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UNEMPLOYMENT, INACTIVITY AND ECONOMIC CRISIS: STRESS TESTING THE WELFARE SYSTEMS IN EUROPE

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Unemployment, inactivity and economic crisis: stress testing the welfare systems in Europe

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Abstract: As unemployment rises across the European Union (EU) it is important to understand the extent to which the incomes of the new unemployed are protected by tax-benefit systems and to assess the cost pressures on the social protection systems of this increase in unemployment. This paper uses the EU tax-benefit model EUROMOD to explore these issues, comparing effects in five EU countries. It provides evidence on the differing degrees of resilience of the household incomes of the newly unemployed due to the variations in the protection offered by the tax-benefit systems, according to whether unemployment benefit is payable, the household situation of the unemployed person, and across countries.

***Keywords*:** unemployment, European Union, household income, microsimulation.

JEL: C81, H55, I3

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1. Introduction and motivation

The social impact of the economic downturn faced by European countries since the end of 2008 (OECD 2009), is not easy to anticipate. The consequences of the crisis on the most vulnerable individuals depend on the interaction between their labour market participation, living arrangements and the capacity of the tax and benefit systems to absorb macro-economic shocks.

As unemployment rises it is important to understand the extent to which the incomes of the new unemployed are protected by the tax-benefit system and to assess the cost pressures on the social protection system of this increase in unemployment.

Stress testing is a common practice applied to financial institutions (Jones et al. 2004, Sorge and Virolainen 2006). Applied to social protection schemes it offers the possibility of examining the impact of the loss of income on the living standards of the individuals and on the total cost to the government (Atkinson 2009). Indeed the existence in all European countries of a welfare state (Schubert et al. 2009) that is intended to protect people and their families against economic crisis is one of the main differences between the crisis faced today and that which occurred in the 1930s. However, this in turn leads us to ask some crucial questions: how effective is today's welfare state in providing protection? Are those losing their jobs in fact cushioned against a catastrophic loss of income? Do income-tested benefits stabilise family incomes in the face of a downturn?

Our aim is not to predict what will happen, but to test the resilience of the welfare state with respect to unemployment and the consequent loss of income. The economic crisis may have impact on poverty and social exclusion, which current indicators will have serious difficulties in capturing (Nolan 2009). Our analysis is not a forecasting exercise, which would require, at least, some macro-micro linkage modelling. However, it allows us to illustrate the variation in social impact of potential scenarios across countries and social protection systems (Atkinson 2009).

In due course, survey data collected over the period of increasing unemployment will provide evidence of the evolution of the income distribution and the incomes of the unemployed (Aaberge et al. 2000). Analysis of panel data will show us how incomes change for the new unemployed (Jenkins 2000). The approach taken here provides, in a timely fashion, an indication of these income changes, highlighting the direct cushioning effects of the tax-benefit system rather than those arising from other adaptive changes that the unemployed or other members of their households may make.

The economic downturn affects many dimensions of the economic system. We provide evidence on one important aspect: the implications for the living standards of those most likely to become unemployed over the initial period of economic downturn, exploring the interactions between the circumstances of individual families and the policy instruments in operation. The cushioning effect of contributory and means-tested benefits for the unemployed are identified, along with the effects of other means-tested benefits and tax credits designed to protect families on low income. The role of other household incomes, in the form of earnings of those still in work as well as pensions and benefits received by other household members is considered.

We exploit the information from a representative sample of each national population using data from the European Union Statistics on Income and Living Conditions (EU-

SILC) and the simulation of the tax-benefit instruments in place in each country. This is done using EUROMOD, the EU-wide tax-benefit microsimulation model, which is described in section 2. We consider the effects of tax-benefit systems in protecting the new unemployed in five countries of the European Union: Belgium, Italy, Lithuania, Spain and the United Kingdom. This selection of countries provides examples of cases with large increases in unemployment (as in Lithuania and Spain) and also a range of types of welfare states whose most relevant features are described in section 3. The following section introduces the indicators adopted in the analysis, aiming to capture the resilience of the welfare system in both relative and absolute terms, as well as the budgetary cost implications. Cross country evidence using these indicators is presented in sections 5, 6 and 7. Section 8 concludes.

2. Methodology

Data and approach

Our analysis makes use of EUROMOD, which simulates tax liabilities and benefit entitlements for the household populations of EU Member States. EUROMOD is a multi-country, Europe-wide tax-benefit microsimulation model that provides measures of direct taxes, social contributions and cash benefits as well as market incomes in a comparable way across countries. EUROMOD simulates non-contributory cash benefit entitlements and direct tax and social insurance contribution liabilities on the basis of the tax-benefit rules in place and information available in the underlying datasets. The components of the tax-benefit systems which are not simulated (e.g. benefits which depend on contribution history) are taken from the data, along with information on original incomes. See Sutherland (2007) for further information.[2]

Underlying micro data come from the 2006 EU-SILC[3] with the exception of the UK component which is based on the national 2003/04 Family Resources Survey. The analysis in this paper is based on the tax-benefit rules in place in the 2008 (as of June 30th) which is the most recent policy year currently covered by EUROMOD. Monetary values referring to 2005 (2003/04 for the UK) have been updated to 2008 according to actual changes in prices and incomes over the relevant period.[4] No adjustment is made for changes in population composition between 2006 and 2008.

In this analysis EUROMOD does not take account of any non take-up of benefits or tax evasion. The only exception is Italy for which gross self-employed income has been calibrated in order to obtain an aggregate amount corresponding to that reported in fiscal data (Fiorio and D'Amuri 2006). It is generally assumed, however, that the legal rules are universally respected and that the costs of compliance are zero. This can result in the over-estimation of taxes and benefits.[5] Our results can be interpreted as measuring the intended effects of the tax-benefit systems.

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[2] EUROMOD is currently subject to a major updating process. The aim is to include all EU-27 countries in EUROMOD, using EU-SILC as underlying data, by 2012.

[3] In case of Italy the national version of the EU-SILC has been used because it includes more variables at the necessary level of detail.

[4] This process is documented in EUROMOD Country Reports.

[5] It can also result in the under-estimation of poverty rates although this depends on the relationship between the level of income provided by benefits and the poverty line (potential claimants may be poor whether or not they receive the benefits to which they are entitled). For a comparison of poverty

Baseline systems in EUROMOD have been validated at micro level (i.e. case-by-case validation) and macro level (Figari et al. 2010) and the model has been tested in numerous applications (e.g. Bargain 2006).

A microsimulation approach (Bourguignon and Spadaro 2006) allows us to compute the household incomes of individuals under different scenarios, taking account of the operation of tax-benefit systems and the way they depend on the level of individual market income and personal/household characteristics. Income, after becoming unemployed, is calculated as an annual average assuming the person is unemployed for one year (or the number of months spent in work in the income reference period if these are less than twelve). This captures some of the effects of the variation in duration of unemployment benefit eligibility across countries. However, it is also relevant to measure what would happen after unemployment benefit eligibility is exhausted, and in cases where there is no eligibility. For this reason we make two alternative assumptions about the receipt of unemployment benefits.

First, we simulate the amount received as contributory unemployment benefit (based on reported earnings and under assumptions about contributions made in the past) and any additional income-tested benefits received by the family (i.e. housing benefits, social assistance, in-work benefits and other means-tested support) and reductions in income tax and social contributions; this is the net total support received in the short-term.

Second, we restrict the support to that which a family is likely to receive in the long-term (such as housing benefits, social assistance, in-work benefits), assuming the exhaustion of entitlement to unemployment insurance benefits.

Sample of interest

We focus on a sub-sample of people who are identified from among the currently employed or self-employed in our data as most likely to lose their jobs at the time of the current economic crisis.

The people with the highest risk of becoming unemployed in the initial period of economic downturn are identified using published information from the European Labour Force Survey (EU-LFS) (Eurostat, 2010). The characteristics of the new unemployed are established by comparing the information on the stock of unemployed in the first quarter of 2008 (the last quarter with positive growth for the EU as a whole) with that of the stock in the third quarter of 2009 (the latest available at the time of writing). These changes are identifiable in published statistics by gender, age group (3 categories) and education level (3 categories) while other potentially relevant characteristics such occupation, sector of activity and region of residence are not available. The increase in numbers of unemployed with each combination of characteristics (i.e. within each cell) is calculated and cases selected randomly in the EUROMOD input databases conditioning on gender, age and education as well as currently being in work. The sample of people making the transition from employment to unemployment has the same combinations of characteristics as the new unemployed in the LFS statistics. As shown in Table 1 the increase in the unemployment rate given by the LFS varies widely from one percentage point in Belgium and Italy to 10 points in Lithuania. Once the EUROMOD

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rates estimated using simulated incomes from EUROMOD with those calculated directly from EU-SILC see Ward et al. (2009) and Figari et al. (2010).

data samples have been inflated, the sample size of new unemployed varies from 268 in Belgium to 1,452 in Spain.[6]

An alternative approach would be to re-weight the data to take into account macro-economic changes such as an increase in unemployment rate (Immervoll et al. 2006; Dolls et al. 2009). However such a method has a major limitation related to the focus of this paper. By increasing the weights of households containing unemployed people at the time the survey was collected and reducing the weights of other similar households, in order to keep demographic characteristics and household structures constant, this method implicitly assumes that the new unemployed are like those unemployed at the time of the survey. This can be particularly misleading for two reasons. First, the characteristics of those becoming unemployed at the beginning of the downturn might be different from those unemployed years before. Second, those recorded as unemployed in the data include the stock of long-term unemployed who have already exhausted the unemployment benefits to which the new unemployed might be entitled. In addition, the lack of enough information on how the original EU-SILC weights were constructed prevents us from being able to re-construct them without introducing unknown distortions into the weighted samples.

Table 1 shows the marginal distributions of the characteristics that are used to control the selection of the new unemployed (shaded area) and the differences across countries in other characteristics which might have a relevant impact on the results. Those most at risk of becoming unemployed are more likely to be male (especially in Italy where 78% of the new unemployed are men). In Belgium they are more likely than in the other countries to be younger but educated to a relatively high level. In Spain they are more likely to only have low level educational qualifications, whereas in Lithuania the proportion of older workers is relatively high. The remainder of the table shows some other characteristics of those selected, including whether or not they have children, their household income quintile group before unemployment and the number of people with earnings in the pre-unemployment household.

3. Welfare systems for the unemployed

The countries covered in this paper make use of very different policy packages to support individuals who suffer from unemployment and their families. Continental countries, like Belgium, have a Bismarkian tradition of contribution-financed unemployment benefits with social assistance safety nets. These are less important than in countries, such as the UK, with systems based on the principles of Beveridge and where unemployment insurance is less generous, especially for high earners. Southern European countries, such as Italy and Spain, tend to have a lower level of protection and rely more on informal family support. However, Spain resembles the Continental countries with quite generous unemployment benefits and regional social assistance (Bonoli 1997). Eastern European countries, such as Lithuania, add even more heterogeneity to the European mix of systems. As a result, replacement rates,

[6] The absolute number of new unemployed selected in each country depends on the availability of potential new unemployed within each cell corresponding to the combination of demographic characteristics. In order to maximise the sample size, first we selected the new unemployed from the cell with the lowest number of observations and then we sampled the remaining new unemployed from other cells, maintaining the right proportions.

eligibility requirements, duration and benefit amounts differ considerably across countries (Bertola et al., 2000).

Table 2 shows the main characteristics of the unemployment protection schemes, as of June 30th 2008, which can be classified into unemployment insurance and unemployment assistance benefits. Unemployment insurance is usually the main scheme whose eligibility is based upon contributory history and whose amount depends on previous earnings. Unemployment assistance is not available in all countries and covers those who are not eligible to or have exhausted unemployment insurance on a means-tested basis. Means-testing is usually assessed at the family or household level whereas entitlement to insurance benefits depends on individual contributions. Underpinning these schemes in some countries, Social Assistance schemes provide a guaranteed minimum level of income which is independent of employment status (although able bodied working age people are usually expected to be available for work).

Unemployment benefits are quite generous in Belgium and Spain, both in terms of replacement rate and duration. Belgium provides a replacement rate of around 60%, with minimum and maximum daily amounts and a family component with dependant's additions conditional on the dependant not receiving income in excess of a specified amount. After 12 months reduced amounts are still payable. Means tested Income Support operates as an alternative to unemployment benefits for those not eligible and also as a top-up in cases where unemployment benefit is not sufficient to reach the levels of household income guaranteed by Income Support.

In Spain, the earnings related unemployment benefit is paid at a rate of 70% of the previous earnings, with ceilings. It lasts for between 4 and 24 months, depending on contribution history. There is also a means-tested unemployment assistance scheme which lasts for 6 months with the possibility of extension up to a maximum of 18 months. There is no national social assistance scheme but instead, a series of widely varying regional schemes.

In Italy, only as a result of recent increases in the generosity of the unemployed benefits, the earnings related benefit is paid at a rate of between 40% and 60%, with a ceiling, for up to 8 months or 12 months if aged 50 or more. There is no social assistance at the national level.

The UK system has a low flat amount of contributory benefit (i.e. contributory Job Seekers Allowance) that lasts for 6 months. It can be topped up by a means-tested benefit (i.e. income-based Job Seekers Allowance) for those on low family incomes and this means-tested benefit is also an alternative for those not eligible for the contributory benefit or those who have exhausted entitlement. Low income families who pay rent may also be entitled to Housing Benefit.

In Lithuania, the unemployment benefit is composed of a flat amount plus an earnings related component (40% of insured income). A ceiling was introduced in 2008. The benefit lasts at this level for 6 months, which may be extended at a reduced level, depending on contributory history, for 9 months. Means-tested social assistance acts as an alternative and as a top up.

In all countries unemployment insurance schemes are subject to income tax with the exception of Lithuania. In Spain, the unemployment benefit is also subject to social contributions paid mostly by the social security agency and only a residual part by the unemployed.

In Belgium and Italy, wage supplementation schemes provide an additional compensation for reduced hours of work. However, people brought onto wage supplementation schemes do not count as unemployed in the official statistics. In the simulations, we consider only those losing their jobs and not those retaining any wages and reducing hours of work.[7]

In the simulation of unemployment benefits we faced a number of issues which need to be borne in mind when interpreting the results, First, the duration of unemployment is assumed to be equal to 12 months unless the duration in employment in the income reference period is less (in this case the calculation takes place for the months of employment). Second, the point in time at which the unemployment benefit entitlement is calculated is assumed to be 12 months after becoming unemployed.[8] Third, the contribution history before becoming unemployed is assumed to be equal to the duration of work as reported in the data.

As shown in Table 1, around 90% of the unemployed in Belgium, Spain and Lithuania are judged to qualify for contributory unemployment benefits. Generally, those that are older than the age limit, self employed or have not worked long enough to receive the contributory unemployment benefits make up the remainder. The share is lower and equal to 73% in the UK (where a relatively large share of new unemployed has not worked long enough to qualify) and only equal to 62% in Italy (due to higher relevance of self employed and restrictions to unemployment benefit entitlement for those on temporary contracts).

4. Welfare resilience indicators

We deploy a number of indicators, designed to capture different aspects of the protective effect of tax-benefit systems.

Relative resilience

First, in order to assess the extent to which incomes are protected relative to the pre-shock baseline, we measure household disposable income after the shock as a proportion to that before the shock and call this the Relative Welfare Resilience Indicator (RWRI).

$$RWRI = \left(\frac{Y_{post}}{Y_{pre}} \right)$$

where Y is Household Disposable income made up of Original Income (which includes any form of market and private income, and even in the unemployment scenarios may be positive due to capital incomes, private pensions, inter-household transfers or the earnings of other household members) plus Benefits minus Taxes.[9] Savings could be seen as another channel of self-insurance but given the poor

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[7] In any case, we are unable to simulate these schemes because they depend on the nature of the employer and the contract for which we do not have the necessary information in the EU-SILC.

[8] EUROMOD simulations take into account the interactions of all tax-benefit instruments given the market incomes after becoming unemployed. When some benefits (e.g. Family allowance in Italy) are assessed on the basis of income in previous year (i.e. before becoming unemployed) the changes in their amounts, occurring one year after the unemployment shock, are not captured in the calculations.

[9] This indicator is identical to the Net Replacement Rate (Immervoll and O'Donoghue, 2004).

quality of the underlying data we treat them as one of the components of Original Income without highlighting their specific role.

In analysing the Relative Welfare Resilience Indicator we decompose the effect by income source and explore the composition of post shock household income as a proportion of pre-shock household income:

$$RWRI = \left(\frac{O_{pre}}{Y_{pre}} + \frac{O_{post} - O_{pre}}{Y_{pre}} \right) + \left(\frac{B_{pre}}{Y_{pre}} + \frac{B_{post} - B_{pre}}{Y_{pre}} \right) - \left(\frac{T_{pre}}{Y_{pre}} + \frac{T_{post} - T_{pre}}{Y_{pre}} \right)$$

where O is the Original Income, B is the sum of Benefits and T includes Income Taxes and Social Insurance Contributions paid by employees and the self employed.

Benefits are further decomposed into

- Unemployment benefits, both insurance and assistance schemes
- Social Assistance, including minimum income schemes, housing benefits, means-tested in-work benefits such as the Working Tax Credit in the UK and other residual social assistance benefits
- Other benefits, including contributory old-age and survivors pensions, early retirement benefits, disability and invalidity benefits and family benefits due to the presence of children in the family

The RWRI generally takes a value between zero (if a household does not have any income after the unemployment shock) and 1 (if household disposable income after the shock is equal to the income before the shock). Focusing on the new unemployed, the average RWRI is intended to provide a cross-country indication of the extent of protection of disposable income for those affected by the unemployment shock.[10] We make no judgement about a desirable level of RWRI. The positive and negative effects of generous income protection for the unemployed are the subjects of an extensive literature (Atkinson and Micklewright 1991; Tatsiramos 2009) but are beyond the scope of this paper.

Absolute resilience

The second indicator captures the protection offered in absolute terms, by looking at the extent to which the household income falls below a low absolute income threshold after the unemployment shock.

The Absolute Welfare Resilience Indicator (AWRI) is

$$AWRI = \frac{\tilde{Y}_{post}}{PovLine_{pre}}$$

where $\tilde{Y}_{post}$ is the equivalised disposable income, using the modified OECD scale, after the unemployment shock and $PovLine_{pre}$ is the poverty threshold at 60% of the

[10] In principle the RWRI can also be negative (in presence of negative disposable income due, for example, to losses related to self employment) or greater than 1 (if the support offered by the tax-benefit system to the unemployed is larger than the earnings in the baseline scenario).

median in the pre-shock baseline, used for convenience as a low absolute income threshold.

A value of the AWRI of less than one identifies people who are poor, as conventionally measured using a fixed poverty line. In analysing the Absolute Welfare Resilience Indicator we also distinguish between those affected by a unemployment shock with income already below the threshold in the baseline before the shock ("poor in work"), those falling below as a result of the shock ("at risk") and those remaining above in spite of the shock ("protected").

As with the RWRI we make no explicit judgement about a desired level of the AWRI. However it is implicit, given the clear policy goal of reducing the numbers at risk of poverty, that household income should not fall below the poverty threshold.

Cost of protection

The third indicator is a measure of the budgetary cost to the public budget per person affected by the shock. This includes any increase in net benefit payments and reduction in income taxes and social contributions. It also includes reductions in employer contributions and, where relevant, credited contributions paid for the unemployed. In order to make comparisons across countries, the cost per person is measured as a percentage of national per capita disposable income in the baseline.

5. Relative resilience

The Relative Welfare Resilience Indicator (RWRI) is shown in Table 3. The top panel shows the average value for all the new unemployed, both with unemployment benefit (if eligible) and without.

On average, with unemployment benefits, in Belgium and Spain household income falls to around 80% of its pre-unemployment level. The average RWRI is 68% in Italy, while in the UK and Lithuania it is just over and just under 60% respectively. As expected, without unemployment benefits the average RWRI is lower in all countries showing the role played by the unemployment benefits. In the UK, the contributory unemployment benefit does not offer a more generous protection than the social assistance and the drop is less than 2 percentage points. In the other countries unemployment benefit makes a bigger difference. In particular, in Spain, on becoming unemployed without unemployment benefits, household income falls by a further 25 percentage points, while in Belgium, Italy and Lithuania the additional income loss is between 16 and 19 percentage points.

These averages can be unpicked in a number of ways. First, we consider how the protective effects vary according to the composition of the household, and in particular focus on the case where the person becoming unemployed is the sole earner in the household and no other earned income remains. Next we disaggregate the effects by income component and focus on the particular taxes and benefits providing cushioning effects. Finally we explore how the relative replacement of income varies by household income level before unemployment.

Any earnings that remain in the household will play a major role in maintaining income relative to its pre-unemployment level. This is indicated by the lower values of the RWRI in the bottom panel of Table 3 referring to sole earner households, which are always at least 10 percentage points lower than the corresponding values in the upper panel. The largest differences are found in Italy, where, without unemployment benefits the average single-earner household RWRI is 30 points lower than for the unemployed as a whole. The opposite is true in the UK, where the tax-benefit system provides a household income level for those not qualifying for unemployment benefits equivalent to 51% of pre-unemployment income, only one percentage point lower than the average with unemployment benefits.

Once we disaggregate the RWRI according to income source the protective role of other earnings is evident. Figure 1 shows the components of post-unemployment household income as a proportion of pre-unemployment household disposable income, on average across all the new unemployed and for the sub-group for whom no earned income remains in the household (sole earner households, before unemployment). This confirms the importance of other household original income (mostly earnings: shown as the white sections of the bars) on average for the group as a whole (shown in the first bar of each pair). This makes up at least half of post-unemployment household income in all five countries. Other benefits play a small role. In most cases these are pensions or other benefits received by other household members before and after the new unemployment, although in the UK this also includes means-tested family benefits that increase due to the loss of income on unemployment. Unemployment benefits play a large role in Belgium and Spain, making up 30% and 36% respectively of pre-unemployment household income. They are less important in Italy and Lithuania (21% and 15%). In these countries social assistance plays a small additional role, adding between 5% in Belgium and virtually nothing in Italy. In the UK, however, means-tested benefits are on average the larger source of support: 14% of pre-unemployment income compared with just 4% for contributory unemployment benefits.

For households without remaining earnings the income replacement role of benefits becomes paramount. RWRIs are smaller on average and the effect of remaining original income becomes very small. In sole earner households other benefits and unemployment benefits play a major role, although this is mainly because they make up a larger proportion of a lower pre-unemployment income and not because they are higher in absolute terms. Social assistance increases to fill some of the gap in Belgium, Spain and Lithuania and in the UK it becomes the major source of post-unemployment income (57%), equivalent to 30% of pre-unemployment household income.

The elements of income that have a protective effect vary across the pre-unemployment income distribution, as shown in Figure 2 for all new unemployed (assuming contributory unemployment benefit is payable if entitled). In all countries other household earnings (net of taxes) are important at the top of the income distribution and unemployment benefits play a larger relative role at the bottom. The net effect is that the RWRI varies only slightly with pre-unemployment household income. Aside from the effects arising from the distribution of post-unemployment household original income across pre-unemployment household income quintiles, which shows marked differences across countries, we can make a number of further observations. First, the RWRI rises with income in Italy, with no substantial social assistance scheme protecting incomes at the bottom. It is quite flat in Belgium where the strongly earnings-related unemployment benefits are complemented by social assistance at low income and relatively high taxes at high incomes. In Spain the gradient is also generally quite flat but the RWRI is higher at low pre-unemployment income levels due to regional social assistance schemes (combined with relatively high original incomes). In the UK and Lithuania flat rate unemployment benefits and social assistance combine to provide a lot of targeted support at the bottom resulting in profiles that fall gently with income

However, the cross-country differences evident from Figures 2 may be to some extent affected by differences in the composition of the income quintile groups. In order to control for this and to summarise the main socio-economic characteristics associated with variations in the RWRI, Table 4 shows the results from an OLS regression, where the RWRI of the new unemployed is regressed on their demographic characteristics (gender, age, education and being in receipt of unemployment benefit) and those of their household.

Controlling for other relevant characteristics (including the presence of a partner with positive earnings or other household members receiving old age benefits), the RWRI has a negative association with the pre-unemployment household disposable income quintile group. Individuals living in better off households are less protected in relative terms in particular in Spain, Lithuania and the UK, mainly due to the flat and the means tested components of the unemployment benefits. In Belgium and Italy, where earnings related unemployment benefits are dominant, the downward effects are less relevant and not significantly different across quintiles.

The number of children in the family has a positive association with the extent of protection in the UK, where there is a relatively generous income-responsive family benefit (the Child Tax Credit), which compensates to some extent for the loss of earned income.

The RWRI is significantly higher for the unemployed with an earning partner and there is an additional positive effect if the unemployed person is female (except in Italy). This is what might be expected, given the importance of original incomes as identified in Figure 1, and the fact that the contribution of any remaining earnings is likely to be higher on average if it is the male partner that remains in employment.

Also as expected, being in receipt of unemployment benefit makes individuals better protected in relative terms with the exception of the UK where the effect is not significant. In the UK, if an unemployed person is not eligible to receive the contributory Job Seekers Allowance (JSA) but their family incomes are low enough to be eligible for the means-tested benefit (known as income-related JSA but equivalent to the social assistance, Income Support), there is no effect on their disposable income at the family level. On the other hand, if their income is too high to qualify for Social Assistance the low flat amount of the JSA would not make any substantial difference to the household income.[11]

6. Absolute resilience

Absolute resilience, measured as the ratio of post-unemployment household income to the income level indicated by the poverty threshold is shown for all new unemployed and sole-earners, both with and without unemployment benefit, in Table 5. This shows that in Belgium, for example, the household incomes of the new unemployed as a whole, with unemployment benefit, fall to a level that is on average 1.7 times the poverty threshold. The figure is much lower for unemployed without

[11] However, this analysis at the household level ignores the within-household role of JSA in maintaining individual incomes for the unemployed living with employed partners.

other household earnings and without unemployment benefits: for example 0.27 for Italy. The rankings of countries are largely similar to those shown in Table 3 for the RWRI.

These indicators are averages over all cases and it is relevant to also show how many of the people affected by unemployment fall below the poverty threshold and how many remain above it. Figure 3 shows the proportion with household equivalised incomes below the threshold before unemployment ("poor in work"), those falling below as a result of becoming unemployed ("at risk") and those remaining above in spite of unemployment ("protected"). It shows the situation for all the new unemployed and for the sub-group of sole earner households before unemployment, assuming unemployment benefits are received. First it is worth noting that rates of in-work poverty for those vulnerable to unemployment are quite high in Spain, Italy and Lithuania (over 10%) but much lower in Belgium and the UK (under 4%). In-work poverty risk is higher in all countries for those in one-earner households before unemployment: over 20% in Spain and Lithuania and at least 9% in all five countries. Those at risk of falling below the poverty threshold on becoming unemployed make up between 7% (in Belgium) and 43% (in Italy) of the group as a whole. The figure is 13% in Spain and 31% in Lithuania and the UK. Those whose incomes do not fall below an absolute level equivalent to the poverty threshold are protected by a combination of other household earnings and benefits.

The bars in Figure 3 indicating the effects in sole earner households demonstrate the extent of protection offered by benefits alone (including benefits and pensions received by other household members). In all countries the proportion of this sub-group at risk is much higher. This is especially so in Italy, Lithuania and the UK where the proportion of the group remaining protected is only 9%, 19% and 23%, respectively. The situation is even worse if no unemployment benefit is payable (not shown) with proportions of sole earners protected from poverty falling to 9% in Italy and Spain and 5% in Lithuania. The figure is also much reduced in Belgium (21% compared with 69% with unemployment benefits). In the UK there is no difference in the proportion protected: on the basis of our calculations which assume full take up of social assistance, contributory unemployment benefits are too low in value to play a role in maintaining incomes above the poverty threshold.

Table 6 summarises the extent to which the socio-economic characteristics are associated with the Absolute Welfare Resilience Indicator. As expected, there is a positive gradient between income and AWRI, with the individuals living in better off households being better protected in absolute terms and facing a smaller risk of falling below the poverty threshold as long as they belong, before unemployment, to the upper quintile groups. However, the risk is not significantly different between the first two quintiles in Belgium Lithuania and the UK.

The composition of the household matters, both in terms of number of children and presence of household members with old age benefits. Of course, the effects are due, by construction, to the equivalence scale used in the definition of the AWRI but they are still informative in their association with the level of absolute protection.

The number of children (which reduces the equivalised income of the household) is expected to be associated with a lower absolute protection when the support to families with children has an implicit equivalence scale lower than the equivalence scale used in the definition of the AWRI. The effect is statistically significant in Spain, showing that the public support covers a smaller share of the needs of families with children, captured by the equivalence scale.

The effect of the presence of household members with old age benefits depends on the amounts of these benefits relative to the equivalised household income: their contribution supports the absolute protection of the family as a whole in most of the countries.

The receipt of unemployment benefit guarantees a higher level of absolute protection in all countries, with the exception of the UK given the absence of any substantial difference on average between the amount received as unemployment benefit or social assistance.

7. Cost of protection

The average cost of providing benefits for each new unemployed person (and their dependents) plus the revenue loss from reduced taxes and contributions on pre-unemployment earnings is shown, as a proportion of national household per capita income, in Figure 4. Estimates are shown both without and with unemployment benefit. The difference in the height of the pairs of bars is largely accounted for by the cost of unemployment benefit (net of some social assistance that may substitute when unemployment benefit is not payable and any taxes on unemployment benefit). In Spain the cost of employer contributions increases because the government pays the employer contribution on behalf of the unemployed on benefits (this additional cost is added to the lost contributions paid by employers). In Belgium and Italy the cost related to the loss in revenue from income tax is lower when unemployment benefits are paid because they are taxed. The effect is negligible in Spain and the UK because, even if unemployment benefits are in principle taxable, they are lower than the tax-free allowance. Overall, the average tax-benefit cost of each person becoming unemployed ranges from 93% of national per capita disposable income in the UK (without unemployment benefits) to 234% in Spain (with unemployment benefits). Focussing on the estimates with unemployment benefits, in all countries the bulk of the cost is due to lost (or additional) contributions and taxes, rather than additional benefits. As a proportion of total costs, employer contributions are particularly large and employee contributions particularly small, in Spain and Lithuania. Taxes make the proportionately largest contribution in the UK and smallest in Spain. The cost of benefits is largest in Spain and smallest in the UK.

Figure 5 shows how this average cost varies depending on the pre-unemployment position in the household income distribution, on average across all new unemployed. In all countries the cost per unemployed person is highest at the top of the income distribution largely because lost revenue from taxes and contributions is highest there.

8. Conclusions

We have provided evidence of the implications for the living standards of those most likely to become unemployed over the initial period of economic downturn, exploring the interactions between the circumstances of individual families and the policy instruments in operation. Across European countries there is a huge variety of systems of social protection for the unemployed, ranging from generous earnings related benefits to flat rate low level amounts.

As expected, different countries provide a wide ranging degree of protection of relative household income when a household member becomes unemployed. Assuming individuals are eligible for unemployment benefits, the highest average level of protection is provided in countries characterised by a Bismarkian tradition of contribution-financed unemployment benefits like Belgium and, to some extent, Spain.

However, the factor which plays the major role in protecting the household from a large drop in income is whether there are other people in the household with earnings. If this is not the case then household incomes fall much lower as a proportion of pre-unemployment income. Our analysis highlights the role for adequate minimum income schemes alongside unemployment benefits.

Individuals living in better off households are less well protected in relative terms than those in lower income households where unemployment benefits are characterised or complemented by flat and means tested components, as in Spain, Lithuania and the UK.

It could be argued that guaranteeing a reasonable minimum level of protection for all potentially unemployed people is of higher importance than relative income maintenance for a smaller (and generally higher income) group. On that basis we have shown that there is wide variation in the extent to which welfare systems protect the new unemployed from poverty-level incomes. In none of the countries are all new unemployed protected but generally the risk of falling below the threshold is much lower in Belgium and Spain and higher in Lithuania. Support for families with children in the UK helps to cushion the loss of income, but the absolute level of protection is lower than in the other countries. In the context of concern about growing child poverty in the recession this points to a role for child-targeted support alongside adequate unemployment protection.

As expected, the effects on income (both absolute and relative) are correlated with the cost of benefits for the unemployed. However, our analysis highlights how the direct implications of unemployment for government budgets extend beyond benefit payments to lost taxes and social contributions. We have shown that not only is benefit expenditure a minor part of the total, but also that the cost per unemployed person rises with pre-unemployment income level, due to the increasing effect of income taxes and contributions especially.

Our assumptions as well as the methods employed have some implications for these findings in a number of respects. In particular the reference time period that is assumed for unemployment can have a large effect on the measured importance of unemployment benefits. Our assumptions have been common across countries but the result is to maximise the resilience measures in some countries (such as Belgium) but not in others (such as the UK and Lithuania), because of different durations of maximum unemployment benefit entitlement.

Furthermore, our calculations involve assumptions that conceal some further possible weaknesses in the welfare systems. First, we have assumed that all sources of income are shared equally within the household. Our analysis has not considered directly either the protective role of contributory unemployment benefits for unemployed people with earning partners or the implications for those who are unprotected of becoming dependent on others' incomes. Secondly, we have assumed that entitlements to benefits are always taken up. In the case of a newly unemployed person with access to no other resources this may well be a realistic assumption. But in other cases, perhaps particularly if the household retains a substantial amount of income from other sources, this may be less realistic. In general, it means that the scenarios without unemployment benefit may appear artificially optimistic in terms of what happens to household income, relative to the scenarios with unemployment benefits. This is relevant to some extent on all countries except Italy and in particular it applies to Spain, where our estimates of the regional social assistance schemes are likely to be over-stated. It also applies in the case of the UK to both scenarios, because the means-tested benefit often acts as a top up, even if there is entitlement to the (relatively small) unemployment benefit. However, one can interpret these results as being the best possible outcomes. In practice, to the extent that there is incomplete benefit take-up among the unemployed, the situation may be worse than that represented here.

Nevertheless, we believe that these calculations are informative about the differing degrees to which unemployment has the potential to reduce household incomes, and the extent of resilience of those incomes due to the protection offered by the tax-benefit systems, according to whether unemployment benefit is payable, the household situation of the unemployed person, and across countries.

The analysis presented here can be seen as a first step in a larger research project. First, this paper is the basis for a future comparison of *ex ante* with *ex post* analyses of the crisis which are very likely to appear as soon as longitudinal data for the relevant period become available. Second, a further extension of this paper could consider the optimal degree of government protection during an economic crisis. This could borrow relevant insights from the optimal taxation literature which is usually focussed on a stable economic environment.

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Table 1 Characteristics of the new unemployed

			Belgium	Spain	Italy	Lithuania	UK
Increase in unemployment rate (ppt)			1.2	9.5	1.3	10.3	2.6
Sample size			268	1,452	436	872	959
% Male			53.2	65.3	78.1	71.2	65.9
Age groups %	15-24		47.1	19.6	29.9	24.6	41.8
	25-49		42.5	66.9	48.2	55.5	44.5
	50-74		10.4	13.5	21.9	19.9	13.7
Education level %	Lower secondary		1.1	60.0	29.0	9.0	25.9
	Upper secondary		53.0	22.7	51.1	64.0	49.0
	Tertiary		45.9	17.4	19.9	27.0	25.2
With children %			32.9	43.0	37.6	45.1	38.8
Household income quintile %		Q1	5.5	11.9	13.3	11.5	7.3
		Q2	13.2	17.3	16.4	11.1	13.8
		Q3	16.7	23.3	21.1	21.2	23.9
		Q4	26.6	26.0	21.3	26.5	28.2
		Q5	38.1	21.5	27.8	29.7	26.8
Number of earners %	1		19.9	23.5	29.1	26.7	26.6
	2		57.6	47.7	46.9	50.1	49.6
	3+		22.4	28.8	24.0	23.2	23.8
% with other new unemployed in household			6.3	13.1	1.1	14.4	6.3
% entitled to unemployment benefits			86.7	88.9	61.8	92.5	73.0

Notes: New unemployed are individuals who became unemployed between the first quarter of 2008 and the third quarter of 2009. Shaded cells show characteristics controlled using LFS information on changes. Source: EUROMOD version F2.21

Table 2 Unemployment benefit and Social Assistance schemes at June 30th, 2008

	Schemes		**Contributions conditions**	**Payment rate**	**Duration (months)**	**Tax and SICs**
Belgium	Insurance	Earnings-related benefit (flat rate for young persons); amount depends on family situation	Between 45 weeks in 18 months and 89 weeks in 3 years	Single persons: 60% (from 2nd year 53%). Cohabitants without dependants: 58% (from 2nd year 40%). Lower and upper ceilings	No limit	Benefit is subject to income tax
	Assistance	None				
	Social Assistance	*Minimex*	Means test			
Spain	Insurance	Earnings-related benefit	12 months in 6 years	70% for first 6 months; afterwards 60%. Lower and upper ceilings	From 4 months to 2 years	Benefit is subject to income tax, SICs and Credited contributions
	Assistance	Flat-rate benefit	Generally none with the exception of some allowances	80% of the “Public Income Rate of Multiple Effects”	6 months with possible extension up to 18 months	
	Social Assistance	*Renta Activa de Inserción*	Means test			
Italy	Insurance	Earnings-related benefit*	52 weeks in 2 years	60% (for the first 6 months, 50% for month 7 and 8 and 40% for the rest). Upper ceiling.	8 months (12 months for the those aged >50)	Benefit is subject to income tax
	Assistance	None				
	Social Assistance	None				
Lithuania	Insurance	Earnings-related benefit	18 months in 3 years	Fixed component (€ 83) and variable component based on earnings	From 6 (< 25 years in work) to 9 months (> 35 years in work)	Benefit is not subject to income tax
	Assistance	None				
	Social Assistance	*Socialinė pašalpa*	Means test			
UK	Insurance	Flat rate benefit for all employed and some self employed persons	Contributions paid in one of the 2 years on which the claim is based, with minimum level	From € 46 to € 80 per week	6 months	Benefit is subject to income tax
	Assistance	*Income-based Jobseekers' Allowance (JSA)*	Means test		Unlimited, for those seeking work	
	Social Assistance	*Income support* (for those exempt from seeking work)	Means test			

Notes: SICs: Social Insurance contributions paid by the unemployed. Credited contributions are paid by the social security agency on the Unemployment benefit. * Special schemes in the building sector and after the wage supplementation scheme (*mobilita'*) are not simulated in EUROMOD. Source: MISSOC (2008) and EUROMOD country reports.

Table 3 Average Relative Welfare Resilience Indicator (RWRI) with and without unemployment benefits (UBs)

		Belgium	Spain	Italy	Lithuania	UK
All	with UBs	0.823	0.800	0.677	0.592	0.618
	without UBs	0.664	0.544	0.490	0.430	0.603
Sole earner households	with UBs	0.691	0.700	0.459	0.463	0.526
	without UBs	0.471	0.441	0.159	0.213	0.514

Notes: RWRI is the ratio of household disposable income after and before the unemployment shock
Source: EUROMOD version F2.21

Table 4 RWRI and socio-economic characteristics

	Belgium	Spain	Italy	Lithuania	UK
Male	-0.054***	-0.085***	-0.005	-0.041***	-0.068***
	(0.017)	(0.008)	(0.040)	(0.013)	(0.013)
Age (/10)	-0.291***	-0.040*	-0.337***	-0.252***	-0.190***
	(0.061)	(0.022)	(0.060)	(0.041)	(0.036)
Age square (/100)	0.033***	0.003	0.041***	0.031***	0.020***
	(0.008)	(0.003)	(0.008)	(0.005)	(0.005)
Lower secondary education	-0.084	0.054***	-0.079*	0.064**	0.008
	(0.072)	(0.011)	(0.043)	(0.029)	(0.017)
Upper secondary education	0.040**	0.040***	-0.126***	0.033**	-0.023
	(0.018)	(0.012)	(0.041)	(0.016)	(0.015)
2nd quintile	-0.083*	-0.121***	-0.016	-0.136***	-0.101***
	(0.044)	(0.013)	(0.039)	(0.026)	(0.026)
3rd quintile	-0.090**	-0.142***	-0.044	-0.172***	-0.176***
	(0.044)	(0.013)	(0.039)	(0.024)	(0.025)
4th quintile	-0.085*	-0.154***	-0.068*	-0.269***	-0.208***
	(0.044)	(0.013)	(0.040)	(0.024)	(0.026)
5th quintile	-0.116**	-0.188***	-0.083**	-0.248***	-0.255***
	(0.045)	(0.015)	(0.040)	(0.025)	(0.027)
Dual earner couple	0.135***	0.145***	0.296***	0.221***	0.157***
	(0.024)	(0.009)	(0.024)	(0.016)	(0.015)
No. children	0.007	-0.006	-0.017	0.01	0.043***
	(0.011)	(0.005)	(0.014)	(0.008)	(0.006)
HH in receipt of OldAge benefits	0.067**	0.094***	0.172***	0.140***	0.068***
	(0.027)	(0.010)	(0.024)	(0.014)	(0.018)
In receipt of UB	0.129***	0.172***	0.280***	0.241***	-0.002
	(0.026)	(0.012)	(0.021)	(0.024)	(0.015)
Constant	1.250***	0.765***	1.011***	0.820***	1.081***
	(0.104)	(0.044)	(0.117)	(0.083)	(0.063)
N	268	1452	436	872	959
R^2	0.410	0.394	0.541	0.388	0.347

Notes: * p<0.10, ** p<0.05, *** p<0.01. Standard errors in parenthesis. OLS regression. Dependent variable: Relative Welfare Resilience Indicator (RWRI), ratio of household disposable income after and before the unemployment shock. Sample: new unemployed. Source: EUROMOD version F2.21.

Table 5 Average Absolute Welfare Resilience Indicator (AWRI) with and without unemployment benefits (UBs)

		Belgium	Spain	Italy	Lithuania	UK
All	with UBs	1.716	1.562	1.471	1.404	1.383
	without UBs	1.391	1.062	1.104	1.089	1.348
Sole earner households	with UBs	1.134	1.050	0.781	0.663	0.833
	without UBs	0.732	0.617	0.269	0.315	0.809

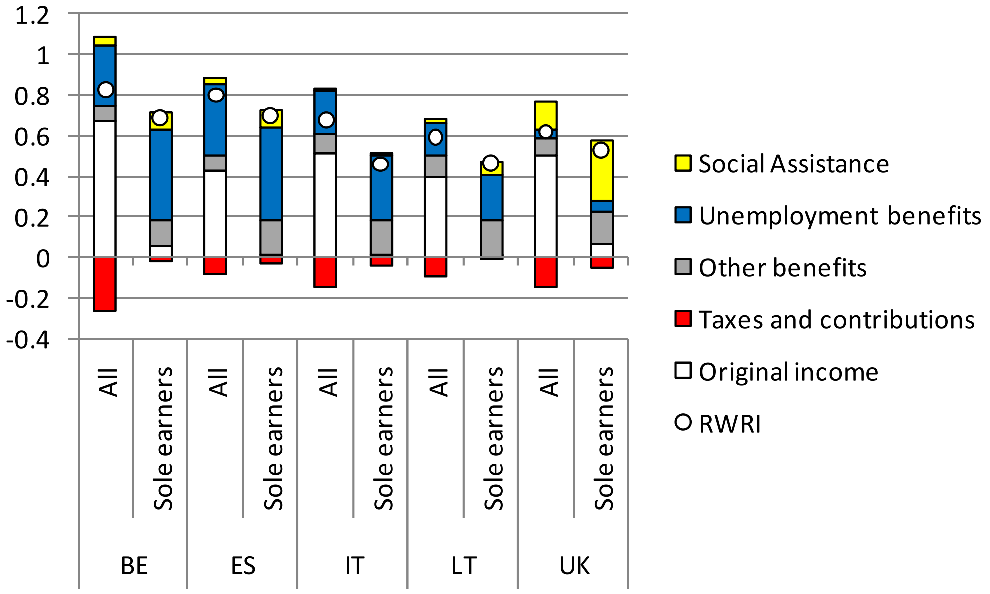
Notes: AWRI is the ratio of post unemployment household income to the income level corresponding to the poverty threshold, measured as 60% of median pre-unemployment equivalised household disposable income. Source: EUROMOD version F2.21

Table 6 AWRI and socio-economic characteristics

	Belgium	Spain	Italy	Lithuania	UK
Male	-0.018	-0.169***	-0.118	-0.089	-0.117***
	(0.057)	(0.022)	(0.128)	(0.059)	(0.038)
Age (/10)	-0.573***	-0.105*	-0.443**	-0.558***	-0.352***
	(0.201)	(0.061)	(0.193)	(0.182)	(0.108)
Age square (/100)	0.065**	0.01	0.052**	0.070***	0.036**
	(0.028)	(0.008)	(0.025)	(0.024)	(0.015)
Lower secondary education	-0.114	0.039	-0.296**	-0.011	-0.127**
	(0.237)	(0.031)	(0.138)	(0.127)	(0.052)
Upper secondary education	0.019	0.006	-0.378***	0.01	-0.133***
	(0.061)	(0.035)	(0.132)	(0.069)	(0.046)
2nd quintile	0.188	0.265***	0.304**	0.094	0.008
	(0.145)	(0.038)	(0.127)	(0.115)	(0.078)
3rd quintile	0.356**	0.535***	0.508***	0.264**	0.109
	(0.144)	(0.037)	(0.125)	(0.108)	(0.075)
4th quintile	0.630***	0.913***	0.857***	0.467***	0.364***
	(0.145)	(0.038)	(0.130)	(0.107)	(0.077)
5th quintile	1.163***	1.610***	1.683***	1.537***	0.902***
	(0.147)	(0.041)	(0.127)	(0.111)	(0.080)
Dual earner couple	0.368***	0.315***	0.625***	0.558***	0.406***
	(0.080)	(0.026)	(0.077)	(0.071)	(0.043)
No. children	-0.018	-0.059***	0.044	-0.011	0.029
	(0.037)	(0.013)	(0.044)	(0.035)	(0.018)
HH in receipt of OldAge benefits	0.084	0.156***	0.363***	0.252***	0.107**
	(0.089)	(0.027)	(0.077)	(0.063)	(0.053)
In receipt of UB	0.287***	0.342***	0.437***	0.463***	-0.041
	(0.087)	(0.033)	(0.066)	(0.108)	(0.043)
Constant	1.566***	0.577***	1.028***	0.935**	1.540***
	(0.342)	(0.125)	(0.377)	(0.369)	(0.188)
N	268	1452	436	872	959
R^2	0.589	0.718	0.631	0.456	0.428

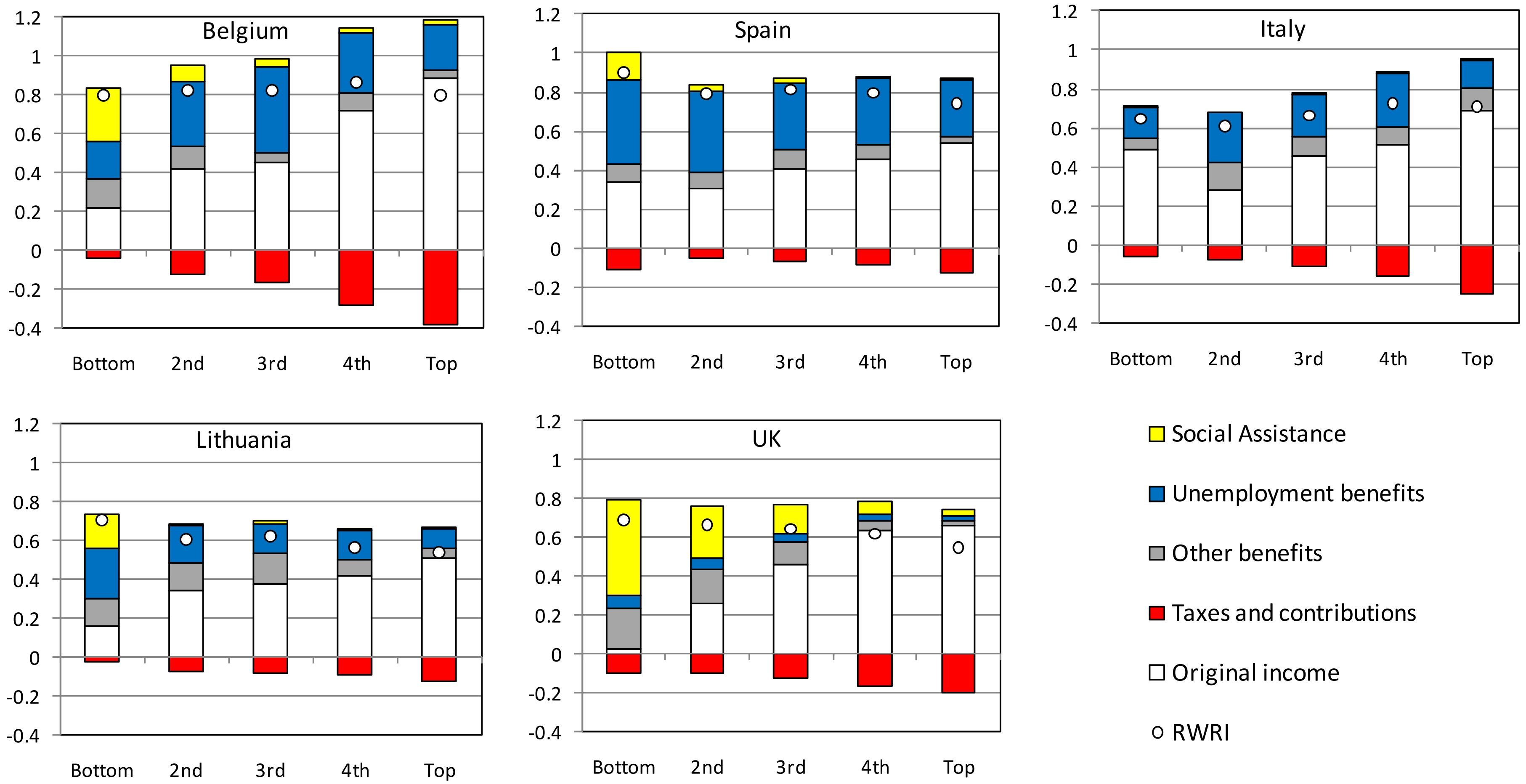
Notes: * p<0.10, ** p<0.05, *** p<0.01. Standard errors in parenthesis. OLS regression. Dependent variable: Absolute Welfare Resilience Indicator (AWRI), ratio of post unemployment household income to the income level corresponding to the poverty threshold, measured as 60% of median pre-unemployment equivalised household disposable income. Sample: new unemployed. Source: EUROMOD version F2.21.

Figure 1 Average Relative Welfare Resilience Indicator (RWRI) and post-unemployment household income composition, with unemployment benefits



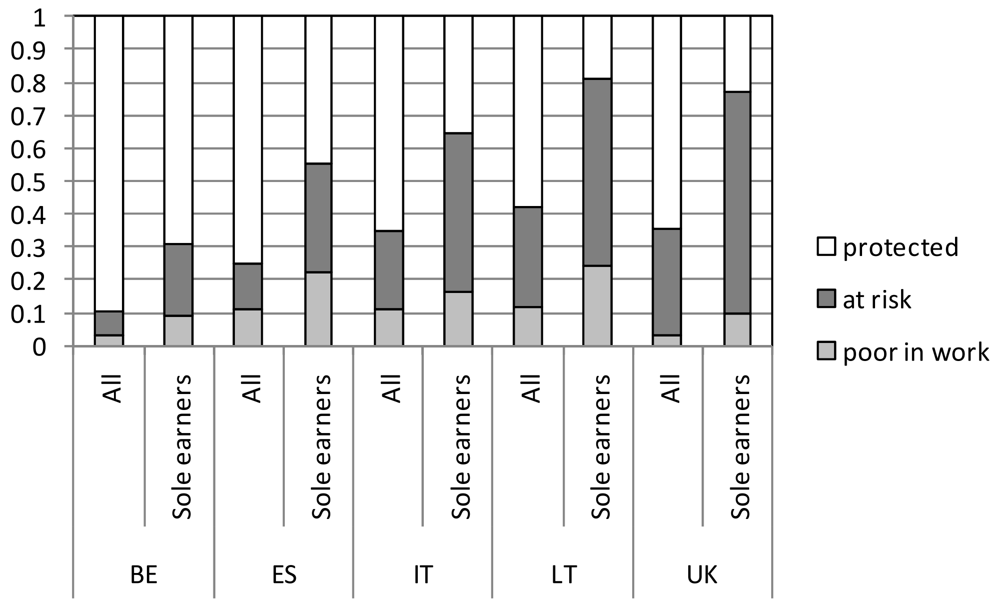
Notes: "Taxes and contributions" include personal income tax, employee social insurance contributions and other direct taxes such as the UK Council Tax and property tax in Italy and Lithuania; "Other benefits" include pensions, family benefits, disability and invalidity benefits; "Social Assistance" includes minimum income payments, housing benefits and means-tested in-work benefits. RWRI is the ratio of household disposable income after and before the unemployment shock
Source: EUROMOD version F2.21.

Figure 2 Average Relative Welfare Resilience Indicator (RWRI) and post-unemployment household income composition by household income quintile group: with unemployment benefits



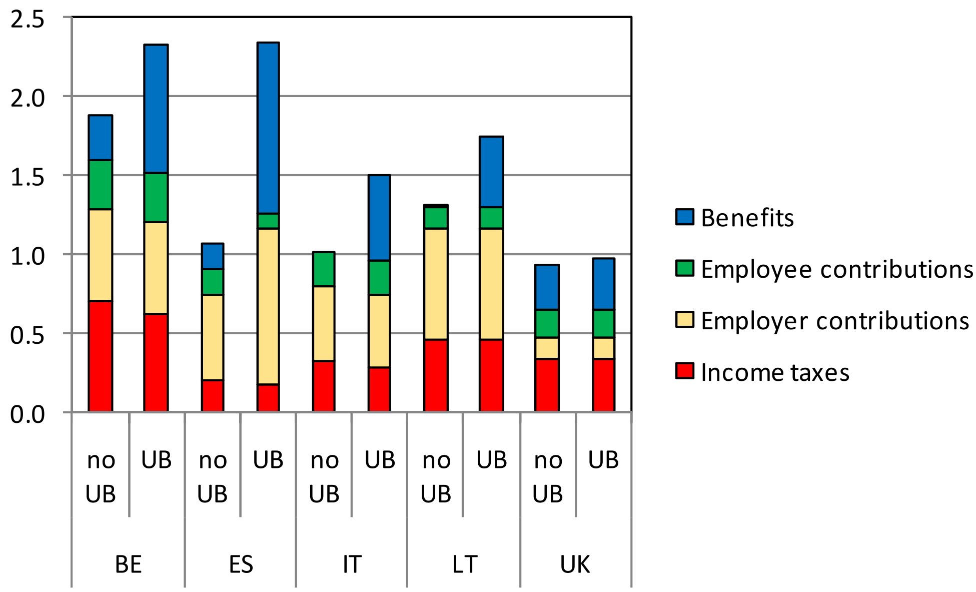
Notes: RWRI is the ratio of household disposable income after and before the unemployment shock. Bars show income as a % of pre-unemployment household disposable income. Source: EUROMOD version F2.21.

Figure 3 The proportion of new unemployed at risk of falling below the poverty threshold, with unemployment benefits



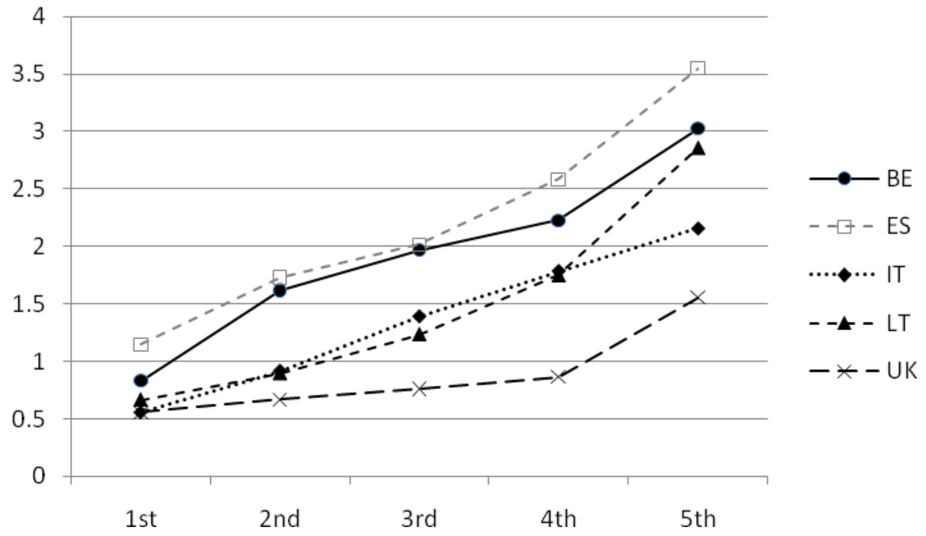
Notes: The poverty threshold is fixed at 60% of baseline median household disposable equivalised income. Source: EUROMOD version F2.21.

Figure 4 Average budgetary cost per unemployed person (as a proportion of per-capita national disposable income)



Source: EUROMOD version F2.21.

Figure 5 Average budgetary cost per unemployed person by pre-unemployment income quintile (as a proportion of per capita national disposable income): with unemployment benefits



Source: EUROMOD version F2.21.