One of the main ways in which governments can influence income distribution is through the system of cash benefits and personal taxes. Taxes tend to be progressive, in the sense that people with higher incomes pay a higher proportion of their income in tax. Benefits may be targeted at the poor or, even if flat rate, they will narrow the proportional difference between the incomes of the rich and the poor. When benefits are paid to people in particular circumstances, these tend to be correlated with low income or greater needs (such as childhood, disability, etc.) or are benefits that are specifically intended to replace income from work (unemployment benefit, pension).

This chapter focuses on the effects of taxes and benefits on income distribution. First, we present some summary measures of the effects of taxes and benefits on income inequality and the composition of disposable incomes, focusing on the redistributive impact of taxes and benefits. The scale of this redistribution varies significantly across countries, depending not only on the extent of social security arrangements and the total personal tax burden, but also on how benefits are targeted and the progressivity of the tax and contribution systems, as well as the distribution of original incomes. Second, we show the absolute differences across countries and by income level in the composition of household income and the relative roles of taxes and benefits of different types. Third, we focus on the two most vulnerable age groups and analyse the income sources available to elderly people, on the one hand, and the support provided through the tax–benefit system to children, on the other. Finally, we consider the effect of taxes and benefits on the risk of poverty for the overall population and the two subgroups previously considered.

The estimates are derived using EUROMOD, a multi-country tax–benefit micro-simulation model, currently covering 19 EU countries — the 15 pre-2004 Member States and Estonia, Hungary, Poland and Slovenia (see Box 7.3, Appendix and Sutherland (2007) for further information). The estimates are based on the latest available policy year for each country, ranging from 2001 to 2005.

1 This chapter draws partly on Paulus et al. (2008).
The effect of taxes and benefits on income inequality

Across European countries, the distribution of original income varies as much as the contribution of tax–benefit systems in reducing inequality levels. Figure 7.1 shows the Gini coefficient for the original income (empty square), original income with public pensions (empty circle), gross income (green diamond) and disposable income (green circle) — see Box 7.1 for income definitions, equalised using the modified OECD scale. The difference between original income inequality and disposable income inequality represents the total redistributive effect of benefits and taxes; alternatively, if one is to exclude public pensions, the total redistributive effect would be limited to the difference between inequality in original incomes plus public pensions, and inequality in disposable incomes.

Box 7.1: Income definitions

Throughout the analysis, **original income** refers to income before taxes are deducted or cash benefits added. It includes earnings from employment, income from self-employment, income from capital, private pension income and transfers from other households (such as alimony and child maintenance). **Gross income** is original income plus cash benefits. **Disposable income** is gross income less taxes. **Taxes** include income taxes and employee and self-employed social contributions, together with other direct taxes customarily included in the concept of disposable household income, such as Council Tax in the UK and Church taxes in Finland. Locally administered income taxes are included along with national taxes, while indirect taxes are not included. **Benefits** include all the main cash benefits and public pensions received by households. In some cases, we divide benefits further into public pensions, means–tested benefits and non–means–tested benefits.

**Public pension income** is defined as restricted to those aged 65 or over (67+ for Denmark, since that was the Danish pension age in 2001) and to benefits specifically intended to provide income during old age or to replace earnings during retirement. Any other pensions paid to younger people or other benefits paid to the elderly are included in one or other of the cash benefit categories, rather than as pension income. We do not consider means–tested old age schemes to be pensions, unless they are an integral part of the pension system. If low pensions are topped up to reach a certain minimum, we count these supplements as pension income. This distinction can be somewhat arbitrary in practice. Other means–tested schemes for the elderly are included as other benefits. Essentially, we try to distinguish state–enforced savings for retirement from public pensions, as one could argue that these should be excluded from redistribution analysis and be considered along with private pensions, which are included in the market income concept.

Entitlement to **means-tested benefits** depends on the amount of other current income and/or capital. These are benefits targeted specifically at those with larger needs or lower resources and, therefore, explicitly involve redistribution. They are distinguished separately, so that we can see whether they in fact achieve more in terms of redistribution than **non-means-tested benefits** — which are usually based on contingencies such as disability, intended for horizontal redistribution (e.g. to children) or as earnings replacement (sickness, maternity/paternity or unemployment).
Inequality in original incomes across these 19 EU countries, measured by the Gini coefficient, ranges from 0.39 to 0.55. The country with the lowest original income inequality is the Netherlands (0.39), followed by Sweden and Austria (both 0.44). At the other extreme, Hungary and Poland have the largest inequality in original income (both 0.55).

Figure 7.1: Income inequality (Gini coefficient) before and after taxes and benefits

In order to reduce inequality of original income, taxes and benefits play complementary roles. Their combined redistributive effect is not strictly correlated with inequality in original income due to the re-ranking of countries when we consider the distribution of disposable income. The total redistributive contribution of taxes and benefits in absolute terms is larger in Hungary (with an absolute change in the Gini equal to 0.27) and Belgium (0.24), and smaller in the Netherlands (0.14) and Portugal, Italy and Ireland (0.15 in each). Considering disposable income, inequality is then lower in the Nordic and the Continental countries (led by Austria, Denmark and Sweden with a Gini of 0.23 in each). Inequality is high, on the other hand, in the Southern European (Greece, Italy, Portugal and Spain) and the Anglo-Saxon countries (the UK and Ireland), with Portugal (0.36) and Italy (0.35) having the most unequal distribution of disposable income. The four Eastern European countries that we consider do not form a distinct group of their own in terms of disposable income inequality. Poland (0.33) and Estonia (0.32) are closer to the high-inequality groups of countries, while Hungary and Slovenia (0.27 in each), in the middle of the ranking in Figure 7.1, are more like the Continental countries in this respect.²

²It should be emphasised that the estimates for (equivalised) disposable income presented here relate to the period 2001–05 and are derived using EUROMOD (version D24), which considers simulated rather than recorded income under the assumption of full benefit take-up (see Box 7.2) and absence of tax evasion. Overall, the results are similar to those presented elsewhere in this book (cf. Chapter 1); however, due to different data sources and income reference periods, there are notable differences for
Benefits are more effective in Poland and Hungary (with Ginis falling by 0.20), while they have a weaker effect in Portugal, Ireland and the Netherlands (with corresponding Ginis falling by 0.10). Although benefits and taxes always have an equalising effect on incomes, the extent to which they contribute to reducing inequality differs significantly across countries. The absolute contribution of benefits (including public pensions) is substantially higher than that of taxes in all countries (see Figure 7.2). Public pensions and other benefits each individually have effects that are comparable in size to those of taxes, and in some cases larger.

Figure 7.2: Original income inequality reduction due to taxes and benefits

Source: EUROMOD
Note: Countries are ranked by the Gini coefficient for (equivalised) disposable income, and estimates apply to various years 2001–05.

Box 7.2: Take-up of benefits

EUROMOD calculations assume 100% take-up of benefits — i.e. that all eligible individuals or families claim the benefits they are entitled to. However, depending on a particular benefit, this can be a rather strong assumption. More often, this tends to be a problem with means-tested benefits (e.g. social assistance) and less of a concern with universal and contributory benefits (e.g. public pensions). There are a number of potential reasons for this: claiming can be costly or have a negative associated image (the so-called 'stigma' effect), or there could be lack of information about entitlements, etc.

In the SSO 2008 research note by Matsaganis et al., the effects on targeting efficiency and poverty measures of incomplete take-up of means-tested

some countries (e.g. Hungary, Italy, Slovenia). Differences in the results might also be affected, though to a lesser extent, by some methodological differences concerning, for example, whether or not households with non-positive incomes are included in the calculations and whether any bottom-/top-coding has been applied to incomes. EUROMOD estimates include all households in the sample without any coding of their incomes. The concern here is not so much with the estimates of income inequality in different countries per se, but with the effect of benefits and taxes on these.
social assistance were studied in five countries (France, Poland, Portugal, Sweden and the UK). Target efficiency was considered according to three measures: vertical expenditure efficiency, measuring the share of benefit received by individuals below the poverty line before the transfer; poverty reduction efficiency, which is the fraction of total expenditure allowing poor individuals to approach or reach but not cross the poverty line; and poverty gap efficiency, measuring the extent to which the transfers succeed in filling the aggregate poverty gap. It was shown that the results for the first two measures differed little between complete and incomplete take-up of the benefits. However, poverty gap efficiency was reduced by 10–50%. The effect on poverty also depended on the measure — head-count ratio (FGT0) and poverty gap (FGT1) did not change much, while the weighted poverty gap (FGT2) increased by 30–75%.

The composition of incomes

The redistributive effect of a tax–benefit system depends on the resources involved, the size and the structure of the various components, and the underlying characteristics of the population in terms of income distribution. Figure 7.3 presents the composition of (unequivalised) disposable incomes at the household level in terms of the average size of each income component as a percentage of average household disposable income. As such, it shows how much market income is necessary, on average, to achieve a given level of disposable income; how much is added as (cash) benefits and deducted as (direct) taxes.

Figure 7.3: Household income composition, whole population

Overall, market income equal to 100% of disposable income means that direct taxes and cash benefits balance each other. Among the 19 EU countries, average household market income ranges from 91% of disposable income (in Estonia) to
131% (in Denmark). In other words, (net) cash support (i.e. benefits less taxes) contributes 9% of household disposable income on average in Estonia, while taxes and contributions exceed benefits on average in Denmark by an amount equal to 31% of average household disposable income.

On the deduction side, income taxes dominate social insurance contributions, except in Greece, France, the Netherlands and Slovenia. Denmark and Sweden tax incomes the most, while Estonia, Ireland and the Southern European countries tax the least. In terms of benefits, the bulk of spending is made up of public pensions and non–means–tested benefits, except in the UK and Ireland, where means–tested benefits are equally important. Public pensions are noticeably low in Ireland, the UK, Denmark and the Netherlands: most pensions are provided through the private sector (except in Denmark). Ireland, the UK, the Netherlands and the Southern European countries have the smallest shares of income from non–means–tested benefits, while Hungary, Denmark, Poland and Austria have the largest shares.

The composition of incomes differs for the rich and the poor across countries because taxes may be more progressive and benefits more targeted on those with fewer financial resources. Some indication is provided by Figure 7.4 and Figure 7.5, which show the same information as Figure 7.3, but for the households in the bottom and the top decile groups of the equivalised disposable income distributions, respectively.

As expected, all types of benefits (and especially means–tested benefits) are much more important for low–income households (Figure 7.4). Net cash support (benefits less taxes) varies from 87% in Ireland and 81% in the UK to 29% of disposable income in Italy and Hungary, and only 20% in Poland.³ Social benefits and pensions represent a share of disposable income varying from 46% in Italy to between 50% and 75% in the majority of countries, over 75% in the Nordic countries and Belgium, and as much as 92% in the UK and 94% in Denmark. Although most income taxes are progressive, people with low income still pay some taxes, particularly in Poland, Denmark and Hungary, where taxes and social insurance contributions together make up as much as 46%, 34% and 33%, respectively, of the disposable income of the poorest decile group.

At the top of income distribution, the relative impact of taxes and benefits on disposable income is reversed (see Figure 7.5). In all countries, the taxes and contributions paid in the top decile group are much greater than the benefits received. The share of social benefits is still relevant in a few countries — 35% in Austria and less than 25% in others — while it accounts for only 2% of disposable income in the UK and Ireland, where social transfers are more targeted on those with low levels of financial resources. Households in the high–income group pay most taxes in Denmark and least in Estonia, along with the Southern and the Anglo–Saxon countries.

³ The results for Poland are partly due to the agricultural tax that is based on imputed earnings from farm land. In our calculations, we do not consider these imputed earnings as part of disposable income, though the tax is taken into account. Therefore, there are a number of households with a significant tax liability compared to disposable income that end up in the bottom of income distribution. In the case of Hungary, the results are influenced by relatively high average social insurance contributions for the self–employed, and further accentuated by a fixed–amount component, making the incidence of contributions rather regressive.
Chapter 7: The Effect of Taxes and Benefits on Income Distribution

Figure 7.4: Household income composition, bottom decile group

Source: EUROMOD
Note: Decile groups are based on equivalised household disposable income, each including 10% of the population. Estimates apply to various years 2001–05.

Figure 7.5: Household income composition, top decile group

Source: EUROMOD
Note: See note for Figure 7.4.
While previous figures focused solely on structural differences in the income composition, Figure 7.6 also shows absolute differences across the income distribution in each income source per person (normalised to the overall average per capita disposable income). The results are presented by quintile groups, which have been constructed on the basis of equivalised household disposable income. Income sources are grouped following the same classification adopted above (see Box 7.1 — but separating private pensions from other market income sources), giving an indication of the relative importance of different market income components and policy measures in different countries.

We can consider all sources of income net of taxes and social contributions — disposable income — by subtracting the negative parts of the bars from the positive. Denmark and Sweden show the smallest difference in disposable incomes between the top and the bottom quintile. By contrast, in the Southern European countries and Poland, the relative income differences between top and bottom quintile groups are more evident.

As expected, original income is distributed more towards the upper end of the income scale, with larger disparities among quintile groups in Denmark, the UK, Portugal, Ireland and Belgium. Among those countries, Denmark and Belgium, together with Germany, Slovenia, Sweden and Hungary show also the largest differences in the tax burden (the negative parts of the bars as a proportion of the positive) across quintile groups, helping to reduce the differences in disposable income between the top and the bottom of the distribution. By contrast, Austria, France, the Netherlands and Hungary are the countries where the relative differences in terms of original income between the first and last quintile groups are least pronounced.

The relative importance of public pensions and other social benefits depends on the distribution of the individuals entitled to receive them and their amount relative to disposable income — factors that vary from country to country. They account for the bulk of the income of individuals in the bottom quintile of the income distribution in the UK (mainly due to means-tested benefits), Denmark, Estonia (due to the contribution of public pension and non-means-tested benefits) and Ireland (due to public pension and means-tested benefits). By contrast, in Hungary, Poland, Greece and Italy, original income contributes significantly to the total income of individuals even in the bottom quintile.

A focus on pension incomes

Figure 7.7 shows the different sources of income in relation to the average per capita disposable income by income quintile in each country for those aged 65 and over. In most of the countries these are at or over the age of retirement, with the main exception of Denmark, where the retirement age in 2001 was 67 years. It also indicates the proportion of the population in this age group in each income quintile (black line).

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4 Incomes here are considered at the individual level. However, where the unit of assessment for a social benefit is not the individual, the benefit is assumed to be split equally between all the adult members of that unit. Also, in countries where tax liability of couples is considered jointly, taxes are allocated to partners in a couple proportionally to their share of the tax base.
A large proportion of the population aged 65 and over falls into the bottom income quintile in most of the countries. The elderly make up as much as 59% of the bottom quintile in Denmark, and 32–39% in Ireland, Finland, Sweden, Belgium and Portugal. As income increases, so the share of the elderly tends to decline. A few countries, however, deviate from this pattern. In Estonia, Germany, Greece and the UK, the largest number of the elderly are found in the quintile second from bottom, while a relatively pronounced ‘inverted U’ pattern is observed in Italy, Luxembourg, Hungary and Poland.

Market incomes contribute significantly to the total incomes of older people in a number of countries (Denmark, Finland, Ireland, Italy, Portugal, the UK and Estonia). As might be expected, the contribution of market incomes is greatest in the top income quintile group, where the population share of the elderly is typically small (in some cases, very small, and therefore gives rise to possible problems of statistical significance). This is less likely to be the case in Italy, where 17% of the elderly are in the top quintile, with net income of almost three times the average, 62% of which is made up of earnings from market sources rather than pensions or social benefits of any kind.

In most of the countries covered, private pensions are virtually non-existent (though it is possible that they are misrecorded in some cases as capital income in the input data). The main exceptions are Sweden, the UK and, most notably, the Netherlands, where 16% of the elderly are in the top quintile group (with disposable incomes twice the average) and receive 84% of their income from private pensions.

Social benefits other than pensions (mainly housing benefits and/or social assistance) make up a small part of the income of the elderly in Austria, Belgium, Slovenia and, most of all, the UK (means-tested benefits) and Denmark (non-means-tested benefits).

Public pensions account for the bulk of income in old age in all countries. In countries with flat-rate schemes and modest second-tier pensions (such as Denmark, Sweden, the UK, Ireland and the Netherlands), public pensions are distributed more or less equally across income quintile groups. On the other hand, in countries featuring strong ‘Bismarckian’ earnings-related schemes (e.g. Austria, France, Germany and the Southern European countries), public pensions are distributed more towards the upper end of the income scale than the lower end. The distribution of public pensions in the Eastern European countries included in the analysis falls somewhere in between.

Figure 7.7 also shows the relative importance of taxes (mainly income taxes) and social contributions paid by those over 65 years of age. In most of the countries, pensions are subject to income tax, but generally higher allowances apply to people in older age groups, resulting in low average amounts of taxes paid, in particular by those in the bottom quintile groups. Due to basic tax allowance and special tax relief for pensioners, the majority of them effectively pay no income tax in Estonia, Slovenia and Finland (if they receive only the state pension). Moreover, public pensions are tax exempt in Hungary, and minimum pension schemes are tax exempt in Belgium, France, Hungary, Italy, Poland and Spain.
Figure 7.6: Income sources per person by quintile group

Source: EUROMOD
Notes: See Box 7.1 for definition of income concepts. Bars show income sources as a proportion of overall average per capita disposable income, by quintile group. Quintiles have been constructed on the basis of equivalised household disposable income of the entire population. Estimates apply to various years 2001–05.
SIC: Social insurance contribution
Figure 7.7: Income sources per elderly person (65+) by quintile group

Source: EUROMOD

Notes: See Box 7.1 for definition of income concepts. Bars show income sources of elderly persons (65+) as a proportion of overall average per capita disposable income, by quintile group. Quintiles have been constructed on the basis of equivalised household disposable income of the entire population. Share of elderly (65+) by quintile group is shown on the right-hand axis. Estimates apply to various years 2001–05. SIC: Social insurance contribution
**A focus on cash support for children**

We now consider the size and distribution of cash support for families with children (aged under 18). We estimate the overall (net) support, differentiating between the instruments that are explicitly targeted at children and those that are not. For that purpose, we define ‘child–contingent income’ as the parts of the tax and benefit system that are due by virtue of the presence of children. This is a broader concept than simply counting benefits labelled as family, child or parental benefits, since some other benefits contain elements for children, and there may be child–related tax concessions. We term the remainder of benefits ‘other benefits’. Furthermore, in both cases we split the net effect into the gross payment and taxes paid on these benefits. Note that child–contingent taxes, i.e. taxes paid on child–contingent benefits, are also net of child–related tax concessions.  

The size of total net payments per child at each point in the income distribution is shown by the lines plotted in Figure 7.8. As in Figure 7.6 and Figure 7.7, the payments have been normalised by the national per capita household disposable income, so that the charts can be compared across countries, and the decile groups are constructed on the basis of national equivalised household disposable income. As one can see, children are not uniformly distributed by household income, so this chart does not indicate the distribution of resources for children across the income distribution. Instead, it shows the relative amounts received for each child, depending on where their household is placed in the income distribution. In most countries, the basic shape of the curves indicates that children in lower–income households receive higher support than do children in higher–income households. This is strongly the case in Denmark and the UK (except the bottom decile). It is also clearly (but less strongly) so in Belgium, Finland, Ireland and Sweden. In Germany and the Netherlands, the payment is particularly large at low incomes and then fairly uniform. It is also fairly uniform, although at a rather different level, in Estonia, Luxembourg, Austria, Portugal and Slovenia. It favours children in the middle–income households in Poland and better–off households in Greece, Spain and Hungary, partly due to the presence of child–contingent tax concessions. It has a rather irregular shape in France and Italy.

There is no particular relationship between the scale of benefits that are contingent on the presence of children and that of benefits that are non–child contingent. They neither complement nor substitute each other in any systematic way. This is also evident in the way the size of both sorts of payment varies by household income level.

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5 We assume that such child–contingent benefits are the ‘top slice’ of the relevant tax base (i.e. subject to marginal taxes). Thus any taxes on child–contingent benefits are computed as the difference between tax paid on all taxable income and tax paid on income without gross child–contingent benefits. Tax on other benefits is computed as the difference between the tax paid on all taxable income less the tax paid on original income, minus the tax on child–contingent benefits. We also assume that all sources of income, including child–contingent payments, are shared equally among household members. See Sutherland and Levy (2005), Sutherland *et al.* (2006) and Figari *et al.* (2007) for results based on an alternative sharing assumption, namely that child–contingent payments are entirely incident on children.

6 See Sutherland *et al.* (2007) for an example using PPP–adjusted euros as the basis for normalisation. The relative ranking of countries was not affected much.
There are often interactions between taxes and benefits, as some benefits might be taxed or their entitlements depend on after-tax income. For some analysis, these interactions can be crucial for the results, and taxes and benefits, as collected in the survey data, will be of very limited use even if they provide otherwise reliable and detailed estimates. Instead, the relevant tax liabilities and benefit entitlements need to be simulated in full detail, based on their statutory rules, to capture their dynamic effects. This is where tax–benefit microsimulation models are the appropriate and valuable tools to be used.

A prime example is when taxes paid on particular income (e.g. employment income or parental benefit) need to be identified in order to derive the net value of the income. For example, in the last section of this chapter we present the effects of both gross and net benefits on the risk of poverty. Although the difference in this case is not large, it does vary across countries and population subgroups. Therefore, for the analysis to be based on comparable measures, benefits should be considered net of the taxes levied on them, and some effort is needed to identify these taxes.

Another more complex situation involves identifying taxes and benefits that are conditional on certain individual characteristics. In this section, we analyse child-contingent payments; in order to identify properly all payments conditional on the presence of a child, it is not enough merely to distinguish benefits on the basis of whether or not they are explicitly targeted at children (e.g. family benefits). This is because other benefits may also contain a child-related component. Furthermore, there might be child-related tax concessions, which must be considered along with any potential tax liability levied on those benefits.

For example, in Belgium the size of child-contingent benefits seems quite uniform across household income decile groups, and it is the relative size of non-child-contingent payments (here including public pension payments) that gives the combination its pro-poor character. At the same time, tax concessions for children seem to favour middle-income households. Something similar can be seen to apply in Finland, although the effect of taxes is rather uniform, and also in the Netherlands, although the taxes (which are, in fact, contributions paid on benefits) have a larger effect at low household incomes. In the UK, both child-contingent benefits and other benefits have a higher cash value for children with low household incomes, and the same applies in Ireland and Germany. In Denmark, non-child-contingent benefits, net of the significant taxes paid on them, are most important for children in the second, third and fourth decile groups, and child-contingent benefits accentuate this distributional effect. However, as is shown in Figure 7.8, there are rather few children in the second decile group in Denmark, suggesting that those that are in this group may belong to households with particular configurations — such as large families — that attract high levels of benefit.
Figure 7.8: Spending per child and the share of children by decile group

% of national per capita disposable income

Source: EUROMOD

Notes: Bars show components of spending per child as a proportion of overall average per capita disposable income, by decile group. Deciles have been constructed on the basis of equivalised household disposable income of the entire population. Estimates apply to various years 2001–05.
Sweden looks rather similar to Belgium in terms of gross payments, with the pro-poor character being introduced by non-child-contingent benefits. However, taxes on both types of benefit are relatively high in all decile groups. In France, and partly in Slovenia, child-contingent benefits are worth less per child at high household incomes, but this is balanced by large child-contingent tax concessions, which to some extent offset the effect. A similar effect is evident in Luxembourg, although here the tax concessions compensate for a falling average value of non-child-contingent benefits as incomes rise. The four Southern European countries have rather undeveloped systems of child-contingent support through benefits. Moreover, these countries have some child tax concessions that benefit children in higher-income households. Estonia, Hungary and Slovenia differ from other countries by also having the highest child-contingent benefits at the top of the distribution, while the amount is rather flat across the rest of the distribution. In Poland, both child-contingent and other benefits are largest for middle-income households.

It is instructive, in order to understand the make-up of child-contingent benefits, to consider their composition according to their source. We use the following categories: family benefits (including, among other things, support for childcare and disabled children), parental benefits, social assistance (including housing benefits) and other benefits, i.e. old age and survivor benefits, health-related benefits, unemployment benefits, etc., which sometimes include child-contingent additions.

**Figure 7.9: Child-contingent cash payments per child by benefit and tax categories**

![Figure 7.9: Child-contingent cash payments per child by benefit and tax categories](source: EUROMOD)

Note: Countries are ranked by the size of the total net payment per child (as a proportion of national per capita disposable income). Estimates apply to various years 2001–05.

Child-contingent benefits (see Figure 7.9) consist, unsurprisingly, on average mostly of family benefits. Parental benefits are of secondary importance, with the largest share in Sweden, Slovenia and Estonia. Social assistance is the third-
largest group of benefits, contributing more to income in France, Germany, Poland, Portugal and the Nordic countries, while the other types of benefit account for only a marginal share (and here are grouped together as ‘other benefits’). Additional support through tax concessions is also at a relatively low level, but nevertheless exceeds support from social assistance on average. In Greece and Spain, it even exceeds the total income from child-contingent benefits, which are very low. The main contribution on the tax side comes in the form of income tax allowances — except in the Netherlands, where most of the effect comes through lower social insurance contributions. Taxes and contributions paid on child-contingent benefits dominate child-contingent tax concessions in the three Nordic countries and Germany. Overall, net child-contingent payments — indicated by the height of the positive parts of the bars less the negative parts — are largest in Hungary (14.9% of per capita disposable income per child), France and Slovenia (12.1% in each) and smallest in Spain (3.1%) and Greece (2.4%).

The effect of taxes and benefits on the risk of poverty

In the following section, we explore the extent to which benefits and taxes reduce the risk of poverty for the population as a whole in each country, as well as for two subgroups — children and elderly people. We distinguish the effect of taxes and benefits by showing how much poverty rates would change if, first, net benefits were excluded from disposable incomes and, second, if gross benefits were excluded, therefore capturing the effect of taxes. In each case, (national) poverty thresholds are held constant at the baseline levels, i.e. 60% of the median equivalised household disposable income.

Figure 7.10 shows the EUROMOD estimates of the risk of poverty among the population as a whole. The risk of poverty, using the standard equivalised household disposable income measures (green triangle), ranges from around 9% in Sweden to 22% in Ireland.\(^7\) The green square markers show how much higher poverty would be if there were no benefits (including public pensions) net of taxes, and the points indicated by empty diamond shapes show the risk-of-poverty rate without gross benefits. It should be emphasised that these figures show the impact of taxes on benefits, not taxes as a whole.\(^8\) For the populations as a whole, all net benefits reduce the poverty risk from 30–50% to 10–20%, depending on the country. Taxes on benefits do have an impact on their poverty-reducing effect in all countries, but the effect is small, exceeding 3 percentage points in only two countries — Sweden (5.7 percentage points) and Denmark (4.3). The poverty-reducing effect of net benefits in aggregate is quite well correlated with the ranking of countries according to the disposable income poverty rate: countries with the lowest poverty rates have benefit systems that achieve most in terms of poverty reduction and vice versa. The highest proportional reduction is achieved in Denmark, France, Austria, Sweden and Belgium, all achieving proportional poverty reduction above

\(^7\)In practice, poverty rates calculated using EUROMOD tend to be either much the same or lower than those from EU–SILC (cf. Chapter 1) and that is to be expected, given that benefit take-up in EUROMOD is assumed to be 100%. The main exceptions are Ireland, the Netherlands and Slovenia, where poverty rates calculated using EUROMOD are higher, but this can be explained by the use of different data sources at different points in time.

\(^8\)It is assumed that benefits represent the top slice of the tax base (i.e. are subject to the marginal tax rate).
that of the 19 countries as a whole, which is 63% (based on the national poverty lines). The smallest proportional reduction is achieved in the Southern European countries and Ireland.

**Figure 7.10:** Poverty rates for whole population based on equivalised household disposable income in the baseline, without net benefits and without gross benefits

Source: EUROMOD
Notes: Countries are ranked by the baseline poverty rate for the whole population, using national poverty lines defined as 60% of median equivalised disposable income; benefits include public pensions. Estimates apply to various years 2001–05.

Figure 7.11 shows the same for elderly people (aged 65+). The risk is lowest in Luxembourg (3%) and highest in Ireland (43%). Not surprisingly, pensioner poverty would be extremely high in all countries without any net benefits (including public pensions). Pensions are, after all, intended to replace market incomes from work and are therefore the main income source for elderly people. However, the presence of private pensions and other market incomes prevents poverty rates reaching 100% in any country, and these, combined with the (assumed) sharing of incomes with other household members, would leave at least 20% of the elderly above the poverty line, even without benefit and public pension payments in Ireland, Italy, the Netherlands, Portugal and the UK. Again, the difference between the poverty-reducing effect of net benefits and gross benefits is rather small (albeit slightly larger than for the population as a whole) — the largest is in Sweden (6.3 percentage points) and Italy (4.9).
Figure 7.11: Poverty rates for elderly people (65+) based on equivalised household disposable income in the baseline, without net benefits and without gross benefits

Source: EUROMOD
Notes: See note for Figure 7.10.

Figure 7.12: Poverty rates for children (0–17) based on equivalised household disposable income in the baseline, without net benefits and without gross benefits

Source: EUROMOD
Notes: See note for Figure 7.10.

Last, we consider child poverty and show, in Figure 7.12, the EUROMOD estimates of the risk of poverty among people aged below 18. Denmark has the lowest rate (6%) and Portugal the highest (28%). Public support plays an important role in child
poverty reduction, even if many children are in households with above-poverty levels of market income. Without net benefits, the child poverty rate would range from 23% in the Netherlands to as high as 51% in Hungary. The proportional reduction in the child poverty rate is largest in the same five countries as for the whole population (Denmark, France, Austria, Sweden and Belgium), which also have the lowest baseline child poverty rates. The additional effect due to taxes on benefits is negligible in most countries, except the Nordic countries.

Figure 7.13: Poverty rates for children (0–17) based on equivalised household disposable income in the baseline, without net child-contingent payments and without total net payments

An alternative perspective on child poverty reduction is provided by Figure 7.13, which shows the effect of net child-contingent payments and total net payments on child poverty. Without net child-contingent benefits and tax concessions, child poverty would be much higher in all countries except Greece, Spain and Portugal, where we have seen that such payments are minimal and are mainly not targeted on low-income households. This is shown by the green square markers. Child-contingent payments offer the most protection, in terms of absolute reduction in poverty risk in France, Hungary, the UK and Austria. The proportional reduction in the child poverty rate is notably large in France (74%). In many countries, the additional effect of other benefits, shown by the empty diamond marker, is relatively small. It is less than 30% of the total poverty-reducing effect in Finland, Hungary, Belgium, Germany, the Netherlands, Luxembourg, the UK and France. However, in Denmark and Poland, non-child-contingent benefits play a role that is similar in scale to that of child-contingent benefits, while in the Southern European coun-

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9 The difference between total net payment in Figure 7.13 and net benefit in Figure 7.12 is due to child-contingent tax concessions, which are included in the former but not in the latter.
tries (except Italy) non–child–contingent benefits have the main effect, although it is modest in size. Child poverty reduction is higher in those countries that have higher child–contingent benefit per child (France, Hungary, the UK, Austria and Luxembourg) (Figure 7.9). However, of those, only in France and the UK do the poorest individuals receive bigger shares of child–contingent benefits, while Hungary, for example, has clearly pro–rich child–contingent benefits (Figure 7.8). This shows that, although the distribution of benefits varies markedly between countries (as noted above), its effect on the extent to which the risk of child poverty is reduced is less straightforward and is likely to be influenced by other factors, such as the location of children in the income distribution.

Concluding remarks

In this chapter, we have analysed the effect of taxes and benefits on income distribution in 19 EU countries. The estimates, related to 2003 or 2005 for most countries, are derived by using EUROMOD and address a number of issues in order to compare the relative size of payments across countries. Moreover, we have explored the effects of benefits and tax concessions that are contingent on the presence of children in the household and have identified the taxes paid on particular benefits, exploiting EUROMOD’s unique capacity to do this.

- Taxes and benefits play a complementary role in reducing income inequalities. The absolute contribution of benefits, including public pensions, is substantially higher than that of taxes in all countries (Figure 7.2). However, the effects are of comparable size if public pensions are considered separately from other benefits. The extent to which all three components contribute to reducing inequality varies significantly across countries.

- There are noticeable differences in the composition of household incomes across countries. In general, a large share of benefits is made up of public pensions and non–means–tested benefits, while income taxes dominate social insurance contributions within the calculation of the overall tax burden (Figure 7.3). While, on average, people with low income pay much less tax (Figure 7.4) and the share of income from benefits is relatively minor for the top of the distribution (Figure 7.5), the tax burden in the bottom of the distribution can still be rather high, and benefits can account for a considerable share of income for the rich households in some countries.

- A large proportion of the elderly population is located in the bottom of the income distribution (Figure 7.7). Their income consists mostly of public pensions, which are usually either distributed equally by income level or are more concentrated in higher–income groups. Other social benefits are rather small and private pensions virtually non–existent (with a few notable exceptions). Although pensions are mostly taxable, due (at least in part) to additional special tax reliefs, average taxes are low.
Support for children is mainly channelled through child–contingent benefits in all countries, with the exception of the Southern European countries (Figure 7.8), which show the lowest levels of support, along with the Netherlands. Generally, child–contingent benefits and other benefits are neither substitutes nor complements for each other in any systematic way. In most countries, children in lower–income households receive higher support than do children in richer households, and this is particularly true in Denmark and the UK.

In some countries, children are also supported through tax concessions that generally have a pro–rich effect. In France, Luxembourg and Slovenia, child–contingent tax concessions compensate for a falling average value of other benefits as income rises. In the Southern countries, the absence of generous child benefits is combined with child tax concessions that benefit children in higher–income households. Taxes and social contributions on child–contingent benefits are generally low and are relevant only in Denmark, Finland and Sweden.

Child–contingent benefits consist mostly of family benefits (Figure 7.9). Maternity benefits are the second largest, followed by social assistance, while all other types of benefit are negligible, when looked at in aggregate. Although child–related tax concessions are allowed at a relatively low level, their size exceeds support from social assistance on average.

Benefits as a whole, when measured net of taxes, reduce the overall risk of poverty from 30–50% to 10–20%. The countries with the lowest rates (Denmark, France, Austria, Sweden and Belgium) have benefit systems that achieve most in terms of proportional poverty reduction, both for the whole population (Figure 7.10) and specifically for children (Figure 7.12). Taxes on benefits do have a small impact on the gross effect (less than 3 percentage points for most countries). Not surprisingly, pensioner poverty would be extremely high in all countries without any net benefits, including public pensions (Figure 7.11). However, at least 20% of the elderly would be above the poverty line even without net benefits in Ireland, Italy, the Netherlands, Portugal and the UK.

Public support plays an important role in child poverty reduction in all countries except Spain, Greece and Portugal (Figure 7.12). Without net benefits, the child poverty rate would reach 23–51% (instead of 6–28%). In most countries, child poverty is reduced mainly by child–contingent benefits. In Denmark and Poland, non–child–contingent benefits have an equally important role, and in the Southern countries (except Italy) non–child–contingent benefits have the main effect.
Appendix

EUROMOD

EUROMOD\textsuperscript{10} is a static tax–benefit microsimulation model that currently covers the 15 pre–2004 European Union Member States, plus Estonia, Hungary, Poland and Slovenia.

The model calculates direct taxes, social contributions and cash benefits on the basis of the tax–benefit rules in place. Instruments that are not simulated are taken directly from the data, as are market incomes. The model takes no account of any failure to take up benefits (see Box 7.2) or any tax avoidance or evasion. It is assumed, therefore, that the legal rules are universally respected and that the costs of compliance are zero. This can result in the overestimation of taxes and benefits.\textsuperscript{11} See Sutherland (2007) for further information.

The datasets that are used in the current version of EUROMOD are shown in the table below. The choice of dataset is based on the judgement of the national EUROMOD experts, who decide which is the most suitable available dataset for scientific research. In most cases, the input datasets of household circumstances refer to a period a few years prior to this, and the original incomes derived from them are updated to this date. This process relies on indexing each income component (which is not simulated) by appropriate growth factors, based on actual changes over the relevant period.\textsuperscript{12} In general, no adjustment is made for changes in population composition. The tax–benefit systems simulated refer to different years in different countries, ranging from 2001 to 2005 (see below Table A7.1 for details).

\textsuperscript{10} See Immervoll \textit{et al.} (1999) and Sutherland (2007) for general descriptions. Sutherland (2001; 2005) provides descriptions and discussions of technical issues. The version of EUROMOD used in this paper is D24.

\textsuperscript{11} It can also result in the underestimation 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 rates estimated using simulated incomes from EUROMOD with those calculated directly from survey data by the OECD or available through the Luxembourg Income Study (LIS), see Corak, Lietz and Sutherland (2005).

\textsuperscript{12} This process is documented in EUROMOD Country Reports, see: www.iser.essex.ac.uk/msu/emod/documentation/countries/
### Table A7.1: EUROMOD latest (version D24) datasets and simulated tax-benefit systems

<table>
<thead>
<tr>
<th>Country</th>
<th>Dataset</th>
<th>Date of collection</th>
<th>Income reference period</th>
<th>Tax-benefit system</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>Belgium Panel Survey on Belgian Households</td>
<td>2002</td>
<td>annual 2001</td>
<td>2003</td>
</tr>
<tr>
<td>DK</td>
<td>Denmark ECHP</td>
<td>1995</td>
<td>annual 1994</td>
<td>2001</td>
</tr>
<tr>
<td>DE</td>
<td>Germany German Socio-Economic Panel Study</td>
<td>2002</td>
<td>annual 2001</td>
<td>2003</td>
</tr>
<tr>
<td>EE</td>
<td>Estonia Household Budget Survey</td>
<td>2005</td>
<td>monthly 2005</td>
<td>2005</td>
</tr>
<tr>
<td>ES</td>
<td>Spain EU-SILC</td>
<td>2005</td>
<td>annual 2004</td>
<td>2005</td>
</tr>
<tr>
<td>FR</td>
<td>France Enquête sur les Budgets Familiaux (EBF)</td>
<td>2000/01</td>
<td>annual 2000/01</td>
<td>2001</td>
</tr>
<tr>
<td>GR</td>
<td>Greece Household Budget Survey</td>
<td>2004/05</td>
<td>monthly 2004</td>
<td>2005</td>
</tr>
<tr>
<td>IT</td>
<td>Italy Survey of Households Income and Wealth</td>
<td>1996</td>
<td>annual 1995</td>
<td>2001</td>
</tr>
<tr>
<td>LU</td>
<td>Luxembourg Socio-Economic Panel (PSELL-2)</td>
<td>2001</td>
<td>annual 2000</td>
<td>2003</td>
</tr>
<tr>
<td>HU</td>
<td>Hungary EU-SILC</td>
<td>2005</td>
<td>annual 2004</td>
<td>2005</td>
</tr>
<tr>
<td>NL</td>
<td>Netherlands Sociaal-economisch panelonderzoek</td>
<td>2000</td>
<td>annual 1999</td>
<td>2003</td>
</tr>
<tr>
<td>AT</td>
<td>Austria Austrian version of ECHP</td>
<td>1998+1999</td>
<td>annual 1998</td>
<td>2003</td>
</tr>
<tr>
<td>PL</td>
<td>Poland Household Budget Survey</td>
<td>2005</td>
<td>monthly 2005</td>
<td>2005</td>
</tr>
<tr>
<td>PT</td>
<td>Portugal ECHP</td>
<td>2001</td>
<td>annual 2000</td>
<td>2003</td>
</tr>
<tr>
<td>FI</td>
<td>Finland Income distribution survey</td>
<td>2001</td>
<td>annual 2001</td>
<td>2003</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom Family Expenditure Survey (FES)</td>
<td>2000/01</td>
<td>monthly 2000/01</td>
<td>2003</td>
</tr>
</tbody>
</table>

**Acknowledgement:** EUROMOD data sources are the European Community Household Panel (ECHP) User Data Base and the EU Statistics on Incomes and Living Conditions (EU–SILC) made available by Eurostat (under contract EU–SILC/2007/03); the Austrian version of the ECHP made available by the Interdisciplinary Centre for Comparative Research in the Social Sciences; the Panel Survey on Belgian Households (PSBH) made available by the University of Liège and the University of Antwerp; the Estonian Household Budget Survey (HBS) made available by Statistics Estonia; the Income Distribution Survey made available by Statistics Finland; the Enquête sur les Budgets Familiaux (EBF) made available by INSEE; the public–use version of the German Socio–Economic Panel Study (GSOEP) made available by the German Institute for Economic Research (DIW), Berlin; the Czech Household Budget Survey (HBS) made available by the National Statistical Service of Greece; the Living in Ireland Survey made available by the Economic and Social Research Institute; the Survey of Household Income and Wealth (SHIW95) made available by the Bank of Italy; the Socio–Economic Panel for Luxembourg (PSELL–2) made available by CEPS/INSTEAD; the Sociaal–economisch pane–londerzoek (SEP) made available by Statistics Netherlands through the mediation of the Netherlands Organisation for Scientific Research — Scientific Statistical Agency; the Polish Household Budget Survey (HBS) made available by the Economic Department of Warsaw University; a sub–sample of Population Census merged with Personal income tax database, Pension database and Social transfers database, made available by the Statistical Office of Slovenia; the Income Distribution Survey made available by Statistics Sweden; and the Family Expenditure Survey (FES), made available by the UK Office for National Statistics (ONS) through the Data Archive. Material from the FES is Crown Copyright and is used with permission. Neither the ONS nor the Data Archive bears any responsibility for the analysis or interpretation of the data reported here. An equivalent disclaimer applies to all other data sources and their respective providers cited in this acknowledgement.