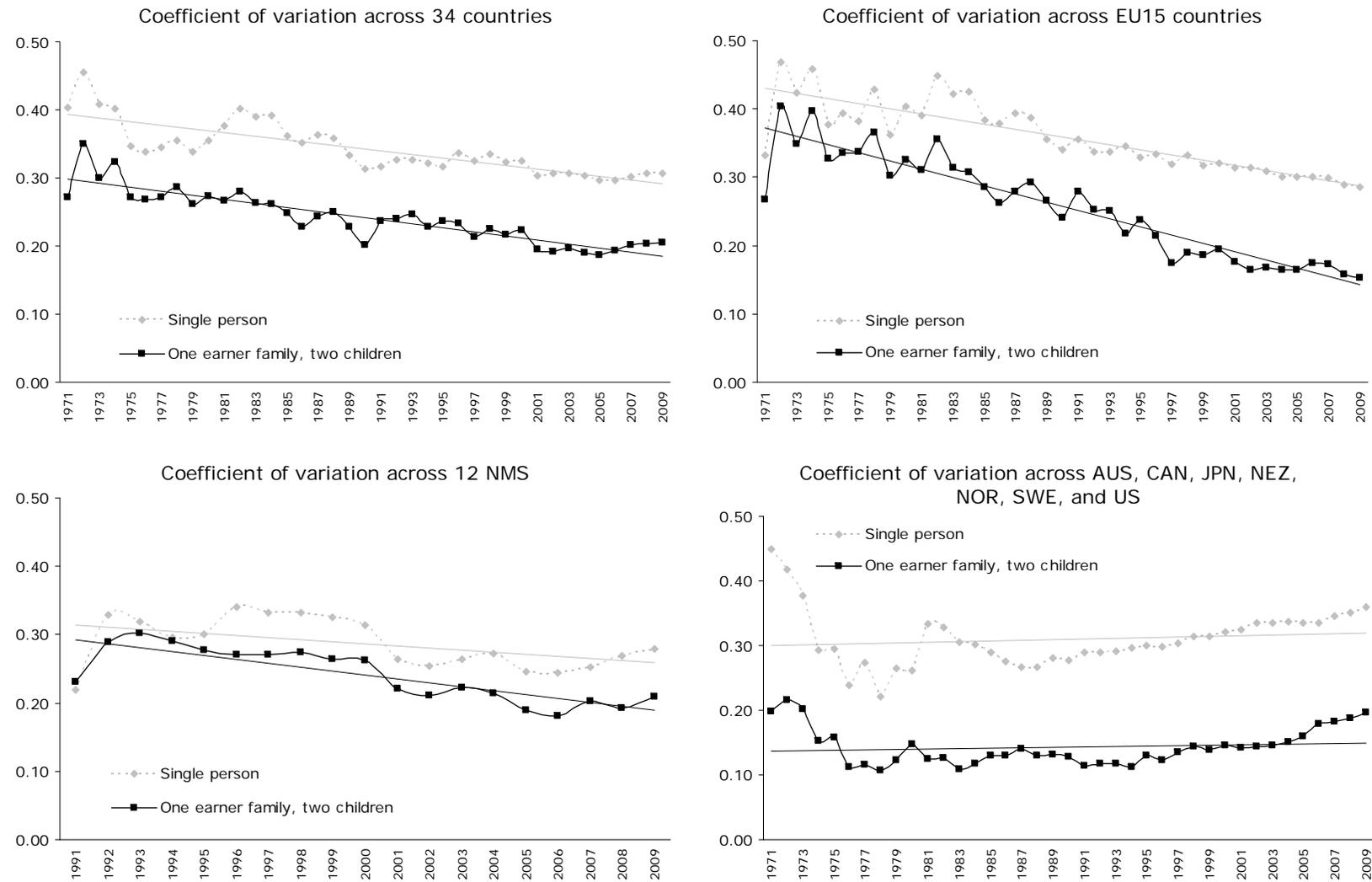
One of the simplest methods for estimating convergence of social protection levels is presented here. Mostly the standard deviation is used as a statistical yardstick ( $\sigma$ -convergence). With this method it is possible to examine how the dispersion between social protection levels, or other social indicators, has changed. A property of the standard deviation is that its value rises with the average value of the data set to which it is applied (see Figure 5). To account for this, we use the so-called coefficient of variation, defined as the standard deviation divided by the value of the mean of the corresponding data set.

For ease of presentation, countries are (again) arbitrarily grouped: EU15 countries, the New Member States and a group of countries consisting of Australia, Canada, Japan, New Zealand, Norway, Switzerland, and the United States.

We find a quite strong convergence of net replacement rates in EU15-countries over a longer period (biased by cyclical or demographic factors). This converging trend is also found for New Member States (although at lower levels of replacement rates on average), possibly under the influence of welfare state reforms. Cross-country differences of replacement rates of unemployment benefits in our mixed group (Australia, Canada, Japan, New Zealand, Norway, Switzerland, and the United States) seem rather stable over time; see Figure 6.

So our quick attempt analysis provides rather mixed evidence on social convergence to be studied in more depth, especially for recent years. It is too early to conclude that a trend to lower protection levels has started, although our results do suggest that recent EU initiatives regarding social protection and inclusion are needed for New Member States.

Figure 6. Convergence of net unemployment replacement rates across (subgroups of) countries, 1971-2009



### 1.6 Country profiles for net unemployment replacement rates, 1971-2009

Figure 7 illustrates the replacement rates for single persons and for one earner couples with two children for all 34 countries. We show consistent time series in all cases (adjusted wage of APW).

Figure 7. Country profiles for net unemployment replacement rates, 1971-2009

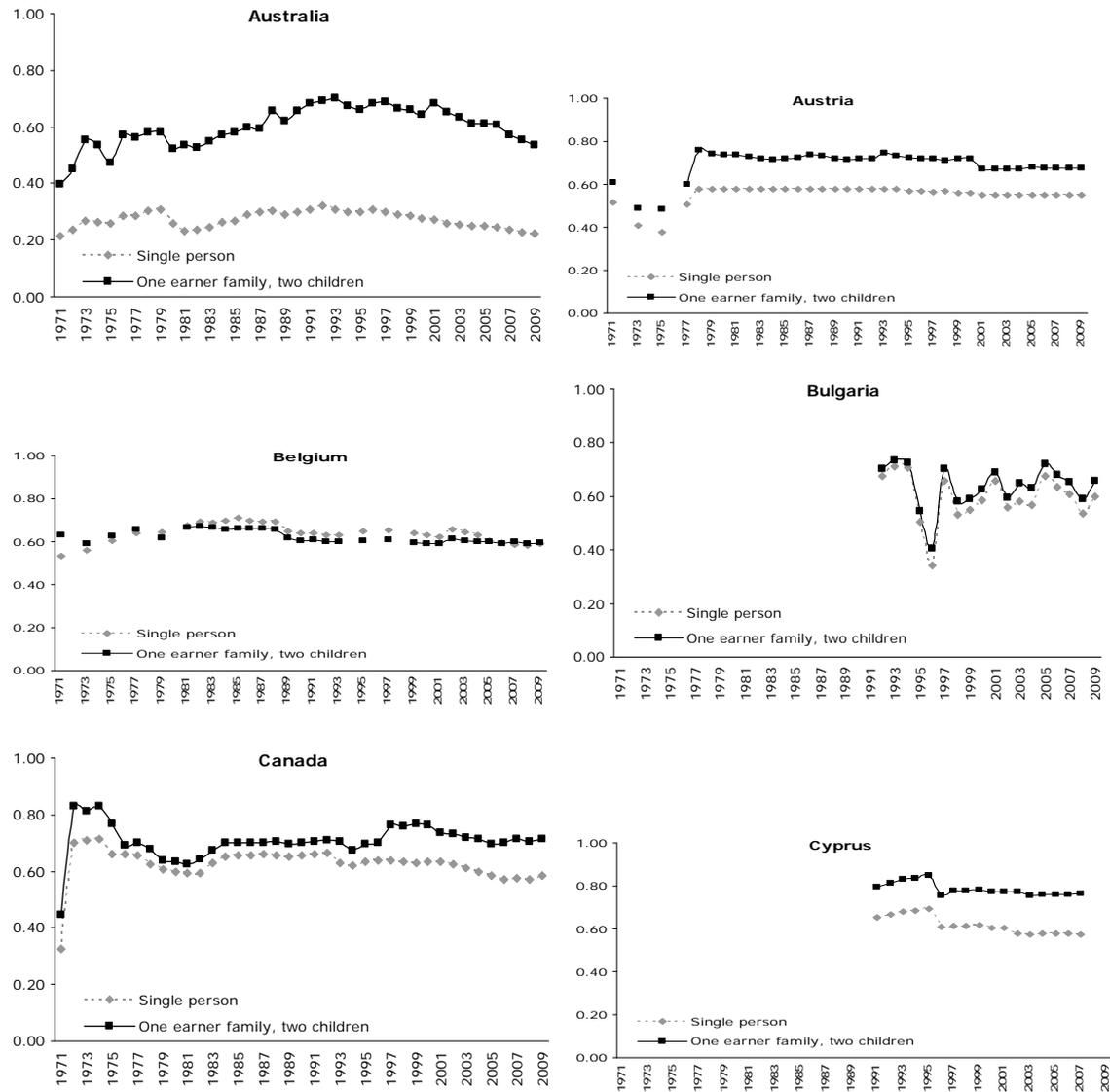


Figure 7. Country profiles for net unemployment replacement rates, 1971-2009, cont.

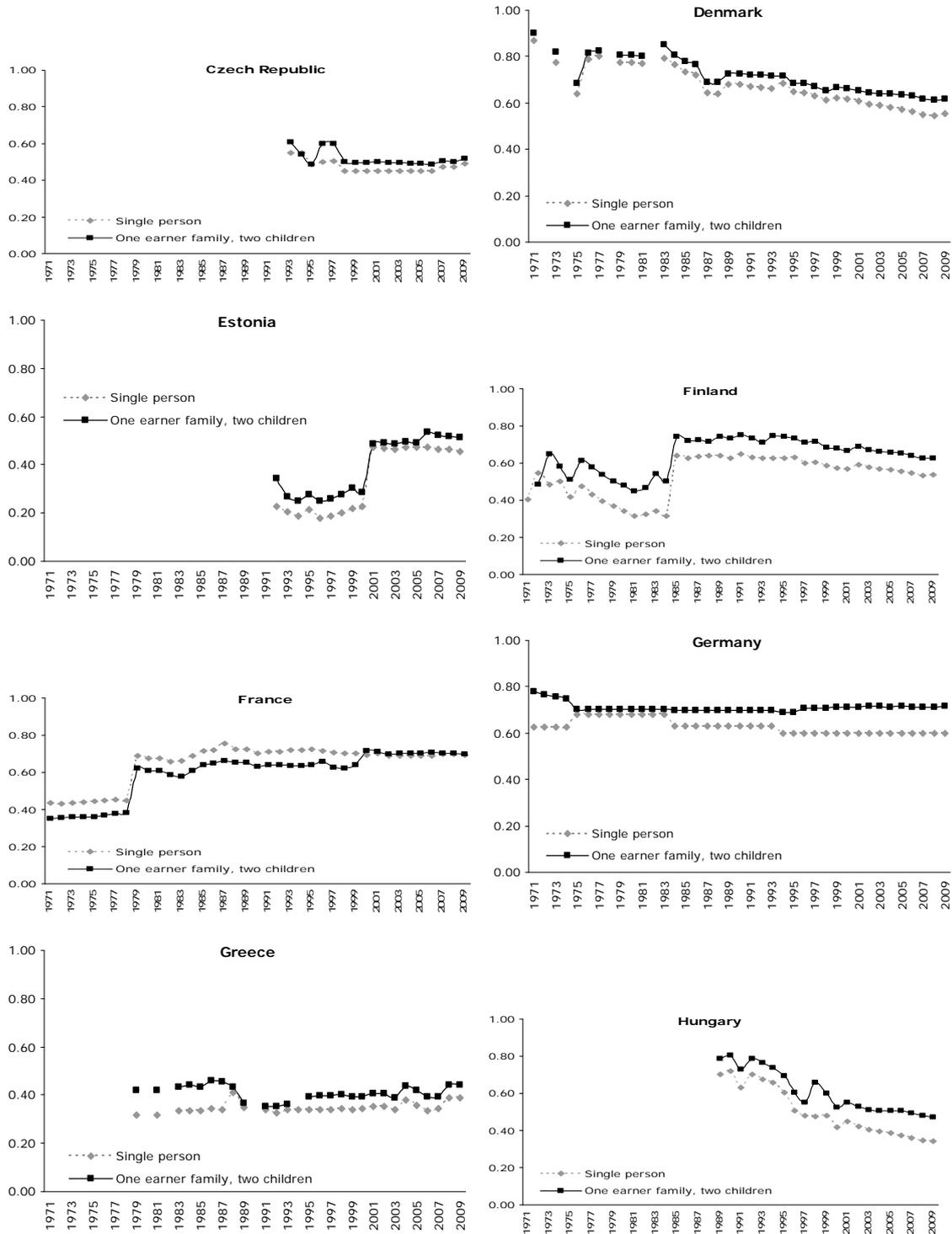


Figure 7. Country profiles for net unemployment replacement rates, 1971-2009, cont.

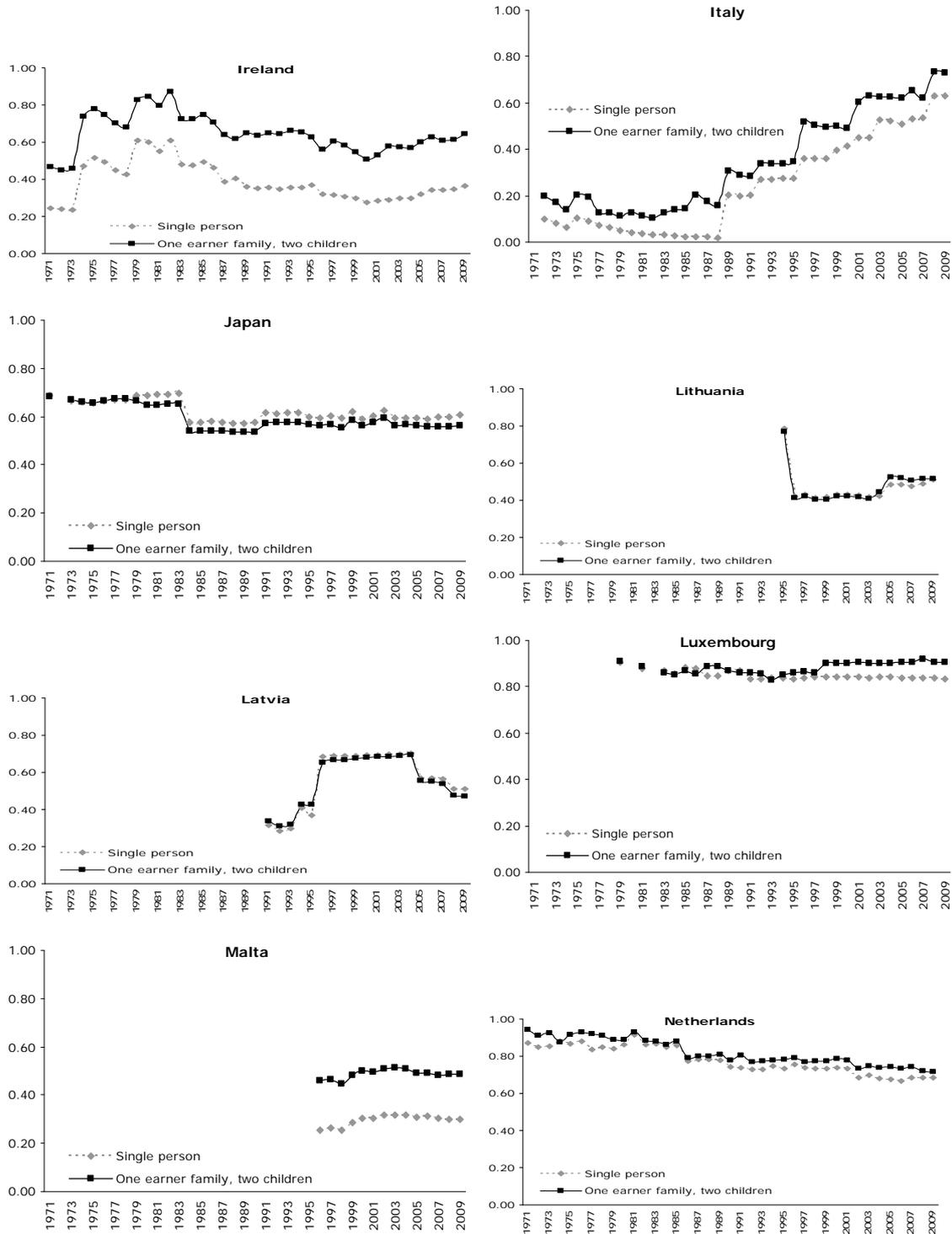


Figure 7. Country profiles for net unemployment replacement rates, 1971-2009, cont.

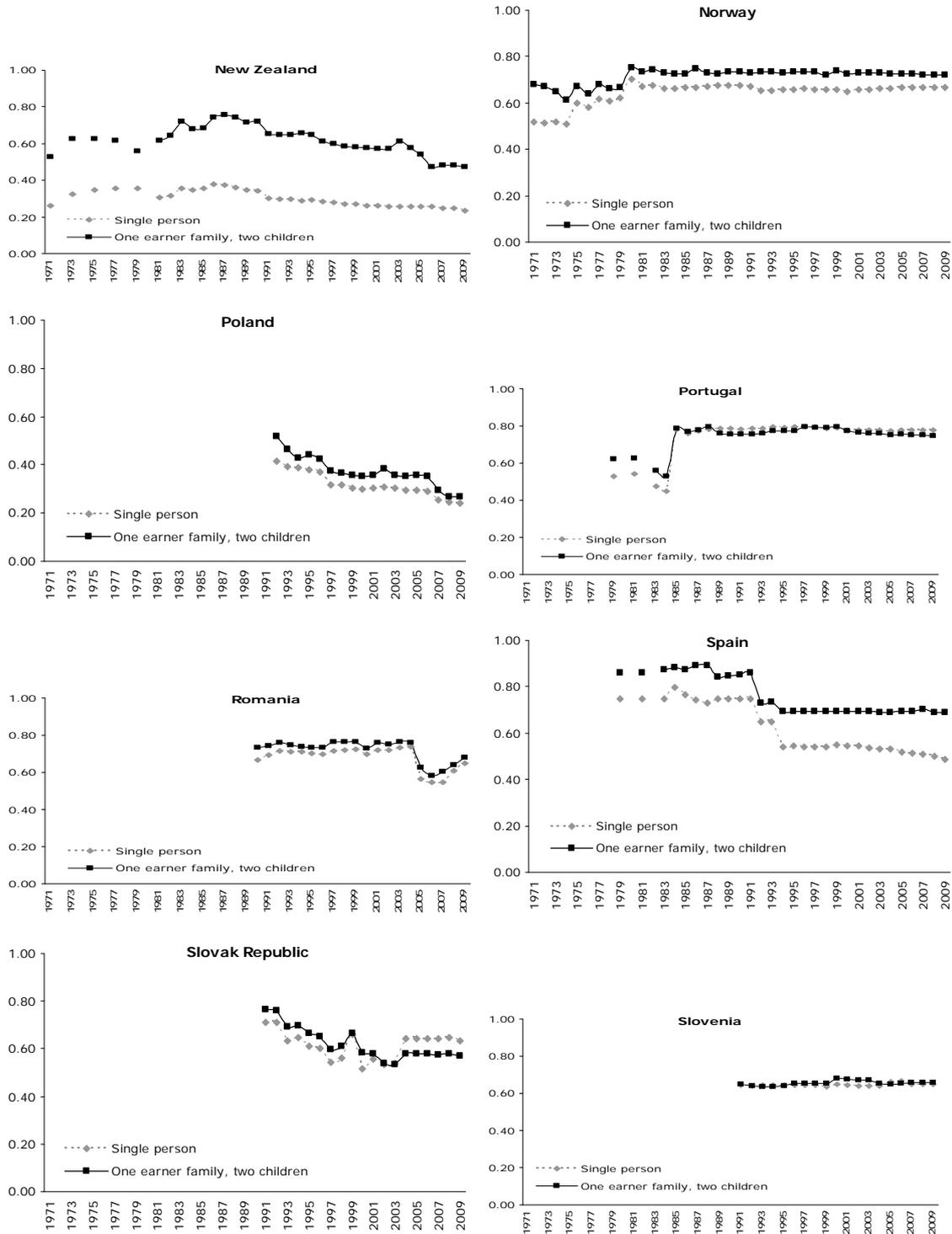
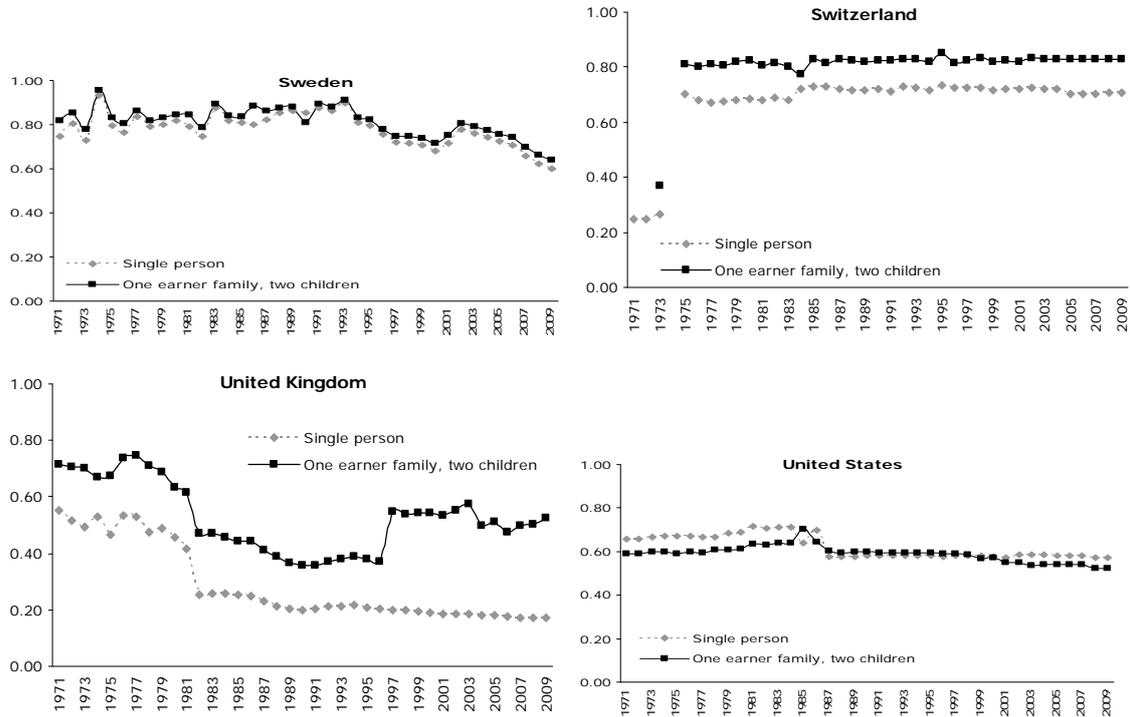


Figure 7. Country profiles for net unemployment replacement rates, 1971-2009, cont.



### 1.7 Summing-up: summary statistics

Finally, Table 3 (single person) and Table 4 (one-earner couple) illustrate the replacement rates for all 34 countries. We show consistent time series in all cases for the period 1971-2009 (adjusted wage of APW).









## 1.8 Future research

Our analysis on the unemployment replacement rates in 34 countries so far was restricted to one average income level. However, to monitor social policy developments, one should evaluate a variety of replacement rates (differentiated to e.g. social security schemes, earnings levels, family situations, duration of spells). Replacement rates often vary with income. Our data focus on a typical earner, just a single point in the wage distribution. Whether benefits are more (or less) generous for people with lower (or higher) earnings is nevertheless an important distributive issue in evaluating social policy and labour market policies.

This dataset presents net replacement rates during the initial phase of unemployment; not for those in long term unemployment. Extension of the dataset is needed for scholars analyzing long term unemployment. It is often hypothesized that a small (big) difference of the net replacement rates between the first and the 30<sup>th</sup> or 60<sup>th</sup> month of benefit receipt may have a high (low) impact on long term unemployment.

Research can employ these data in addressing several important research issues. Among the most commonly addressed questions in the empirical literature on the welfare state concerns the sources of variation across countries and over time in the extent and nature of generosity. Changes (in the generosity) of welfare states can be linked to (changes in) the fiscal redistribution. Best-practice among countries can be identified and analyzed in more detail. In exploring the causes and effects of welfare state redistribution and labour market policies in the developed world, the literature has increasingly moved towards more disaggregated measures of social policy, an enterprise in which our data set offers a rich source of information. Our data are detailed enough to allow an in-depth analysis on the generosity of unemployment programs and the extent to which they are targeted.

Our approach and the used data will be of additional value to future researchers after time-series are created across countries of other replacement rates. So, in addition to unemployment (this data set), one can think about a variety of other replacement rates for sickness leave and minimum or standard public pensions.

Over time the use of replacement rates data in policy analyses increased. Today the capacity to describe and analyze the effects of existing policy and simulate the effects of changes in policy is well-established in most nations with elaborate welfare states. The next step in improving policy analysis can come from moving to a cross-national focus using comparable replacement rate data in a number of countries. To this end, we are able to assemble a dataset of replacement rates that can be used by scholars and policy analysts to study the effects of different kinds of unemployment benefit programs on labour market policy, on poverty, on income adequacy, and the distribution of financial well-being generally. This project is named *Unemployment replacement rates dataset among 34 welfare states 1971-2009: An update, extension and modification of Scruggs' Welfare State Entitlements Data Set* and is available at [www.hsz.leidenuniv.nl](http://www.hsz.leidenuniv.nl).

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## 2. Codebook

### 2.1 Introduction

This data set provides data on unemployment benefit schemes in 34 countries from the 1970s until 2009. The essential indicator of this data set is the net unemployment benefit replacement rate. With respect to the methodology of calculating this measure, the data set builds on:

Lyle Scruggs (2005), “Unemployment Replacement Rate Data Set,” Welfare State Entitlements Data Set: A Comparative Institutional Analysis of Eighteen Welfare States, Version 1.1, June.

Moreover, the data set provides an update of Scruggs’ (2004) data set in terms of the number of data years and an extension in terms of the number of countries. Scruggs (2004) included data for 18 OECD countries for the period 1971-2002. The current data set includes all 27 member states of the European Union (EU) and 7 non-EU OECD countries. Data on other social arrangements that are included in Scruggs’ (2004) data set such as pension schemes and sickness insurance are not updated here.

The codebook contains descriptions of the variables included. Country-specific sources and notes are provided in specific sections of the codebook. In addition, details regarding individual observations are provided in the dataset.

### 2.2 Basic Information

#### *Countries*

Countries that were originally included in Scruggs (2005):

Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DNK), Finland (FIN), France (FRA), Germany (GER), Ireland (IRE), Italy (ITA), Japan (JPN), Netherlands, the (NED), New Zealand (NEZ), Norway (NOR), Sweden (SWE), Switzerland (SWI), United Kingdom (UK), United States (US).

New added countries:

- *EU-15 countries:* Greece (GRE), Luxembourg (LUX), Portugal (POR), Spain (SPA).
- *Countries that acceded the EU in 2004:* Cyprus (CYP), Czech Republic, the (CZE), Estonia (EST); Hungary (HUN), Lithuania (LTH), Latvia (LVA); Malta (MLT), Poland (POL); Slovak Republic, the (SVK), Slovenia (SVN).
- *Countries that acceded the EU in 2007:* Bulgaria (BGR); Romania (ROU).

### *Programme*

The dataset and codebook contain information on unemployment insurance. Data is provided for net unemployment replacement rates, gross unemployment replacement rates, gross unemployment benefits, taxes, social security contributions, average wages and net average wages for two family types.

### *Time period*

Information on unemployment replacement rates is in most cases provided for 1970-2009. For the 18 countries that were originally included in Scruggs' data set, data is added for the period 2000-2009. The data for 1970-1999 for these countries are taken from Scruggs (2005). Information on new added countries is provided for 1979-2009 with the exception that for some Eastern European countries information was only available for 1990-2009.

### *Family types*

The dataset distinguishes between two different family types. The first family type is a single person without children earning 100 percent of the average wage before getting unemployed. The second family type is a married couple. The breadwinner earned 100 percent of the average wage before getting unemployed. The couple has two children, one younger than 12 and one older than 12 years old.

### *Average Production Worker wage (APW)/Average Worker wage (AW)*

The calculation of replacement rates is based on average wage levels. For this wage level, the wage of the Average Production Worker has been used, which is provided in OECD Taxing Wages editions. The OECD has made a fundamental change in the approach of the average wages. The classical approach of calculating the average wage was the average wage of a production worker. In a historical perspective, the wage level in the production/manufacturing industry gave a good indication of the average wage in a country, since this was often the largest sector in a country. In more recent years, other sectors grew in size and the wage of the production worker was not representative anymore for the average wage level. Therefore, the OECD came up with a new concept for the average wage: the AW, which stands for 'average worker wage'. The AW was initially calculated as an average of the wages in the sectors C-K.<sup>1</sup> Later on, the sector classification changed. Since then, the sectors B-N have been used, in which almost all sectors of the old classification are incorporated. The differences in the levels of the APW and the AW can be significant for individual countries. The transition from APW to AW started in 2005 and the AW is available from 2000 onwards. The APW data is available for all years up to 2005 and for the year 2007. Hence, there is no consistent time series for the period 1971-2009. In order to have a consistent replacement rate time series, we calculated the APW for the years 2006, 2008

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<sup>1</sup> The sectors C-K are: C: mining, D: manufacturing/industry, E: production and distribution of electricity, gas and water, F: construction, G: wholesale and retail trade; repair of motor vehicles and motorcycles and consumer products, H: hotels and restaurants, I: transport, storage and communication, J: financial activities, K: real estate activities, renting and business service support.

and 2009 based on the growth rate of the AW. Furthermore, the data set also includes replacement rates based on the AW, albeit only for the period 2000-2009.

### *Methodology*

The calculations of the replacement rate are in line with Scruggs' (2005) method. This method follows the methods developed by the OECD to a large extent. The OECD assumes a 6 month unemployment spell, which means that the yearly unemployment benefits are calculated as two times an unemployment spell of 6 months. This implies that when a country scheme implies changes after six months, these changes are not incorporated the data.

One difference between Scruggs' data set and the OECD approach is the treatment of housing assistance. In the OECD approach of calculating replacement rates, housing assistance is included, in Scruggs' data not. Including the housing assistance leads to higher replacement rates. In the current data set, we follow Scruggs' approach. The reason is that this results in consistent time series for 1971-2009.

### *Data File*

The data file is presented in a Microsoft Excel 2003 spreadsheet file. Each tab contains a country and each tab includes two parts, for each family type one. The file is organized to be printer friendly.

### *Common Sources*

European Commission (2011), Eurostat Database, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=earn\\_nt\\_net&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=earn_nt_net&lang=en), accessed October 2011. This contains information on gross wages, taxes due and family allowances for several countries.

International Labour Organization (ILO), Laborsta Database, <http://laborsta.ilo.org/STP/guest>, accessed October 2011. This database contains detailed information about gross wages. On several occasions it has been used either as the data itself or as an estimator for wage movement.

OECD (2010). "Taxing Wages 2010", Paris OECD. previously titled as Tax/Benefit Position of Employees, Tax Benefit Position of the Typical Worker and the Tax/Benefit Position of a Production Worker. The publications used are 1972-2010, with special notice to the 2010 and 2004 edition in which overview tables are presented for larger periods.

OECD, Tax/Benefit Policies: Documents, Paris: OECD, [http://www.oecd.org/document/7/0,3343,en\\_2649\\_34637\\_39618653\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/7/0,3343,en_2649_34637_39618653_1_1_1_1,00.html), accessed September 2011. These are documents with a country specific description of unemployment insurance, assistance and tax systems. The documents are available since 2001 and run to 2009.

Scruggs, L. (2005). "Unemployment Replacement Rate Data Set", Welfare State Entitlements Data Set: A Comparative Institutional Analysis of Eighteen Welfare States, Version 1.1, June 2005.

Social Security Administration (SSA), (2008). "Social Security Programs Throughout the World, Washington DC: Government Printing Office. The publications used are editions from 1961-1999 and 2000-2008 biannually.

## 2.3 Dataset

### *Variables*

Every tab contains a separate table for each of the 34 countries. The tables are divided into two parts (highlighted by different colours): the case of single person households (marked green) and the case of one earner married couples with two children (marked orange).

A number of variables has been calculated for two income levels: one variable is based on the average worker wage (AW) and one variable is based on the average production worker wage (APW). To indicate that computations are based on AW instead of APW, a "2" is added to the column name. For instance, the variable 'BEN' refers to the gross unemployment benefits based on APW and the variable 'BEN2' refers to the gross unemployment benefits based on AW. In the cases where no distinction has been made, the variable can be used for replacement rate calculations based on both the APW and the AW. This can be the case for instance when benefits are flat rate. Then, the gross benefits are identical for each level of average earnings.

### **Year**

### Year

1970-2009

### **RRAPW**

### Net Replacement Rate for Average Production Worker

This is the ratio of net unemployment insurance benefit to net income earning at average wage level, based on the APW. RRAPW is a consistent time series.

### **RRAW**

### Net Replacement Rate for the Average Worker

This is the ratio of net unemployment insurance benefit to net income earning at average wage level, based on the AW. Figures for RRAW are only available for recent data years.

**RRA(P)W**                      Net Replacement Rate for the Average (Production) Worker

This column provides a combination of the RRAPW and RRAW. The replacement rates for 2001-2009 are based on the AW and the replacement rates for 1970-2000 are based on the APW. Hence, in most countries there is a break in the time series.

**GRRAPW**                      Gross Replacement Rate for the Average Production Worker

This data series are computed as the gross benefits divided by the gross average wage of a production worker. Taxes and social security contributions are not of interest and this is in most cases the amount or percentage that people expect to receive when reverting to unemployment insurance. For the years 2006, 2008 and 2009 an estimate is calculated.

**GRRAW**                      Gross Replacement Rate for the Average Worker

The gross replacement rate for the average worker is calculated as gross benefits divided by gross average wage of an average worker. The average worker wage is in most cases higher than the average production worker wage. In the case of fixed amounts or in the case of a maximum ceiling when gross benefits are earnings related, benefits lead to lower replacement rates.

**BEN**                              Gross Unemployment Benefits

Generally, this variable measures the gross benefits based on the APW. In some cases the gross unemployment benefits are equal for both APW and AW. Then, 'BEN' is representative for both cases. The two basic unemployment benefit systems are the flat amount per period and the earnings related benefits. In some countries, there is a mixture of the two or the system has other extensions. With respect to the eligibility conditions, we followed the OECD and national sources. All the calculations are annualized and explained in the individual country notes.

**BEN2**                              Gross Unemployment Benefits 2

These are the gross unemployment benefits based on the AW.

**TAX**                              Tax on Benefits

This is the tax due on gross unemployment benefits. It is based on the country-specific tax system. In some cases, the Social Security contributions are also included in this variable if those are undisputedly an inseparable part of the taxes. When TAX is zero, the benefits are either not taxable or the tax due is zero.

**TAX2**                              Tax on Benefits 2

TAX2 is the variable addressing taxes on 'BEN2'. In other words, it is the tax on gross benefits for an AW.



**AW**                      Average Worker Wage

The annual gross average worker wage of an average worker according to the definition of the AW.

**AWT**                      Average Worker Tax Wedge

This is the corresponding effective tax rate for an average worker wage.

**AWN**                      Average Worker Net Wage

The annual net wage of an average worker. It is the result of the gross wage diminished by the total tax and social security contributions.

**CAPWAW**                      Combination of APW and AW wages

This variable is a combination of the APW wage for the period 1970-2000 and the AW wage for the period 2001-2009. Hence, there is a break in the time series. This column is the underlying variable for the variable RRA(P)W.

**CAPWTAWT**                      Combination of APW and AW Tax Wedges

See CAPWAW

**CAPWNAWN**                      Combination of APW and AW Net Wages

See CAPWAW

**EXTRA**                      Additional information columns

Additional columns are included for country specific information and calculations. These include information on for instance maximum ceilings or minimum wages, earnings related family allowances, daily reference earnings, local and state taxes. These columns are in most cases specified in the country notes. If not, the columns are intermediate calculations.

***Currency***

Wages, benefits, taxes, social contributions etcetera are presented in current prices; levels are presented in national currencies. Note that (most) EU 15 countries entered the Euro zone in 2002 (generating a break in the time series for some – but not all – variables; in particular not for the replacement rates).

### 3. Country Notes

The codebook continues with the country notes. In this part the codebook describes how the unemployment replacement rate is calculated for every individual country. Furthermore, it shows insight in the dataset and mentions clear differences between unemployment and tax systems.

#### 1. Australia

##### Wages

APW wages are taken from the OECD Benefits and Wages and AW wages are based on OECD Taxing Wages.

Tax wedges (APWT and AWT) are based on Taxing Wages. The APWT rates until 2004 are based on Taxing Wages 2004. The AWT rates are taken from the Taxing Wages 2010.

##### Unemployment

###### *Single, no children*

Sources: Until 2002 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: Australian unemployment benefits system is flat. For a single person without children a basic New Starter Allowance (NSA) fortnight beneficial rate applies. This multiplied by 26 fortnight periods leads to a yearly benefit amount. In the case of Australia unemployment benefits are not taxable and no social security contributions are subtracted from gross benefits.

###### *One earning, married couple with two children*

Sources: Until 2001 Scruggs; thereafter OECD tax benefit policies.

Notes: Scruggs based his calculations on the fortnightly rate for one child beneath 10 years old and one child aged between 13 and 17 years old.

Each member of the couple receives a fortnightly NSA benefit at a rate for couples. The OTHER benefits contain a family tax benefit of a maximum rate for the two separate children plus a family based benefit. Again, unemployment benefits and OTHER benefits are not taxable and the unemployed breadwinner is excluded from paying social security contributions.

## 2. Austria

### Wages

From 2002-2007 the APW is based on Benefits and Wages; OECD indicators. The AW is based on the Taxing Wages series.

The APWT and AWT are based on Taxing Wages. Subsequently, net amounts are derived from the variables mentioned above.

### Unemployment

#### *Single, no children*

Sources: Until 2004 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The Austrian net replacement rate consists of 55 percent of the net average wage. For this household type taxation regulations or gross benefit calculations do not affect the unemployment replacement rates.

#### *One earner, married couple with two children*

Sources: Prior to 2004 Scruggs; then OECD tax benefit policies.

Notes: The replacement rates for this household type are different. Households receive a Tax Credit. If the taxes due are negative, the credit counts as an additional benefit. This increases the replacement rates. Furthermore, the family benefit scheme contains different rates for children in different age categories. The rates for a child up to the age of 10 and up to the age of 19 are selected plus a supplement for an additional child. In 2008, the system accompanies a 13<sup>th</sup> month into the family benefits, by doubling the September allowance.

### 3. *Belgium*

#### Wages

The APW and AW wage data are taken from Taxing Wages.

Tax rates are based on Taxing Wages 2004 and 2010. Taxing Wages 2004 is still APW orientated while Taxing Wages 2010 is based on the AW.

#### Unemployment

##### *Single, no children*

Sources: Until 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: In Belgium, the unemployed receive fixed benefit amounts during their unemployment status. The benefits can be adjusted during the year because of price indexation, but the moments of altering the benefits vary over the years. These adjustments have been taken into account in the calculations. After Scruggs' calculations and the OECD's unemployment replacement rate calculations, we use the benefit level for an older worker between 55 and 64 years old. Benefits are not taxable.

##### *One earner, married couple with two children.*

Sources: Until 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The calculations of the benefits for this household type are comparable to the case for a single person. In addition, the dataset includes calculations for a family without assuming the breadwinner to be in a particular age-group.

The level of the family benefits depends on the age and the birth years of the children. In 2007, a supplement for couples was introduced which increased the family benefits.

## 4. Bulgaria

### Wages

The APW wages are constructed with information provided by the National statistics bureau of Bulgaria 2000-2009, Eurostat database 1996-1999 and ILO data for 1992-1995. The AW wage is based on AW data from the Eurostat database. Notice that in the period 1993-1996 wages increased rapidly because of hyperinflation. Information regarding the tax system is derived from National Personal Income Tax Acts as well as from secondary literature on the tax system.

### Unemployment

*Single person, no children*

Sources: OECD tax benefit policies, SSPTW series, Ackrill et al. (2002), Eurostat database.

Notes: Bulgaria has an unemployment benefit system which is based on the minimum wage. From 1992-2001 the maximum unemployment benefits were 1.4 times the minimum wage and from 1992-2009 the maximum benefits were 12 times the monthly minimum wage. Unemployment benefits are not taxable and not subject to social security contributions.

*One earner married couple with two children*

Sources: OECD tax benefit policies, SSPTW series, Ackrill et al. (2002), Eurostat database.

Notes: The gross unemployment benefits for this family type are similar to that for a single person; the only difference consists of the child benefits. Child benefits are a monthly amount for each child.

### References:

Ackrill R., R., Dobrinsky, N. Markov and S. Pudney (2002), "Social Security, Poverty and Economic Transition: An Analysis for Bulgaria 1992-96", *Economics of Planning* 35, pp. 19-46.

Bogetic Z. and F. M. A. Hassan (1997), "Personal Income Tax Reform and Revenue Potential in Transitional Economies: Bulgaria", *IB Review*, Vol. 1.

## 5. Canada

### Wages

Wage data are from Taxing Wages series. This includes APW data up to 2007 and AW data from 2000 -2009. The tax data for the APW is from Taxing Wages 2004 and for the AW from the 2010 edition.

### Unemployment

#### *Single, no children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: In the Canadian benefit system, the benefit level is calculated as a certain percentage of the last gross income; the latter is bounded to a maximum weekly earnings rate. In the data, the APW gross income level reaches a turning point in 2003. In this year the gross income is higher than the maximum weekly earnings allowed. Hence, from that point onwards the benefits are based on a percentage of maximum allowed earnings. In the case of the AW this turning point is reached in 2005.

The Canadian tax system contains two parts. The first part consists of the federal tax obligations; the second part consists of the provincial and territorial taxes. In both cases the benefits are taxed with a yearly tax rate, minus a basic relief tax credit.

#### *One earner married couple with two children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The benefits of a one earner married couple with two children are almost identical to that of a single person. The main difference is the family supplement which is added to the gross income for the calculations of the gross benefits. In every case the supplement raises gross income above the maximum weekly earnings rate. Therefore, in both the APW case and the AW case the benefits are based on a percentage of the maximum weekly earnings.

The Canadian tax system for a one earner married couple with two children differs from a single person in several ways. The main difference is the family tax credit both in federal as well as in the provincial tax obligations. In 2007, a child tax credit was introduced.

The family allowances are eligible for households with children. The total benefits are based on flat rate benefits and a supplement that is tied to the gross benefits. The supplement is phased out beyond a certain level of gross benefits.

## 6. Cyprus

### Wages

Wage data for AW are based on OECD Tax Benefit Policies (available for 2000-2007). The APW is based on Eurostat data and ILO calculations on the changes in manufacturing Sector D wages. Information on taxation is based on annual legal documents from the government. Social security contributions data are based on SSPTW series.

### Unemployment

#### *Single, no children*

Sources: OECD Tax Benefit Policies, SSPTW series, Eurostat database.

Notes: The unemployment benefits in Cyprus consist of two parts. The first part is a flat rate benefit. The second part is earnings related. The unemployment benefits are not taxable and not subject to social security contributions. There is a steep decline in the replacement rate in 1995. This is due to the introduction of a new tax system which lowers taxes and increases the denominator - the average net wage - in the replacement rate calculations.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies, SSPTW series, Euro stat database, Lyssioutou (2010).

Notes: The unemployment benefit calculations are rather comparable to that for a single person without children. Some extensions: The flat rate part in the unemployment benefits is increased with 1/6 for every child and with 1/3 for a dependent spouse.

The family allowances consist of a basic child benefit and an annual supplementary benefit. The system for family benefits has been changed in 2003: family benefits were reduced at that time, but the family benefits show a steep increase in more recent years, especially from 2006-2007. Before 2003, the family benefits were based on a fixed amount per child.

### References:

Lyssioutou, P. (2010), *Are Child Benefits Fungible?: Evidence from a Natural Policy Experiment*, mimeo, University of Cyprus.

## 7. Czech Republic

### Wages

The wage information for the Czech Republic is based on the OECD Taxing Wages series. Information about taxes is also taken from Taxing Wages.

### Unemployment

#### *Single, no children*

Sources: OECD Tax Benefit Policies and Taxing Wages editions, Erbenova et al. (1998), Vodopivec et al. (2003).

Notes: The benefit system of the Czech Republic is earnings related and based on the last earned *net* income. In most cases the eligibility for benefits lasts 6 months. The benefits are restricted to minimum and maximum boundaries. Prior to 1996, the boundaries were based on the minimum wage level. Subsequently, the boundaries were based on the Minimum Living Standard (MLS). The maximum benefits are for instance 1.5 times the MLS for single persons and 1.8 times the MLS for couples with children. The benefits are not taxable.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies and Taxing Wages editions, Erbenova et al. (1998), Vodopivec et al. (2003).

Notes: The benefit system in the case of a married couple with children is identical to that of the single person without children. The MLS is higher because of the spouse and children.

Taxes are similar to the case of a single person without children, but an important remark has to be made. The unemployment benefits are based on the net average income (APWN or AWN). The family benefits are included in the OECD documentation as a cash benefit. This implies that before calculating the gross benefits the family benefits need to be subtracted from net income in order to get to gross benefits.

Until 2008, family benefits are based on the MLS for children. The MLS for children is multiplied by a number that is based on boundaries.

### References:

- Erbenova, M., V. Sorm and K. Terrel (1998), "Work incentive and other effects of social assistance and unemployment benefit policy in the Czech Republic", *Empirical Economics*, pp. 87-120.
- Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.

## 8. Denmark

### Wages

Wage data are taken from the OECD Taxing Wages series. Tax data are mainly taken from the 2004 and the 2010 editions.

### Unemployment

#### *Single, no children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: Unemployment benefits consist of 90% of the last earned gross wage diminished with the social security contributions. The benefits are bound to a maximum and a minimum boundary. In the data set, this results in all the cases in the maximum benefit level.

Social security contributions consist of three parts: contributions for unemployment insurance, contributions for the early retirement scheme and a labour market supplementary pension scheme charge.

The benefits are taxed according the following principle: social security contributions and a tax credit are deducted from the unemployment benefits. The tax credit, which is in fact a tax allowance, is calculated as the tax rate times a certain amount. The tax rate is based on three different rates: the central government income tax, the central government health tax and the local government income and church tax rate.

#### *One earner married couple with two children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The calculations of the unemployment benefits, the social security contributions and the taxes are identical to the single person case.

The family benefits consist of child benefits. In line with Scruggs, age groups of 3-6 years old and 7-17 years old are used.

## 9. Estonia

### Wages

Information about AW wages and taxes is based on OECD Taxing Wages 2010. Estonia became an OECD member in 2010. Therefore, only AW wages are available. The APW is based on information provided by the International Labour Organization (ILO). Here, the manufacturing wage is used which covers both men and women earnings. Tax rates are based on OECD Tax Benefit Policies and on studies on the Estonian tax system.

### Unemployment

#### *Single no, children*

Sources: OECD tax benefit policies and Taxing Wages, ILO Laborsta, Eurostat statistical database, SSPWT series, Estonian Tax and Customs Board, Hinnosaar and Rõõm (2003), Jarass and Obermair (2000), Kuldkepp (2005) and Vodopivec et al. (2003).

Notes: Until 2000, benefits were based on the minimum wage. The gross benefits were around 60% of the minimum wage. After 2000, the system became somewhat more generous with the introduction of earnings related benefits. The first 100 days of unemployment is compensated by 50% of the last earned income and thereafter the rate is 40%. These benefits are taxable and subject to social security contributions.

Taxation of the benefits is based on a flat rate system. Tax exemptions implicate the incentive of the government to decrease taxes for the low income families. Prior to 1997, the tax burden is zero since tax exemptions exceed taxable income.

Social security contributions for unemployed persons consist only of a contribution for the unemployment insurance. It gives entitlement to future unemployment compensation.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies and Taxing Wages, ILO Laborsta, Eurostat statistical database, SSPWT series, Hinnosaar and Rõõm (2003), Jarass and Obermair (2000), Kuldkepp (2005) and Vodopivec et al. (2003).

The benefit system of a one earner married couple with two children is identical to that of a single person without children.

The tax exemptions are doubled for couples, which reduces taxable income. The family benefits consist of a monthly flat rate benefit per child. The family benefits before 1997 are estimated based on the development of the family benefits up to that point.

References:

Hinnosaar, M. and T. Rõõm (2003), "The Impact of Minimum Wage on the Labour Market in Estonia: An Empirical Analysis", Eesti Pank, November.

Jarass, L. and G.M. Obermair (2000), *Structures of the Tax Systems in Estonia, Poland, the Czech Republic and Slovenia*, Wiesbaden (FRG), European Commission, DG XII, 9 November.

Kuldkepp, A. (2005), *Tax Policy of Estonia in the framework of the EU Integration*, dissertation, Rotterdam: Erasmus University Rotterdam.

Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.

Estonian Tax and Customs Board: <http://www.emta.ee/?lang=en>

## 10. Finland

### Wages

The APW figures from the OECD Taxing Wages series are used. The AW wage data and the corresponding tax rates for both household types are taken from the Taxing Wages 2010 edition.

### Unemployment

#### *Single, no children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Unemployment benefits are calculated as follows: Unemployed receive a basic benefit, the FIM. This FIM is subtracted from the daily reference earnings (DRE), which is 95% of the last earned gross income, or a set maximum reference amount. The resulting difference is multiplied by a fixed rate. If DRE is larger than the set maximum reference amount, the difference will be multiplied by a lower fixed rate and the result of all three components will be summed up to a total and multiplied by 21.5 work days to a monthly benefit rate.

Central government taxation on benefits is levied through a bracket system. Local taxes include a municipal tax and a church tax.

#### *One earner married couple with two children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

The benefit and tax system for this household type is identical to that of the single person case, but the benefit levels are higher for the family.

A one earner married couple with children receives family benefits. These benefits consist of different rates for the first and the second child.

## 11. France

### Wages

Wage data is taken from Taxing Wages. The Average Worker wage is based on Taxing Wages 2010. Tax rates for both household types are used from the Taxing Wages 2004 and 2010 editions.

### Unemployment

#### *Single, no children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The gross unemployment benefits are based on a flat rate system of 57.4 % of the last earned income. In this case the wage of the average (production) worker applies.

The taxation system consists of several tax allowances which decrease taxable income. Furthermore, the system contains different brackets of tax rates, meaning increasing tax rates if income passes a certain threshold. Two separate parts of social security contributions can be deducted. One part of social security contributions is multiplied by 95% of the gross benefits and subtracted and the other part is fully deductible. In addition, the taxation system consists of a tax allowance of 20% and a supplement allowance of 10%. The actual percentages, brackets and allowances change over time.

The social security contributions are calculated by a fixed rate of (95% of 6.2) +0.5% of the gross benefits plus a certain percentage of the gross benefits.

#### *One earner married couple with two children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: Benefits and social security contributions are derived according the same procedure as for a single person. Taxation is not eligible for a family household. The family benefits consist of a basic amount for two children, but is extended with an amount for a child aged 11 years old or older.

## 12. Germany

### Wages

From 2000 APW and AW data are taken from Taxing Wages editions 2004 and 2010.

### Unemployment

#### *Single, no children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

The unemployment benefits for a single person without children are based on a flat percentage of the net last earned income. Hence, net replacement rates are equal to this rate of 60 percent.

#### *One earner married couple with two children.*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

The benefit system for this household type is almost identical to that of the single person. There is a difference in the level of the flat percentage compensation. In the case of a one earner married couple with children the rate is 67 percent. Another difference is the integration of family based benefits. A family with two children receives 'Kindergeld', a child tax credit for each child on a monthly base. This child tax credit is deducted as an allowance for the calculations of the gross benefits. In 2009, there was a one-off payment of 100 EUR per child and this occurred only in 2009.

### 13. Greece

#### Wages

Wage information for Greece is based on the OECD Taxing Wages editions and its predecessors. The AW wages are based on data provided by the 2010 edition and the APW wage data are taken from the editions 1979-2004. Tax rates are also taken from the Taxing Wages series. In 1988, a family supplement was paid by the employer which increased the gross wages for the family case in comparison to the single person case.

#### Unemployment

##### *Single person, no children*

Sources: OECD Tax Benefit Policies, OECD Taxing Wages series and Social Security Programs Throughout the World editions 1979-1999.

The benefit system of Greece has changed in the course of time. In the period 1979-2001, benefits depend on the last earned wage. From 2001 onwards benefits are based on the minimum wage and the minimum wage can be considered as the wage of an unskilled worker. Benefits are paid for 25 days a month and they are not taxable.

##### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies, OECD Taxing Wages series and Social Security Programs Throughout the World editions 1979-1999.

The gross benefits of a married couple with two children are calculated by adding supplements for each dependent to the benefits for a single person. The gross benefits of a single person are increased by 3 times 10% in order to end up with the benefits for married couples with children (for spouse and two children).

Family benefits are determined by flat rate amounts for each dependent. In 1988, the family benefits were abolished and replaced by a family supplement. In 1995, the family benefits were restored again in the form of flat rate amounts.

## 14. Hungary

### Wages

Wages are based on the Taxing Wages series and the Tax/Benefit position of the average production worker/employee. Missing data is estimated based on the development of the gross nominal income. For these estimations, average wage calculations provided by the Hungarian Statistical office and by Halpern and Wyplosz (1998) are used.

### Unemployment

#### *Single person, no children*

Sources: OECD Tax Benefit Policies and Taxing Wages series, Halpern and Wyplosz (1998), Vodopivec et al. (2003) and Newbery (1996).

Notes: The unemployment benefits for a single person without children are in essence earnings related. Unemployment benefits are higher in the first six months than in the next six months. In addition, unemployment benefits are restricted to a minimum and maximum level. Until 1993, these limits were based on the minimum wage. From 1993 to 1997 a fixed amount was set and from 1997 onward the limits were based on the level of the old-age pension benefits. In the data set, almost all cases reached the maximum level.

The benefits are taxable and subject to social security contributions. The tax system started as a bracket system with different tax rates. Later on, the tax system became a flat rate system. The social security contributions consist of contributions for sickness, unemployment and pension programs. In the period 1994-2003, these contributions are deductible for the income tax. After 2003, only pension contributions are deductible.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies and Taxing Wages series, Halpern and Wyplosz (1998), Vodopivec et al. (2003) and Newbery (1996).

Notes: The unemployment benefit system for a one earner married couple with two children is similar to that of the single person; differences are tax credits and family allowances. The household receives a family-type based allowance. In 2006, the level of this allowance has been increased because the tax credit for children was abolished. Social security contributions and gross benefits calculations are in line with those for the case of a single person without children.

References:

- Halpern, M. and C. Wyplosz (1998), *Hungary: towards a market economy*, Centre for Economic Policy Research, Press Syndicate of the University of Cambridge.
- Newbery, D.M. (1996), *Reforming Tax and Benefit Systems in Central Europe: Lessons from Hungary*, Department of Applied Economics, Cambridge, 12 June 1996.
- Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.
- Hungarian Statistical Office (2011), *Statat Tables*, [http://portal.ksh.hu/portal/page?\\_pageid=38,591965&\\_dad=portal&\\_schema=PORTAL](http://portal.ksh.hu/portal/page?_pageid=38,591965&_dad=portal&_schema=PORTAL), downloaded at 15 December 2011.

## 15. Ireland

### Wages

APW and AW data are taken from the Taxing Wages editions 2004 and 2010.

### Unemployment

#### *Single, no children*

Sources: Prior to 2003 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: There are flat rate unemployment benefits. In principle, benefits are taxable; but the income level of the unemployment benefit is exempt from taxes.

#### *One earner married couple with two children*

Sources: Prior to 2002 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The benefits for married couples with children differ from the benefits for a single person. The married couple with two children receives additional benefits for the spouse and the children. Family benefits consist of a flat rate benefit, but this rate may be adjusted over the year. These benefits are not taxable.

## 16. Italy

### Wages

APW data after 1999 and AW data are taken from the Taxing Wages. Tax rates are based on the Taxing Wages editions 2004 and 2010.

### Unemployment

#### *Single, no children*

Sources: Prior to 1999 Scruggs; thereafter OECD Tax Benefit Policies and Taxing Wages.

Notes: The unemployment benefits are earnings related. A fixed percentage of the last earned gross income is compensated when a worker becomes unemployed. In 2005, the benefit system has been changed. After six months, the percentage of the last earned gross income will be lower.

The taxation of the benefits is based on a brackets system. In all cases the total unemployment benefits fall below the first threshold. Therefore, the lowest tax rate has been applied. Furthermore, there is a local tax rate of 0.9 percent.

#### *One earner married couple with two children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The calculation of the level of gross benefits for a family are identical to the calculation of the benefits for a single person. However, the tax system contains tax credits for the family. A dependent spouse tax credit and a child tax credit are applicable for this household type. In principal, the child credit is distributed equally between the incomes of the parents, but in the case of a one earner family the child tax credit is fully deducted from the income of the breadwinner. In 2003, a tax free basic allowance (the no tax area) has been introduced, resulting in tax allowances up to 7,500 euro for working dependents. In 2005, this scheme has been extended to a no tax area for the family and a family arrangement with allowances for children and a dependent spouse. The result of these adaptations to the system is that the sum of allowances is higher than the level of the benefits. In 2008, the tax free basic allowances haven been abolished.

The family benefits consist of a single cash benefit. The level of this benefit depends on the number of family members and their income.

## 17. Japan

### Wages

APW wages are taken from OECD Taxing Wages. AW wages are based on Taxing Wages edition 2010. Tax rates are taken from Taxing wages 2004 and 2010.

### Unemployment

#### *Single, no children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes:

Unemployment benefits are earnings related. Below a minimum level, unemployment benefits consist of 80% of the daily amount of wages (DAW). Above the maximum level, 60% of the DAW is compensated. Between the minimum and maximum, a formula is used to calculate a percentage between 60 and 80 percent. The DAW is calculated as 80% of the gross wage.

Benefits are not taxable.

#### *One earner married couple with two children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The unemployment benefits are identical to that of the single person without children.

There are no family benefits.

The tax burden is lower in the case of the family; therefore net wages are higher. As a result, net replacement rates are lower for families than for a single person without children.

## 18. Lithuania

### Wages

Wage data are based on information from Statistics Lithuania. The APW is based on sector D wages. The AW is calculated as an average of the wages in the sectors C-K.

In 1995, a flat rate tax was introduced. Data on tax exemptions are based on information provided by Lithuania Customs and Tax.

### Unemployment

#### *Single, no children*

Sources: OECD Tax Benefit Policies, Vodopivec et al. (2003), Eurostat Statistical Database.

Notes: Until 1996, unemployment benefits consisted of about 70% of the last earned income at the beginning of an unemployment spell. At the end of the year, unemployed received 50% of the last earned income.

In the period 1996 - 2005, unemployment benefits consisted of 32% of the gross earnings.

From 2005 onwards, unemployment benefits consist of a fixed part and a variable part which is based on last earned income.

Unemployment benefits are not taxable but they are subject to social security contributions for pensions and health care.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies, Tax and Customs Lithuania, Vodopivec et al. (2003), Eurostat Statistical Database.

Notes: Unemployment benefits for the single person and benefits for the one earner married couple are almost identical. Family benefits have been introduced in 2004. Therefore, for the period 1995-2004 the only difference between the single and the family case is the extra tax allowance for children, which is 1/5 of the basic relief. In 2004, a child allowance has been introduced. First, this allowance only applied to children up to 7 years old. Later on, this age has been increased so that both children of the family case are eligible.

### References:

Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.

Lithuanian Statistics (2011), Labour Statistics, <http://www.stat.gov.lt/en/pages/view/?id=2491>, downloaded at 19 December 2011.

## 19. Latvia

### Wages

For the period 1991 – 2008, APW wage data are primarily based on ILO wage data for manufacturing workers. However, for the period 1996-1999 APW wages are based on Eurostat data. AW wages are based on Eurostat data.

Tax system information is based on OECD Tax Benefit Policies and on literature mentioned below.

### Unemployment

#### *Single person, no children*

Sources: OECD Tax Benefit Policies, SSPTW series, Vodopivec et al. (2003), Eurostat database, Rajevska (2005).

Notes: The gross unemployment benefits are in most cases based on a percentage of last earned income.

For the period 1991-1995, benefits are based on the minimum wage.

In the years 1996-2004, the benefits consist of 50% of the last earned wage.

In the period 2005-2009, the percentages decrease during the unemployment spell, but the benefits are still earnings related.

Unemployment benefits are not taxable and they are not subject to social security contributions.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies, SSPTW series, Vodopivec (2003), Eurostat database, Rajevska (2005).

Notes: The benefits for one earner married couples with two children are similar to that for a single person with no children. The only difference between the two is the eligibility for child benefits. The level of the child benefits in 1991, 1992, and 1994 are estimated based on the development of the level of the average wage (ILO data).

### Sources:

Christie, E. and M. Holzner (2006), *What explains tax evasion; An empirical assessment based on European data*, WIIW Working Paper, June 2006

Dabrowsky, M., B. Slay and J. Neneman (2004), *Beyond Transition; development perspectives and dilemmas*, Hants: Ashgate Publishing Limited.

Rajevska, P. (2005), *Social policy in Latvia; Welfare state under double pressure, Development in Estonia and Latvia*, Fafo report 498.

Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.

## 20. Luxembourg

### Wage

APW wages and tax rates are based on the OECD Taxing Wages, 1979 - 1999 and 2004. AW wages are taken from the Taxing Wages edition 2010.

### Unemployment

#### *Single person, no children*

Sources: OECD Tax Benefit Policies, OECD Taxing Wages and the “Administration de l’employ”.

Notes: Unemployment benefits are earnings related: a percentage of last earned gross income. The maximum benefit level is 250% of the minimum social income. However, this maximum was never reached for average (production) worker wages. The benefits are taxable and they are subject to social security contributions.

The tax system is progressive. Furthermore, the taxable income is diminished with three tax allowances. The first allowance is a general deduction. Second, a fixed amount of professional expenses is deductible. Here, it does not matter whether the person is employed or unemployed; the allowance is in both cases deductible. Third, social security contributions can be deducted. Social security contributions consist of contributions for an old- age pension scheme contribution and for unemployment insurance. In 1999, a health care contribution has been introduced. This contribution cannot be deducted.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies, OECD Taxing Wages, Administration de l’employ and the Institutions de Sécurité Sociale.

Notes: The unemployment benefits for the married couple with two children is rather equal to the benefits for the single person; the percentage of last earned gross income is 5% points higher.

In the period 1998-2007, the tax system contains a child tax credit that is subtracted from the total tax obligations.

Social security contributions for the couple are equal to the contributions for the single person without children.

Family benefits are based on the number and the age of the children.

## 21. Malta

### Wages

For the period 1996-1999, APW data are taken from Eurostat. For the period 2000-2008, APW data are taken from ILO Labour Statistics; 2009 is estimated based on the development of the AW.

For the period 2000-2009, AW data is taken from Eurostat.

Tax system information is based on OECD Tax Benefit Policies and the Malta government Inland Revenue Department.

### Unemployment

#### *Single, no children*

Sources: OECD Tax Benefit Policies, SSPTW series, Eurostat database, Inland Revenue Malta.

Notes: There are flat rate unemployment benefits. The benefits are not subject to income tax and social security contributions.

#### *One earner married couple with two children.*

Sources: OECD Tax Benefit Policies, SSPTW series, Eurostat database, Inland Revenue Malta.

Notes: The unemployment benefits for married couples with two children are somewhat higher than the benefits for a single person without children. First, the benefit level for families is higher and second, families are eligible for family benefits. In addition, the tax brackets are a bit different.

### References:

Malta Inland Revenue Department (2011), Tax Rates, <http://www.gov.mt>, downloaded at 9 November 2011.

## 22. Netherlands

### Wage

APW and AW wages are based on OECD Taxing Wages data. Tax rates are taken from the Taxing Wages editions 2004 and 2010.

### Unemployment

#### *Single, no children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies and Dutch Tax administration.

Notes: Gross unemployment benefits are earnings related. The unemployed receives a gross benefit that consists of a certain percentage of the last earned gross wage.

The taxation of unemployment benefits is identical to the taxation of income from work. A basic tax credit applies and a part of the social security contributions can be deducted as a tax allowance; health care contributions cannot be deducted. The tax system is progressive and it contains brackets.

In 2006, health insurance became mandatory for all inhabitants. Health care contributions are partly compensated by the employer. Furthermore, health care benefits haven been introduced for low income groups.

#### *One earner married couple with two children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The gross unemployment benefits for a one earner married couple with children are calculated in a similar way as the benefits for the single person without children. In the case of the family, the basic tax credit is doubled. Furthermore, the tax system contains a child credit. In 2006 and 2007, the child credit has been changed: it consists of a fixed amount that becomes lower with each additional earned euro.

## 23. *New Zealand*

### Wages

Wage data are taken from the OECD Taxing Wages and former Tax/Benefit publications. Tax rates and AW wages are from the editions 2004 and 2010.

### Unemployment

#### *Single, no children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: There are flat rate unemployment benefits. Every year, the rates are adjusted in April. Therefore, the yearly rate that is used in the calculations is a combination of the rates before and after April. Unemployment benefits are not taxable.

#### *One earner married couple with two children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The flat rate benefit for couples is lower than the flat rate benefit for singles, but both adults of the household are eligible. In 2003, the benefit level has been lowered.

## 24. Norway

### Wages

APW wage data are taken from the OECD Taxing Wages series. AW data are based on the Taxing Wages 2010 edition. Tax rates are based on the 2004 and 2010 editions of Taxing Wages.

### Unemployment

#### *Single, no children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The unemployment benefits for a single person without children consist of a percentage of the daily gross income. The yearly benefits are based on 260 days a year.

The tax system includes a basic relief allowance and an allowance that depends on the gross wage.

Social security contributions are earnings related: a percentage of gross income.

#### *One earner married couple with two children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: The gross unemployment benefits for this household type contain an earnings related element and a flat rate element.

The taxation rules for the family are the same as for the single person case, but the allowances are different: the basic relief is doubled and a fixed amount can be deducted for the earnings related allowance.

The calculation of the social security contributions for the family case is based on the same principles as for the single person case.

The family benefits consist of a fixed rate per child.

## 25. Poland

### Wages

Wage data are taken from the OECD Taxing Wages series 1991-2010. Wages for 1992 and 1994 are estimates based on the development of the manufacturing wages which are provided by the ILO.

Information on the tax system is based on OECD Taxing Wages and Tax Benefit Policies.

### Unemployment

*Single, no children*

Sources: OECD Tax Benefit Policies and Taxing Wages series, Vodopivec (2003), ILO Labour Statistics Database and OECD Economies in Transition.

Notes: Before 1997, unemployment benefits consisted of 36% of the last earned gross income. Since 1997, there are flat rate unemployment benefits.

Unemployment benefits are taxable. Social security contributions are paid by employers. Since 2007, health care contributions must be paid by the employees. The tax rate is flat for the unemployed. A tax credit can be deducted. Since 2007, social security contributions are largely deductible.

*One earner married couple with two children*

Sources: OECD Tax Benefit Policies and Taxing Wages series, Vodopivec et al. (2003), ILO Labour Statistics Database and OECD Economies in Transition.

Notes:

Gross unemployment benefits for a couple are identical to the gross benefits for a single.

A couple can apply for two tax credits.

Families are entitled to family benefits: a fixed amount per child per month.

### References:

Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.

OECD (1994), *Unemployment in Transition Economies: Transient or Persistent?*, Centre for Co-operation with the Economies in Transition, Paris.

## 26. Portugal

### Wages

APW wage data are taken from the OECD Taxing Wages 1979-2004. AW wage and tax rate data are taken from the Taxing Wages 2010.

### Unemployment

#### *Single, no children*

Sources: OECD Tax Benefit Policies, OECD Taxing Wages, Bover et al. (2000) and Valério (2001).

Notes: The gross unemployment benefits are 65% of last earned gross income. The maximum gross income level is three times the minimum wage. This maximum has not been reached in the data set. Minimum benefits consist of 70 to 75% of the minimum wage.

The unemployment benefit insurance system has been introduced in 1985. Before 1985, benefits data are based on the unemployment assistance system: 70% of the minimum wage.

Benefits are not taxable and they are not subject to social security benefits.

#### *One earner married couple with two children*

Sources: OECD tax benefit policies, OECD taxing wages, Bover et al. (2000) and Valério.

Notes: Unemployment benefits for a family are almost identical to those for the single person without children. Prior to 1985, unemployment assistance consists of 80% of the minimum wage.

Family benefits consist of a flat rate amount for every child.

Unemployment benefits and family benefits are not taxable and they are not subject to social security contributions.

### Reference:

Bover, O., P. García-Perea, P. Portugal and P. B. Sorensen (2000), "Labour Market Outliers: Lessons from Portugal and Spain", *Economic Policy*, Vol. 15, No. 31, pp. 379-428.

Valério, N. (ed.) (2001), *Portuguese Historical Statistics*, Lisbon: Instituto Nacional de Estatística.

## 27. Romania

### Wages

Wage data is based on ILO sector wage data. For the APW, sector D wages are used. For the AW, the average of sectors C-K wages are used.

Information on the tax system is taken from Eurostat and from official documents of the 'Monitorul Juridic'. Information has been found for 1990-2008; 2009 has been estimated based on the development in Eurostat wage data.

### Unemployment

#### *Single person, no children*

Sources: OECD Tax Benefit Policies, SSPTW series, Earle and Pauna (1998).

Notes: In the period 1990-2004, unemployment benefits are earnings related. The maximum earnings level is linked to the daily reference earnings.

The unemployment benefit system has been changed in 2005. From that year onwards, unemployment benefits contain a flat rate amount and an earnings related element. The latter element is a percentage the last earned gross income. The benefits are not taxable and they are not subject to social security contributions.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies, SSPTW series, Earle and Pauna (1998).

Notes: Gross unemployment benefits for this family type are identical to the benefits for a single person without children. The benefits are not taxable and not subject to social security contributions. The only difference between the family and the single person case consists of the family allowances.

### References:

Earle, J. S. and C. Pauna (1998), "Long-term unemployment, social assistance and labour market policies in Romania", *Empirical Economics*, 23, pp. 203-235.

## 28. Spain

### Wages

Data on wages and taxes are based on the OECD Taxing Wages series. APW wages are based on the 1979-2004 editions and Average Worker wages are based on the 2010 edition.

### Unemployment

#### *Single, no children*

Sources: OECD Tax Benefit Policies and Taxing Wages, Bover et al. (2000), Bover et al. (2002) and the Ministry of Employment and Immigration.

Notes: Unemployment benefits are earnings related. In the first six months the benefit level is higher than in the following months. In 1984, minimum and maximum gross benefit levels have been introduced, based on the minimum wage level.

Since 1994, unemployment benefits are taxable. Taxes are based on a bracket system. Two allowances can be deducted: a basic relief can be subtracted from the taxable income; the flat rate social security contributions can be deducted.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies and Taxing Wages, Bover et al. (2000), Bover et al. (2002) and the Ministry of Employment and Immigration.

Notes: The only difference between the unemployment benefits for a single and for a couple is that the maximum level of gross benefits is higher for married couples.

Compared to the single person case, there are some couple-related and children-related tax allowances.

Before 1991, family benefits consisted of fixed amounts per child. Since 1991, couples are entitled to family benefits if their income is lower than a certain threshold. In the data set, all gross incomes are higher than this threshold and the family benefits are zero.

### References:

Bover, O., P. García-Perea, P. Portugal and P.B. Sorensen (2000), "Labour Market Outliers: Lessons from Portugal and Spain", *Economic Policy*, Vol. 15, No. 31, pp. 379-428.

Bover, O., M. Arrelano, S. Bentolila (2002), "Unemployment Duration, Benefit Duration and the Business cycle", *The Economic Journal*, 112 (April), pp. 223-265.

## 29. Slovak Republic

### Wages

The Slovak Republic entered the OECD in 2000. Hence, the Taxing Wages series did not include APW wage data before 2000. For those years, we have used time series data from the Statistical Office of the Slovak Republic to calculate APW data and part of the AW data. For the APW wage, we used the manufacturing wage from sector D; for the AW wage the average of the wages in the sectors B-N.

For 1999 onwards, tax information is based on OECD Tax Benefit Policies. In the 1994 edition of Taxing Wages, the taxation system of 1993 is described. Because this system does not differ from the one in 1999, it is presumed that the system has not been changed in the intervening years. Before 1993, allowances were higher than the actual average wage. Therefore, only social security contributions had to be subtracted.

### Unemployment

#### *Single, no children*

Sources: OECD Tax Benefit Policies and Taxing Wages series, Vodopivec et al. (2003), and Lubyova and Van Ours (1997 and 1998).

Notes: The unemployment benefits are earnings related but they are restricted to an upper boundary that is related to the minimum wage. In 2005, the upper boundary was loosened and in 2006 it was completely abolished. Benefits are not taxable and not subject to social security contributions.

#### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies and Taxing Wages series, Vodopivec et al. (2003), and Lubyova and Van Ours (1997 and 1998).

Notes: The unemployment benefit system for couples with children is almost equal to that of a single person without children. Family benefits are introduced into the calculations. The family benefits are based on a fixed amount per child per year.

### Sources:

Lubyova, M. and Van Ours, J. (1997), "Unemployment dynamics and the restructuring of the Slovak unemployment benefit system", *European Economic Review*, 41, pp. 925-934.

Lubyova, M. and Van Ours, J. (1998), "Work incentives and other effects of the transition to social assistance: Evidence from the Slovak Republic", *Empirical Economics*, 21, pp. 121-153.

Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.

### 30. Slovenia

#### Wages

APW data are based on data from the Slovenian statistical office and on Eurostat data. These data are based on sector D manufacturing wages for both men and women. The AW wages are taken from Eurostat and from the Slovenian statistical office (sectors D, F, G, I and K). The tax system information is based on the OECD Tax Database and on OECD Tax Benefit Policies.

#### Unemployment

##### *Single person, no children*

Sources: OECD Tax Benefit Policies, SPPTW series, OECD Tax Database, Pokorelc (2005), Vodopivec (1995), Vodopivec et al. (2003), Cok and Urban (2005).

Notes: The unemployment benefit system is earnings related. The gross unemployment benefits are calculated as 70% of the last earned gross wage for the first three months and 60% for the remaining months. The maximum amount is in most cases three times a statutory reference amount. The benefits are taxable and subject to social security contributions. The tax system of Slovenia consists of a bracket system with the possibility to subtract a basic allowance and full social security contributions from taxable income.

##### *One earner married couple with two children*

Sources: OECD Tax Benefit Policies, SPPTW series, OECD Tax Database, Pokorelc (2005), Vodopivec (1995), Vodopivec et al. (2003), Cok and Urban (2005).

Notes: The gross unemployment benefits of couples with two children are identical to that of a single person without children. The benefits are taxable, but because the allowances provided are higher than taxable income, the actual tax levied is zero. The family benefits consist of two separate allowances for the first and second child and are not taxable.

#### References:

Cok, M. and I. Urban (2005), *Distribution of Income and Taxes in Slovenia and Croatia*, mimeo, University of Ljubljana and Institute of Public Finance Zagreb.

Cok, M., J. Sambt, M. Kosak, M. Verbic, and B. Majcen (2011), *Distribution of personal income tax changes in Slovenia*, Institute for Economic Research Working Paper No 57, Ljubljana.

Pogorelc, A. (2005), *Otroski Dodatek in Dodatek za Veliko Druzino V Sloveniji*, University of Ljubljana Faculty of Economics, Ljubljana, may 2005.

Vodopivec, M. (1995), *Unemployment Insurance and Duration of Unemployment: Evidence from Slovenia's Transition*, World bank, Working paper 1552, December.

Vodopivec, M., A. Wörgötter and D. Raju (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, Working paper World Bank, (March), No. 0310.

### 31. Sweden

#### Wages

Wage data are based on recent editions of Taxing Wages. The 2004 and 2010 editions are used for the AW and corresponding tax rates.

#### Unemployment

##### *Single, no children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: Benefits are earnings related. The gross benefits are a fixed percentage of the last earned gross income that is limited to a maximum amount. This maximum amount is reached for every observation in the dataset. Hence, the benefits are equal to the maximum amount.

The taxation system of Sweden contains several components. In order to calculate the tax obligations, first the tax allowances and credits need to be calculated. The basic tax allowance can be calculated with a formula: the maximum relief minus 10 percent of total benefits times a basic allowance which is multiplied by a number; this number depends on the benefit level. Social contributions are fully deductible; they consist of an allowance and a credit.

##### *One earner married couple with two children*

Sources: Prior to 2001 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: There are no differences in gross benefits, taxes or social security contributions for this household type in comparison to the single person case. Only the family benefits are different.

The family benefits are based on a monthly net cash transfer to the family. The allowance is based on a fixed rate for the first and a supplement for the second child.

## 32. *Switzerland*

### Wages

Wage data are based on recent editions of Taxing Wages. The 2004 and 2010 editions are used for the AW and corresponding tax rates.

### Unemployment

#### *Single, no children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: Unemployment benefits for a single person without children are earnings related. The gross benefits consist of a percentage of the last earned gross wage.

Unemployment benefits are subject to federal and local income tax. The federal tax system consists of two allowances which can be deducted from the taxable income. There is a deduction for health insurance, interest on capital and a deduction for professional expenditures. Furthermore, social security contributions can be deducted. These are earnings related. Taxation is based on a bracket system.

The local tax system is almost identical to the federal tax system. Amounts and percentages are different, but the system is the same. Since each province has another own tax system, calculations for the data set are based on the average of the local tax obligations of the provinces.

#### *One earner married couple with two children*

Sources: Prior to 2000 Scruggs; thereafter OECD Tax Benefit Policies.

The gross benefits are calculated differently compared to the situation of a single person without children. The earnings related rate is higher and family benefits are included.

Family benefits are taxable. Therefore, they are added to the gross benefits; together the taxable income.

The calculation of the family benefits is based on the Zurich area: fixed rates for the first and second child. Then, a multiplier is included to calculate national average family benefits.

For a family, taxation is comparable to the single person case, but amounts and rates are somewhat different. Furthermore, child and family supplements are included.

### 33. *United Kingdom*

#### Wages

APW, AW and tax rates after 2000 are from the Taxing Wages series, especially editions 2004 and 2010.

#### Unemployment

##### *Single, no children*

Sources: Prior to 2003 Scruggs; thereafter OECD Tax Benefit Policies.

Notes: There are flat rate unemployment benefits. A single person without children receives a weekly adult Job Seekers Allowance (JSA). Unemployment benefits are taxable, but because the basic tax allowance is higher than the gross benefits, the taxable income is in fact zero.

##### *One earner married couple with two children*

Sources: Prior to 2001 and the year 2002 Scruggs; 2001 and the year 2003 and onwards OECD Tax Benefit Policies.

Notes: Calculations of the gross unemployment benefits for the family case are based on the same principles as for the single person without children. The allowances consist of flat rate allowances for a couple, a family supplement and two times a child supplement. The last two supplements are introduced as a refundable child tax credit. Since the taxable income is negligible due to the basic relief, the child tax credit can be transformed into a benefit.

Family benefits consist of a fixed rate for the eldest child and a lower rate for every subsequent child. The family benefits are not taxable.

### **34. United States**

#### Wages

Wage data are taken from OECD Taxing Wages series, in particular the 2004 and 2010 editions.

#### Unemployment

##### *Single, no children*

Sources: Prior to 2003 Scruggs; thereafter OECD Tax Benefit Policies.

The unemployment benefits are earnings related. The gross benefits depend on the last earned gross wage.

Unemployment benefits are taxable. The taxation system of the U.S. consists of two parts. The federal taxes and state/local taxes.

The federal tax system is a bracket system. Tax allowances include a basic relief and an exemption per person.

State and local taxes are calculated according a similar system as the federal taxes. Local taxes are based on the system of Detroit and consist of a tax rate and an exemption. State taxes are based on Michigan and consist of a fixed tax rate and an exemption.

##### *One earner married couple with two children*

Sources: Prior to 2003 Scruggs; thereafter OECD Tax Benefit Policies.

The gross unemployment benefits for a one earner married couple with children are equal to the benefits of the single person without children. The taxation of the benefits differs due to the levels of the tax allowances and credits.

# ABOUT NEUJOBS

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## 4. “Creating and adapting jobs in Europe in the context of a socio-ecological transition”

NEUJOBS is a research project financed by the European Commission under the 7th Framework Programme. Its objective is to analyse likely future developments in the European labour market(s), in view of four major transitions that will impact employment - particularly certain sectors of the labour force and the economy - and European societies in general. What are these transitions? The first is the **socio-ecological transition**: a comprehensive change in the patterns of social organisation and culture, production and consumption that will drive humanity beyond the current industrial model towards a more sustainable future. The second is the **societal transition**, produced by a combination of population ageing, low fertility rates, changing family structures, urbanisation and growing female employment. The third transition concerns **new territorial dynamics** and the balance between agglomeration and dispersion forces. The fourth is a **skills (upgrading)** transition and its likely consequences for employment and (in)equality.

### 4.1 Research Areas

NEUJOBS consists of 23 work packages organised in six groups:

- **Group 1** provides a conceptualisation of the **socio-ecological transition** that constitutes the basis for the other work-packages.
- **Group 2** considers in detail the main drivers for change and the resulting relevant policies. Regarding the drivers we analyse the discourse on **job quality**, **educational** needs, changes in the organisation of production and in the employment structure. Regarding relevant policies, research in this group assesses the impact of changes in **family composition**, the effect of **labour relations** and the issue of financing transition in an era of budget constraints. The regional dimension is taken into account, also in relation to **migration** flows.
- **Group 3** models economic and employment development on the basis of the inputs provided in the previous work packages.
- **Group 4** examines possible employment trends in key sectors of the economy in the light of the transition processes: energy, health care and goods/services for the **ageing** population, **care services**, housing and transport.
- **Group 5** focuses on impact groups, namely those vital for employment growth in the EU: **women**, the **elderly**, immigrants and **Roma**.
- **Group 6** is composed of transversal work packages: implications NEUJOBS findings for EU policy-making, dissemination, management and coordination.

For more information, visit: [www.neujobs.eu](http://www.neujobs.eu)

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