

3. INCOME DISTRIBUTION IN EUROPEAN COUNTRIES: FIRST REFLECTIONS ON THE BASIS OF EU-SILC 2005

3.1. Introduction

OUR AIM IS TO DESCRIBE DIFFERENCES IN INCOME INEQUALITY AND POVERTY ACROSS THE EUROPEAN UNION AND TO INVESTIGATE INTER-COUNTRY DIFFERENCES IN THE EFFECT OF AGE, EDUCATION AND EMPLOYMENT ON THE DISTRIBUTION OF HOUSEHOLD INCOMES.

The first part of this chapter presents comparative estimates of income inequality based on data from the 2005 EU-SILC ('Community Statistics on Income and Living Conditions'). The aim of the chapter is to describe inter-country differences in income inequality across the European Union.⁴²

The second part of the chapter (Section 3.4) investigates inter-country differences in the effect of age, education and employment on the distribution of household incomes by applying static and dynamic decomposition analysis. The main aim is to provide a cross-country comparison of the overall effect of age, education and employment on the distribution of household incomes. Section 3.4.1 describes the methodology of the analysis, and Section 3.4.2 presents the main results.

3.2. Description of inequality and poverty: data and methods

OUR ANALYSIS FOLLOWS THE METHODOLOGICAL FRAMEWORK OF THE EU LAEKEN INDICATORS.

During the European Council meeting held in Laeken in December 2001, the member states adopted an indicator system for monitoring social inclusion processes, elaborated by Atkinson et al. (2002).

We use the methodological framework of the Laeken indicators for the description of inequality and poverty in the EU. When working on empirical studies about inequality and poverty, researchers have to make a number of decisions regarding the methodology of the analysis. The first decision concerns the definition of household income. Researchers have to decide whether it is the disposable net income or the gross income of households that is of interest, and then they have to decide whether to use monthly or yearly income. The second decision researchers must make has to do with calculating individual well-being based on data about income measured at the household level. This decision involves the choice of an equivalence scale. A third decision involves choosing indices for the measurement of inequality and poverty.

THE GINI INDEX IS USED TO MEASURE INCOME INEQUALITY, AND THE RELATIVE POVERTY RATE IS USED TO MEASURE THE EXTENT OF POVERTY.

The income concept adopted in this analysis is – following the methodology of the Laeken indicators – annual net household disposable income, including any social transfers received and excluding direct taxes and social contributions. In inequality and poverty analysis, equivalence scales are used to calculate measures of an individual's income situation from information about household income.

Equivalence scales are used in inequality research to adjust household incomes for differences in household size, taking into account economies of scale in consumption and differences in household composition. Unfortunately, equivalence

⁴² The analysis of income distribution is partly based on: Income Distribution in EU Member States: First Reflections on EU-SILC data, Chapter 1 of the Annual Monitoring Report 2007 of the Network on Social Inclusion and Income Distribution, European Observatory on the Social Situation, December 2007. (See SSO 2007 in the bibliography.)

scales cannot easily be estimated by observing household consumption behaviour, and research studies on inequality or poverty invariably adopt some widely used equivalence scale, such as the scales advocated by the OECD. In this analysis, we use the so-called modified OECD, or OECD II, scale, which assigns a value of 1 to the first adult in the household, 0.5 to additional members above the age of 14, and 0.3 to children under 14. The incomes of all the household members and any other household income are summed, and total household disposable income is adjusted for differences in household size and composition by use of an equivalence scale. The equivalized income thus calculated is then assigned to each household member. The inequality indices reported here are estimated on the basis of these figures.

The Laeken indicators suggest the use of two inequality indicators. One is the S80/S20 index, which is the ratio of the share in total income of those in the top quintile to those in the bottom quintile of the distribution. The other inequality index is the Gini coefficient⁴³ of income inequality. The Gini index can take values from 0 to 1. The Gini index equals 0 when the distribution of incomes is equal in the society, and thus everyone has the same income. The value of the index rises as inequality gets higher, and equals the maximal value of 1 when all incomes are in the hands of one single person. In the case of poverty, the most important index is the relative poverty rate, which shows the proportion of individuals who have less than 60 per cent of the median income. The analysis is based on data from the 2005 EU-SILC.⁴⁴ The database covers all member states, except Malta. The data relate to the population living in private households in the country in question at the time of the

Standard error of estimates. In order to draw policy conclusions from inequality and poverty data, it is essential to take account of the fact that the data are derived from surveys of a sample of households, and inevitably, therefore, they involve some margin of error. The incomes observed are not those of all households, but only of those belonging to the selected sample, which nevertheless is intended to be representative of the total. In order to make meaningful comparisons between countries or over time, it is necessary to allow for the margin of error that arises from the fact of sampling, which can be done by calculating the standard error of the estimates and taking confidence intervals around this. Such standard errors might be based on asymptotic theory or on simulation methods such as the bootstrap. In this analysis, bootstrap standard errors of the Gini coefficient are examined. Confidence intervals are reported on the basis of the 'percentile method', which divides the estimated sample distribution into 100ths, with the lower bound being the 2.5th percentile and the higher bound the 97.5th percentile. (The confidence interval estimates are based on 1,000 replications, and those reported are also corrected for estimation bias.)

⁴³ $Gini = (1/2n(n-1))\sum_{i=1, \dots, n} \sum_{j=1, \dots, n} |y_i - y_j|$, where y_i are individual incomes, n is sample size.

⁴⁴ The present analysis takes into account changes that Eurostat carried out on the EU-SILC 2005 User Database version 1 released on 01/06/07. These changes affect the results on income inequality and poverty for Portugal and Germany.

survey. Those living in collective households and institutions were, therefore, generally excluded. The reference period is the year 2004, except for Ireland, where it is the 12-month period before the date of the interview.⁴⁵

3.3. Description of inequality and poverty: results

3.3.1. Inequality in the EU

We first present countries' rankings according to the Gini coefficient of inequality, and the results regarding changes in inequality in the early years of this decade.

Gini rankings and inequality change

PORTUGAL IS THE MOST UNEQUAL COUNTRY IN THE EU.

THE GROUP OF RELATIVELY HIGH INEQUALITY COUNTRIES CONSISTS OF THE BALTIC STATES, SOUTHERN EUROPEAN COUNTRIES AND ANGLO-SAXON COUNTRIES.

Figure 3.1 shows the rankings of countries according to the Gini index, as well as the 95 per cent confidence intervals around the estimates. Portugal is clearly the country with the highest inequality, with a Gini index of 38 per cent. The new member states of Lithuania, Latvia and Poland form a second group of countries, with Gini coefficients of around 35–36 per cent. A third cluster of relatively high-inequality countries comprises the Southern European countries of Spain, Greece and Italy, the Anglo-Saxon countries of the UK and Ireland and the new member state of Estonia. These countries have Gini indices of above 30 per cent but below 35 per cent. The four Southern European countries, the two Anglo-Saxon countries and the three Baltic states, together with Poland, have relatively high levels of inequality in the EU.

THE COUNTRIES WITH THE LOWEST INEQUALITY ARE SWEDEN, DENMARK AND SLOVENIA.

At the other end of the spectrum, countries with the lowest inequality by this measure include Sweden, Denmark and Slovenia, with Gini indices of below 25 per cent. Between the low- and the high-inequality countries is a large number of countries with Gini indices of above 25 per cent but below 30 per cent. Differences in the indices between countries in this group are often very small, and in many cases the confidence intervals of the estimates overlap. At the lower end of the group

⁴⁵ Non-positive income values – which result from the way that the income of the self-employed is defined, i.e. essentially in terms of net trading profits – have been excluded from the analysis. In order to tackle the problem of 'outliers' (i.e. extreme levels of income reported), a bottom and top coding procedure (or 'winsorizing') was carried out. (Specifically, income values at the bottom of the ranking of less than the 0.1 percentile were replaced by the value of the 0.1 percentile, while at the top of the ranking, values greater than the 99.95 percentile were replaced by the value of this percentile.)

come the Nordic countries, such as Finland, together with the Netherlands. At the higher end of the group are Hungary, France and Cyprus.

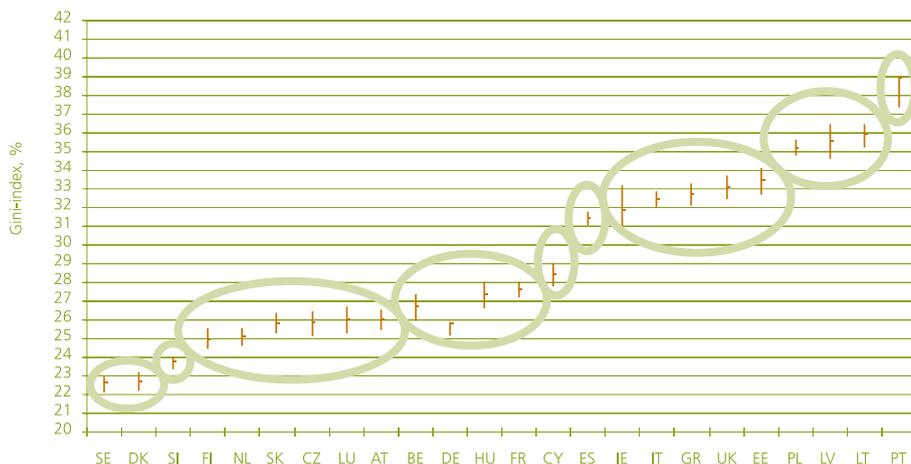


Figure 3.1: Gini indices and bootstrapped 95 per cent confidence intervals

Note: Bootstrap confidence intervals were obtained by 1,000 replications.

Source: own calculations on EU SILC 2005 (2008 March data release).

Since the high-inequality countries in Europe are mainly the relatively low-income transition countries (the Baltic states and Poland) or the Southern European countries (Portugal, Greece), while the low-inequality countries (for example the Nordic countries or Luxembourg) are countries with high incomes, it is not surprising that there is a negative relationship between the level of income and inequality (Figure 3.2).

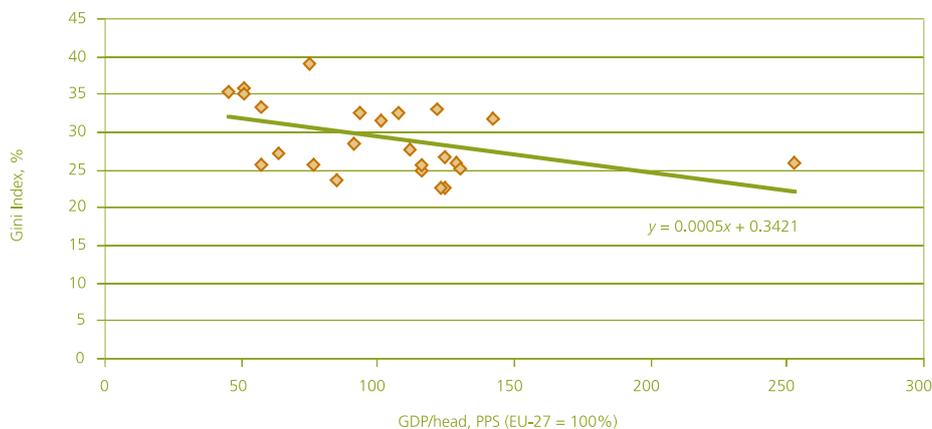


Figure 3.2: Inequality and national income in 2004

Source: GDP data from Eurostat NewCronos database. Inequality figures: own calculations on EU SILC 2005 (2008 March data release).

If we compare Gini coefficients in 2004 with their values at the start of the decade (Figure 3.3) we can see important (more than 10 per cent) increases in Italy, Poland, Lithuania and Ireland. In other countries – such as the UK, Hungary, Latvia, Slovenia, Austria and Germany – inequality increased by a few percentage points. In Sweden, Belgium, Luxembourg, Estonia, Spain and the Netherlands, we observe a decrease of a few percentage points in the Gini index. In the remaining countries there was no significant inequality change. The ranking of countries according to the

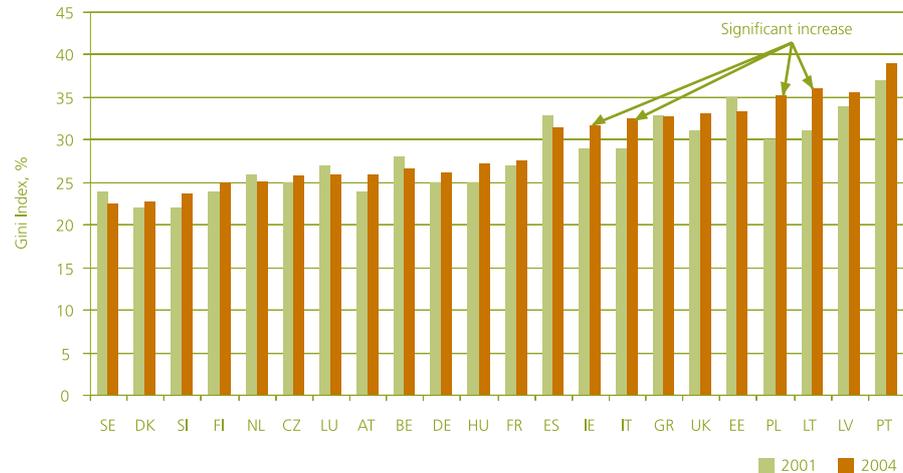
BETWEEN 2001 AND 2004, AN IMPORTANT (MORE THAN 10 PER CENT) INCREASE IN INCOME INEQUALITY WAS DETECTED IN ITALY, POLAND, LITHUANIA AND IRELAND.

Gini index in 2004 shows some minor differences compared to the ranking for 2001. Portugal was also the most unequal country in 2001, but Poland and Lithuania had index values below Spain, Greece and Estonia. The least unequal countries were the same in 2004 as in 2001, while among countries in between the highest and the lowest groups there are a number of smaller differences in the country rankings. It should be emphasized, however, that since the sources of data in the earlier year were different (the European Community Household Panel (ECHP) for EU-15 countries, national sources for others), there is need for caution in interpreting these differences as indicating changes over the period.

Figure 3.3: Gini indices in 2001 and 2004

Note: 2001 Gini indices are from NewCronos. Countries are ranked according to 2004 Gini indices.

Source: own calculations on EU SILC 2005 (2008 March data release).



NO CONSISTENT PATTERN EMERGED IN THE GROWTH–INEQUALITY RELATIONSHIP. COUNTRIES WITH IMPORTANT INEQUALITY INCREASES AND COUNTRIES THAT SHOWED A DECREASE IN INEQUALITY HAD DIVERSE GROWTH AND EMPLOYMENT EXPERIENCES.

We attempted to establish a relationship between changes in inequality and the growth experience of countries. The following table (*Table 3.1*) shows inequality changes (shown by the colour) in countries in different categories of GDP and employment growth. Our expectation was that ‘jobless growth’ was likely to lead to an increase in inequality, since in these cases the main driving force of economic growth is increased productivity, which is likely to raise inequalities in earnings. Our table shows that it is difficult to find consistent patterns in the short-run growth and inequality experience of European countries. Countries where more important inequality increases occurred in this period had diverse growth and employment experiences. For example, Poland and Lithuania had similar growth experiences but different evolutions in employment, and both countries finally ended up with increasing inequalities. Growth and employment experience is likewise diverse in the countries where inequality decreased. For example, inequality decreased in Luxembourg and Spain, which both had a GDP growth rate of 10–15 per cent, but employment was decreasing in the former and increasing in the latter.

GDP growth 2001–04	Change in total employment rate 2001–04			
	Decrease (<-1%)	Small decrease (-1–0%)	Small increase (0–+2%)	Important increase (>+2%)
0–5%	Portugal <i>Netherlands</i>	Germany Denmark		Italy
5–10%	<i>Sweden</i>	Ausztria Finland	<i>Belgium</i> France United Kingdom	
10–15%	Poland	Czech Republic <i>Luxembourg</i>	Cyprus Szlovenia	<i>Spain</i>
15% felett			Hungary Slovakia Ireland	Latvia Lithuania <i>Estonia</i> Greece

Table 3.1: Interrelationships between growth, employment and inequality change

Note: Countries marked orange are those where the Gini index rose by more than 10 per cent between 2001 and 2004. Countries marked green are those where the Gini index rose by 3–10 per cent between 2001 and 2004. Countries marked with italics are those where the Gini index decreased by more than 3 per cent between 2001 and 2004. In countries marked black there was no significant change in the Gini index (change was less than ± 3 per cent). Data on GDP growth and employment are from the NewCronos database.

Income distribution and income structure

The distribution of incomes in individual European member states is shown in *Figure 3.4*. The income distribution of the countries is represented by the average income of each income decile. The income values are shown in Euros at purchasing power parity (PPP), i.e. with cross-country price differences taken into consideration, allowing direct comparisons to be made. The countries are arranged in increasing order of average income.

As can be seen from *Figure 3.4*, there are significant differences in income levels between the EU member states, and a substantial proportion of the income inequality between the citizens of the European Union can be explained by differences in incomes from country to country. Of the EU countries, Lithuania has the lowest standard of living, with an average equivalent income of 5,304 Euros, while the highest average income level (29,153 Euros) is measured in Luxembourg. The former socialist countries cluster together at the bottom of the scale, with average incomes of under 10,000 Euros. As we can see, people in the top decile of the former socialist countries' income distribution have an average standard of living that is typical of the middle class in the developed Western European countries (France, Germany). There are three Southern European countries, Portugal, Greece and Spain, where average incomes fall between 10,000 and 15,000 Euros. One of the former socialist countries, Slovenia, is grouped with them. The largest group of European countries is characterized by average incomes of between 15,000 and 20,000 Euros, and, apart from Luxembourg, average levels in excess of 20,000 Euros are only to be found in the United Kingdom. The figure also gives an indication of income inequalities in the various countries. In countries where relatively high inequalities are a feature, the average incomes of the ninth and tenth deciles are substantially higher than those of the bottom deciles. In Portugal, for instance, the average income of the top decile is more than twice that of the ninth decile and more than three times overall average income.

AMONG THE EU MEMBER STATES, LITHUANIA AND THE FORMER SOCIALIST COUNTRIES HAVE THE LOWEST LIVING STANDARDS, WHILE THE HIGHEST LEVEL OF INCOME WAS MEASURED IN LUXEMBOURG.

Figure 3.4: The income distributions of the countries of the European Union (Euros, PPP)

Source: EU-SILC (2005), recalculations from the 2008 March data release

Note: The bottom of the data bars represents the first decile, the top represents the tenth decile and the marks in between show the average incomes of the individual deciles.



THE NETHERLANDS, DENMARK, SWEDEN AND THE UNITED KINGDOM ARE THE COUNTRIES WITH THE HIGHEST SHARE OF EARNINGS IN HOUSEHOLD INCOME. THE OTHER END OF THE SCALE IS REPRESENTED BY CYPRUS, THE CZECH REPUBLIC, HUNGARY AND IRELAND.

The income of households comes from different sources. Household members may have labour income or capital income from the lease of capital assets; they may earn income as self-employed individuals; and they may receive transfers from the state, civil organizations or private individuals. Households also pay tax on their income and provide transfers. The income types recorded in the EU-SILC database are classified here as follows: wages, capital income, self-employment income, public transfers and direct tax payments. The income composition of the average household is shown in *Table 3.2*. The countries with the highest share of earnings in the total income of the household are the Netherlands, Denmark, Sweden and the United Kingdom. In these countries, gross wages amount to over 100 per cent of the disposable income of the households. At the other end of the scale come Cyprus, the Czech Republic, Hungary and Ireland, where gross wages make up only about three-quarters of household income. The highest share of capital income is to be found in Finland (11 per cent of household income), while capital income accounts for 1 per cent or less in Estonia, Slovenia and Slovakia. The 20 per cent share of income from self-employment that is observed in the Czech Republic and Ireland constitutes the highest among the countries; meanwhile the lowest share of this category of income, only 2 per cent, is found in Estonia. The share of public transfers is one-third or more in Sweden, Poland, the Netherlands, Hungary, Austria, Germany, France and Denmark. Those countries with a relatively small share of public transfers in household income are Cyprus, the Baltic states and the Anglo-Saxon countries. The greatest reductions in gross household income due to direct tax payments are observed in the Netherlands, Denmark, Sweden, the United Kingdom and Belgium, where taxes reduce household income by at least 40 per cent. In Cyprus, Slovakia, the Czech

Republic, Estonia, Lithuania and Ireland, by contrast, only about 20 per cent of income is deducted.

Country	Labour income, %	Capital income, %	Self-employment income, %	Public transfers, %	Taxes, %
AT	81	3	13	35	-33
BE	93	5	13	30	-41
CY	75	4	15	17	-10
CZ	76	2	20	24	-21
DE	81	5	14	35	-35
DK	106	5	10	33	-54
EE	97	1	2	21	-22
FI	88	11	9	32	-39
FR	79	4	10	33	-26
HU	77	2	15	35	-29
IE	76	3	19	24	-21
LT	88	2	9	22	-21
LU	85	5	5	30	-24
NL	115	4	12	35	-66
PL	80	2	14	36	-31
SE	105	5	5	37	-51
SI	95	1	6	30	-32
SK	88	0	6	27	-20
UK	100	5	15	26	-46

Table 3.2: Elements of household income in the European Union, by country (%)

Source: EU-SILC (2005)

Note: In case of Spain, Greece, Portugal, Italy and Latvia only data on net incomes were collected; for this reason these countries do not appear in this table.

3.3.2. Poverty in the EU

The poverty rate used in this part of the analysis is based on the same relative income concept as are the inequality indices. The poverty threshold was set at 60 per cent of median equivalized household income (according to the methodology applied by Eurostat). *Figure 3.5* shows poverty rates across EU countries in 2004.

Figure 3.5: Poverty rates across European countries in 2000 and 2004

Source: ECHP (2000) and EU-SILC (2005) recalculations from the 2008 March data release.

Note: countries are ranked according to year 2004.



THE COUNTRIES WITH THE HIGHEST RELATIVE POVERTY RATES IN EUROPE ARE FROM EASTERN AND SOUTHERN EUROPE, WHILE THE NORTHERN EUROPEAN COUNTRIES ARE TO BE FOUND AT THE OPPOSITE END OF THE RANKINGS.

THE RANKING OF COUNTRIES ACCORDING TO THE POVERTY RATE IS BROADLY SIMILAR TO THE INEQUALITY RANKING AS MEASURED BY THE GINI INDEX.

POVERTY RATES WERE ON THE INCREASE BETWEEN 2000 AND 2004 IN MOST EUROPEAN COUNTRIES.

The countries with the highest poverty rates in Europe are from Eastern and Southern Europe. One-fifth of the total population is estimated to be poor in two of the new member states (Poland, Lithuania) and in two Mediterranean countries (Spain and Portugal), as well as in Ireland. The incidence of poverty is also high in other Eastern and Southern European countries: Latvia, Greece, Italy (19 per cent) and Estonia (18 per cent). The Northern European countries are to be found at the opposite end of the rankings, with poverty rates of around 10 per cent: Sweden (9 per cent), Denmark (11 per cent). The Czech Republic (10 per cent), as an Eastern European country, can also be listed among the low-poverty countries, as can the Netherlands (10 per cent). Other countries, mainly belonging to the group of continental European countries have poverty rates of 12–16 per cent.

The ranking of countries according to the poverty rate is broadly similar to the inequality ranking as measured by the Gini index, but there are some differences. Low-inequality countries are usually also low-poverty countries, and in high-inequality countries poverty also tends to be high, but the actual position of a country within the two rankings can vary. The biggest difference between the inequality and the poverty rankings can be found in Spain. Spain has the third highest poverty rate among the countries studied, but it has the tenth highest inequality. Slovakia, Slovenia and the UK also figure higher in the poverty rankings than in the inequality rankings, while Estonia, Latvia and France are higher in the inequality rankings.

Certain changes occurred in both the magnitude of poverty and the standing of countries between 2000 and 2004; however, these must be interpreted carefully because of the shift in data sources already mentioned. Poverty rates were on the increase during this period in most European countries. The Poles (from 16 per cent to 20 per cent), the Germans (from 10 per cent to 14 per cent), the Lithuanians (from 17 per cent to 20 per cent) and the Latvians (from 16 per cent to 19 per cent) experienced the highest growth in the poverty rate. The most eye-catching exceptions are France (where the poverty rate decreased from 16 per cent to 13 per cent) and the UK (from 19 per cent to 16 per cent). Portugal had the highest poverty rate in 2000 (21 per cent), and the incidence of poverty was also high in Ireland (20 per cent),

Greece (20 per cent) and the UK (19 per cent). The group of countries at the bottom of the rankings in 2000 was very similar to the 2004 group, although in 2000 Germany was also part of that group.

If we compare poverty rates estimated using the OECD II scale to poverty rates based on the OECD I scale, we might conclude that, in most countries, there are no significant differences. The most eye-catching exception is the UK, where the poverty rate calculated using the OECD I scale is much higher than if the OECD II scale is used (21 per cent vs. 16 per cent). In certain other countries the opposite is true – Ireland (18 per cent vs. 20 per cent) and Denmark (9 per cent vs. 11 per cent).

3.3.3. The overall distribution of income in Europe

Income inequalities and poverty within the EU may also be approached by regarding the member states as a single populace and investigating the position of individuals in the overall income distribution of this cross-European populace. *Figure 3.6* shows the income position of the populations of individual countries, relative to the overall European median income.

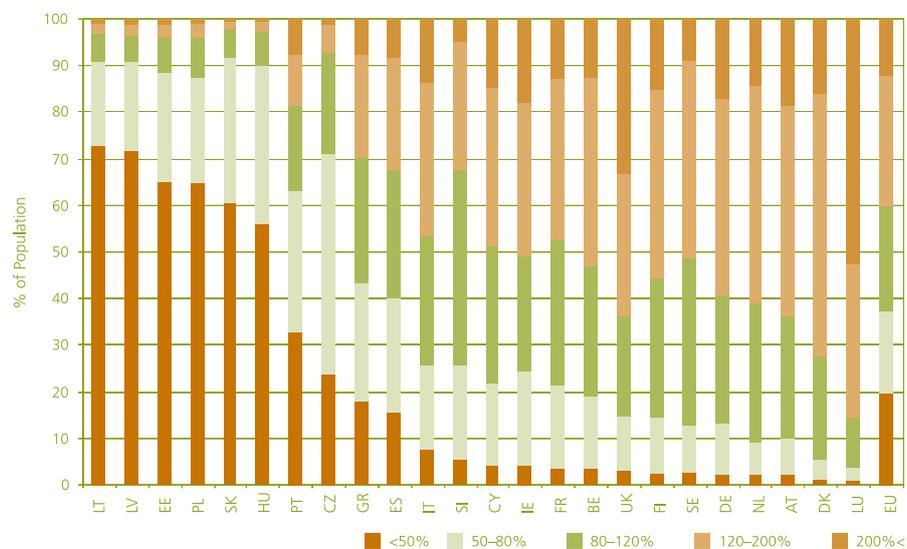


Figure 3.6: The distribution of the population among the different categories of the overall European income distribution by country (%)

Source: EU-SILC (2005)

A fifth of Europe’s populace lives on an income of less than half the European median income. The proportion of those who have an income of between 50 and 80 per cent of the median income is 18 per cent, while 23 per cent of people have an income at about the median level. The income of 28 per cent of the European populace is 20 to 100 per cent higher than the overall European median income, while 12 per cent have an income of at least twice the median.

With the exception of Slovenia and the Czech Republic, the majority of people in the former socialist countries are in the bottom fifth of the European income

A FIFTH OF EUROPE’S POPULACE LIVES ON AN INCOME OF LESS THAN HALF THE OVERALL MEDIAN EUROPEAN INCOME.

distribution. Around 70 per cent of the population of the Baltic states live on incomes of less than half the European median, and the same is true of as many as 56 per cent of households in Hungary. In Luxembourg and Denmark, by contrast, the proportion of those with incomes of below half the overall European median income is under 2 per cent. The majority of people in Luxembourg have incomes more than double the overall European median, and a third of the UK population also belongs in this category.

We have also examined the poverty rates of individual countries relative to a common poverty threshold, which was determined with reference to the relative concept of poverty: specifically, the poverty threshold was set at 60 per cent of the overall European median income. The effects of differences in price levels between the individual countries were controlled for by comparing the incomes achieved in the different countries using the purchasing power parity recommended by Eurostat.

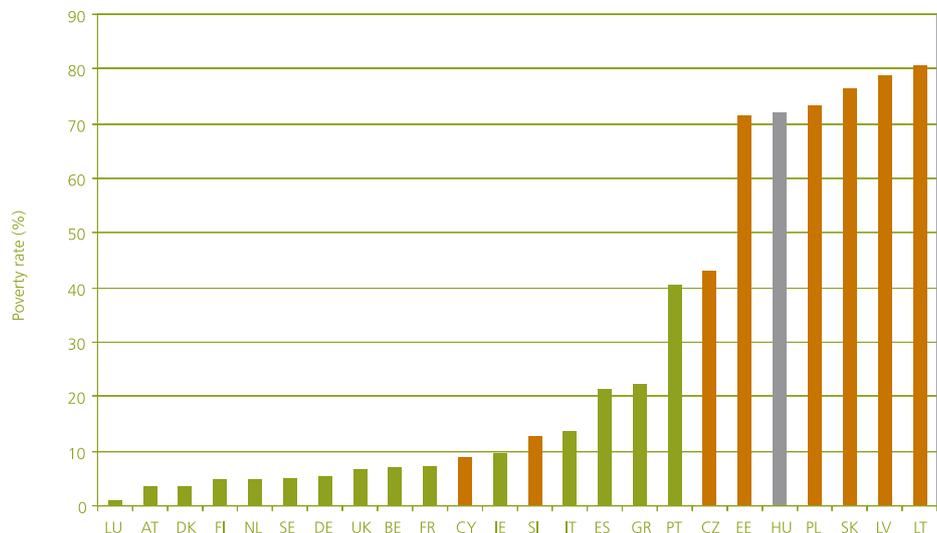
The resulting ranking of the countries is shown in *Figure 3.7*. The gap between absolute income levels is well illustrated by the finding that poverty rates relative to a common poverty threshold are highest by far in the former socialist, new member states of the EU. Lithuania is at the top of the range, with a poverty rate of 82 per cent; but a further five countries (Latvia, Slovakia, Poland, Hungary and Estonia) can 'boast' similarly high rates. The 48 per cent rate measured in the Czech Republic is not too far from the poverty rate in Portugal, which is the country with the highest rate among the old EU-15 member states. The lowest rate is observed in Luxembourg, where less than 3 per cent of the population live on an income below the common European poverty threshold. Austria and Denmark have poverty rates of about 4 or 5 per cent, and Finland, Sweden and the Netherlands around 6 per cent.

POVERTY RATES RELATIVE TO
A COMMON POVERTY THRESHOLD
ARE HIGHEST BY FAR
IN THE FORMER SOCIALIST,
NEW MEMBER STATES OF THE EU.

Figure 3.7: Poverty rates relative to a common European relative poverty threshold in the European Union, by country (%)

Source: Authors' computations based on EU-SILC (2005)

Note: The poverty threshold is defined as 60 per cent of the median of the overall European income distribution.



3.4. The role of age, education and employment in shaping inequalities: decomposition analysis

In this section, we investigate the main driving forces of inequality. As labour income is the most important element of household resources, we study the effect of being in the labour force, as well as the main determinants of earnings: age and education. Human capital theory states that better educated workers enjoy higher wages, which reflects their higher productivity. Workers also accumulate knowledge while working, thus experience is also rewarded with higher wages on the labour market.

It is often argued that increasing inequality of earnings in developed countries is a result of technological change, which uniformly increases the productivity of better-educated workers, relative to the less well educated. If, in the short run, the supply of educated people fails to match the increase in demand, the premium for education will increase. Sudden technological changes might also result in a change in the steepness of the age–earnings profile, in that the education of younger people may be better adapted to the requirements of new technology than the education and skills of older workers. In such cases, there will be greater demand for the well-educated young and less demand for older people, which will result in a less steep age–earnings profile. We study the effect of age, education and employment by applying static and dynamic decomposition of inequality indices. While this methodology is not suited to uncovering true, causal relationships, it is a first step and provides intuition, which remains to be confirmed by more elaborate analysis.

WE INVESTIGATED THE EFFECTS OF INDIVIDUAL CHARACTERISTICS SUCH AS AGE, EDUCATION AND EMPLOYMENT ON INEQUALITY.

DIFFERENCES IN EARNINGS ACCORDING TO EDUCATION LEVEL HAVE INCREASED IN DEVELOPED COUNTRIES OVER THE PAST DECADES.

3.4.1. Methodology of decomposition analysis

When decomposing income inequality, the population is divided into mutually exclusive groups according to some characteristic (age, education, household composition) and we are interested in the share of inequality, which can be attributed to income differences between groups. Some inequality indices are additively decomposable, which means that they can be written as the sum of two components: a weighted sum of within-group inequalities and between-group inequality. A convenient family of additively decomposable inequality indices is the generalized entropy family, which comprises, among others, the mean log deviation (MLD) index. Based on Shorrocks (1980), the MLD index is selected here to perform the calculations. In this case, the effect of the grouping variable on inequalities can be expressed as the ratio of the between-group inequality to total inequality.

In addition to this static decomposition, a decomposition of intertemporal change in inequality was also carried out following the methodology used in Mookherjee and Shorrocks (1982). This method decomposes the change in inequality in three

components. The first is a ‘pure’ effect of inequality increase – that is, the effect attributable to increase in within-group inequalities. The second component is the effect of structural change due to change in relative population shares of the various subgroups, while the third component measures the effect of change in relative mean incomes of the various subgroups. For a clearer understanding of decompositions by various dimensions, it is useful to show changes in *relative* terms: the change of inequality between the two periods as a percentage of the value measured in period.

The data used for the dynamic decomposition analysis come from the ECHP, year 2000, and from EU-SILC (2004). It is important to bear in mind that the two surveys differ to some extent in their methodologies,⁴⁶ and thus results regarding changes should be interpreted with caution. The analysis is carried out on the distribution of equivalized⁴⁷ household income. Variables used for grouping in the decomposition analysis are based on the attributes of the (assumed) head of the household in which respondents live. Since no household head is defined in EU-SILC, this is taken to be the oldest man of active age (between 18 and 64 years). If there is no active-age man, then the oldest active-age woman is taken as the household head instead. If there are no active-age members in the household, the oldest man of 65 or older is taken as the household head (or the oldest woman if there is no man). The same definition of household head has been applied to the ECHP database. For simplicity of analysis, the attributes of the household head are assumed to apply to all household members. The necessary provisos implied by this have been emphasized above.

3.4.2. Results of decomposition analysis

First we present the results of the static decomposition analysis; the results of decomposition of changes in inequality follow in the second part of the section.

The role of age, education and employment in shaping inequalities

We first describe the results of static decomposition analysis for each explanatory factor, and then we summarize the results by reviewing the importance of the explanatory factors by country group.

The role of the age of the household head. In general, age is a less important factor in explaining inequalities than is the education or employment of the household

AGE DIFFERENCES ARE MOST IMPORTANT IN THE NORDIC COUNTRIES AND CYPRUS.

⁴⁶ On the difference between the methodologies of the surveys see Eurostat (2005).

⁴⁷ The OECD II equivalence scale is used. The first household member older than 14 years of age equals one consumption unit. Additional household members older than 14 years of age count as 0.5 consumption units, while household members younger than 14 equal 0.3 consumption units.

head. With the exception of five countries, age differences account for less than 5 per cent of total inequality, as measured using the MLD index. Age differences are most important in the Nordic countries and Cyprus. In Denmark, the component of inequality between groups defined by age is 13 per cent of the total, in Sweden it is 10 per cent, and Finland likewise show percentages that are higher than most other countries. In Cyprus, age accounts for 8 per cent of total inequality. On the other hand, in countries such as Poland, Luxembourg, Portugal, Austria, Hungary and Greece, age of the household head only explains 0–2 per cent of total inequality.

Age differences might arise if the age–earnings profile is steep and so income differences between older and young employed people are considerable. Another possible source of income difference by age is related to the pension system. Low coverage, a low replacement rate or inadequate indexation of pensions might lead to the incomes of retired people lagging behind the incomes of active-age people. In countries with a high between-group effect of age, income differences both between active-age groups and between active-age people and retired people are important. In Denmark, the incomes of those aged 50–64 years are 41 per cent higher than of those aged 18–35, and 56 per cent higher than the income of the retired. Sweden also shows a similar pattern. In Cyprus, it is low incomes among the elderly that drive the results. The average income of those aged above 65 years is only 66 per cent of the national average income, which means that the relative income situation of the elderly in Cyprus is the worst among the countries surveyed in EU-SILC. The relative incomes of the elderly are also low in the Baltic states and in the Anglo-Saxon countries, especially Ireland. In contrast, the elderly enjoy a relatively favourable income position in Austria, France and the Netherlands, where their average income is close to the national average or even slightly above it, as in Poland.

The role of education of the household head. In general, education is more important in explaining income differences than is age, but the role of education differs greatly among the European countries. In some of the countries, education accounts for less than 10 per cent of income inequality, as measured by the MLD index. This is the case for Nordic countries such as Denmark and Sweden, and for continental countries such as Austria, Germany and France. In a second group of countries, education accounts for 10–15 per cent of income inequality. In this group we find the continental countries of the Netherlands and Belgium, the Mediterranean countries of Italy and Spain, and the transition countries of the Czech Republic, Latvia and Estonia, together with Finland and the UK. The group of countries where the between-group effect of education is higher than 15 per cent comprises the Mediterranean countries of Portugal, Cyprus and Greece, and the transition countries of Hungary, Lithuania, Slovenia and Poland, plus Luxembourg and Ireland.

Income differences between educational groups can be important at both ends of the educational distribution. The relative incomes of the poorly educated are lowest in the UK, Lithuania, Estonia, Latvia, the Czech Republic and Poland. In these countries, the average income of those with primary education is around 70 per cent of the national average. The average income of those with tertiary education is highest in Portugal, where the income of those with a university degree exceeds the national average income by 226 per cent. The relative income of those with tertiary education is also high in Poland, Latvia, Lithuania, Hungary, Slovenia and Italy, where average income exceeds the national average by 60 per cent.

IN COUNTRIES WITH A HIGH BETWEEN-GROUP EFFECT OF AGE, INCOME DIFFERENCES BOTH BETWEEN ACTIVE-AGE GROUPS AND BETWEEN ACTIVE-AGE PEOPLE AND RETIRED PEOPLE ARE IMPORTANT.

INCOME DIFFERENCES BY EDUCATION LEVEL ARE MOST IMPORTANT IN SOME OF THE MEDITERRANEAN AND EASTERN EUROPEAN COUNTRIES.

THE RELATIVE INCOMES OF THE POORLY EDUCATED ARE LOWEST IN THE UK, THE BALTIC STATES, THE CZECH REPUBLIC AND POLAND.

COUNTRIES WHERE INCOME DIFFERENCES ACCORDING TO EMPLOYMENT STATUS ACCOUNT FOR MORE THAN 10 PER CENT OF INEQUALITY ARE THE BALTIC COUNTRIES, THE ANGLO-SAXON COUNTRIES, FINLAND, DENMARK, AS WELL AS BELGIUM AND THE CZECH REPUBLIC.

THE GREATEST DIFFERENCE BETWEEN THE AVERAGE INCOME OF THE EMPLOYED AND THE ACTIVE-AGE INACTIVE IS TO BE FOUND IN THE ANGLO-SAXON AND BALTIC COUNTRIES.

THE ANGLO-SAXON AND THE BALTIC COUNTRIES SHOW SIMILAR STRUCTURE OF INEQUALITY, WITH A HIGH EFFECT OF EDUCATION AND EMPLOYMENT AND LOW EFFECT OF AGE. CONTINENTAL, CENTRAL EUROPEAN AND MEDITERRANEAN COUNTRIES ARE SIMILAR TO EACH OTHER, IN THAT EDUCATION IS THE MOST IMPORTANT FACTOR IN EXPLAINING INEQUALITIES.

The role of employment status of the household head. There is also considerable variability in the effect of the employment status of the household head. In some countries, income differences according to employment status account for less than 5 per cent of income inequality. These include continental countries such as France, Austria, the Netherlands and Luxembourg, as well as Southern European countries such as Italy, Greece, Portugal and Cyprus. In the second group (5–10 per cent income inequality) we find Central European transition countries like Poland, Slovakia, Slovenia and Hungary, plus Sweden, Germany and Spain. Among countries where the role of employment is above 10 per cent, we find the Baltic countries, the Anglo-Saxon countries, the Nordic countries of Finland and Denmark, as well as Belgium and the Czech Republic.

The greatest difference between the average income of the employed and the active-age inactive is to be found in the Anglo-Saxon and Baltic countries. In those countries, the average income of the employed exceeds the national average income by 16 per cent, while the income of the inactive is around 60 per cent of the overall mean income. The income of the employed is also relatively high in the Czech Republic, Germany, Denmark, Finland and Poland. We find low income among the inactive in the Czech Republic, Belgium and Denmark.

Summary of static decomposition analysis. In order to summarize the static decomposition analysis, we created six country groups and calculated the averages of between-group effects for each country group. The groups considered were: the Nordic countries (Sweden, Denmark, Finland), the Mediterranean countries (Portugal, Spain, Italy, Greece and Cyprus), the continental countries (France, Germany, Belgium, the Netherlands, Luxembourg, Austria), the Anglo-Saxon countries (United Kingdom and Ireland), the Central European countries (Poland, the Czech Republic, Slovakia, Slovenia, Hungary) and the Baltic states (Lithuania, Estonia and Latvia). The results are displayed in *Figure 3.8*.

The Anglo-Saxon and the Baltic countries show similar structures of inequality, with a high effect of education and employment and low effect of age. The Nordic countries form another distinctive group, where age, education and employment all have a similar effect on income inequality – around 10 per cent. Continental, Central European and Mediterranean countries are similar to each other, in that education is the most important factor in explaining inequalities. In the case of Central European and Mediterranean countries, the effect of education is stronger than in the case of continental countries. Employment is also important in the case of continental and Central European countries, but among Mediterranean countries the effect of employment status is similar to that of age – below 5 per cent.

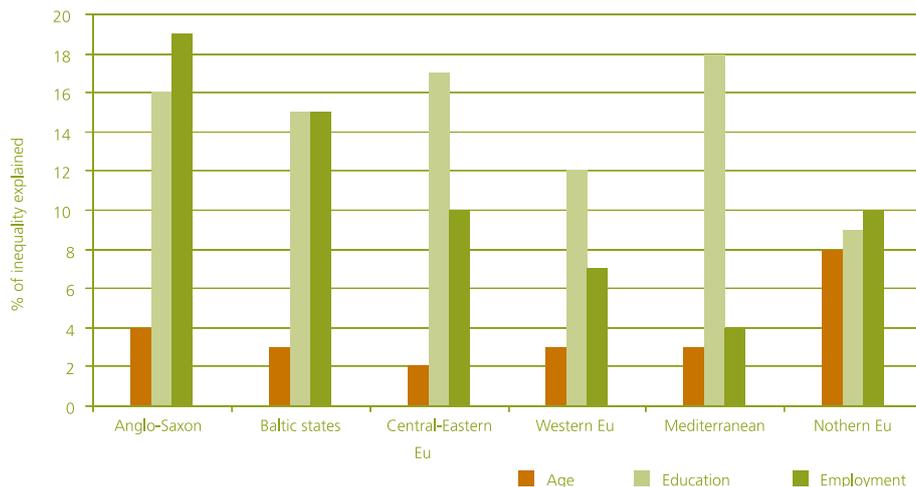


Figure 3.8: Percentage of inequalities explained by various dimensions in different groups in 2004

Note: Percentages are simple country averages.

The role of age, education and employment in inequality change

As described before, we used data from the 2000 ECHP to decompose recent changes in inequality. From the 2000 ECHP and the 2004 EU-SILC, we have comparable data for 12 countries. The increase in inequality in the first half of this decade was important in Ireland and Italy. In these countries, the rise in the MLD index exceeded 15 per cent. There was a moderate increase in Austria and Denmark, where the MLD index increased by 11 per cent. In contrast, there has been a moderate decrease in inequality in Spain, Belgium and Sweden. In these countries, the value of the MLD index was 11–14 per cent lower in 2004 than in 2000. In the rest of the countries for which we have comparative data (Luxembourg, Greece, Finland and France) there was no significant change in inequality.

The results of the dynamic decomposition analysis are summarized in *Table 3.3*. As we have seen, the biggest increases in inequality were observed in Italy and Ireland. In Italy, important between-group effects were found in the case of education and age. Increasing income differences between groups defined by level of education account for 28 per cent of the increase in inequality, while the differences between groups defined by age are responsible for 18 per cent of the increase. In the case of employment, the between-group effect is not important, but changing population structure did contribute to the increase in inequality. The fraction of those living in households where the head is inactive increased from 11 per cent to 15 per cent, while the proportion of those with an employed household head decreased. This change in population structure accounts for 26 per cent of the increase in inequality. In Ireland, there is an important between-group effect in the case of employment: increasing income differences by employment status account for 49 per cent of the change in inequality. In 2000, the average income of the employed exceeded that of the inactive by 63 per cent, and this percentage rose to 91 per cent in 2004. Changing

educational distribution was also an important driving force behind the increase in inequality in Ireland, where it accounts for 43 per cent of the increase in inequality.

Countries with a moderate increase in inequality included Austria and Denmark. In Austria, we find important between-group effects for age and education, but in both cases these are inequality-reducing effects, as income differences according to age and education decreased during this period. In the case of age, the increase in inequality was mainly caused by increasing income dispersion within groups, while, in the case of education, changing population structure had an important inequality-increasing effect as well. By contrast, in the case of Denmark, income differences by age or education widened, and this had an important inequality-increasing effect, accounting for 25 per cent and 71 per cent, respectively, of the increase in inequality.

Belgium, Spain and Sweden experienced falling inequality during this period. In the case of Belgium and Sweden, falling within-group inequality was the main factor, and changing income differences between groups did not contribute significantly. In the case of Spain, income differences by education decreased between 2000 and 2004, and this is responsible for 44 per cent of the decrease in inequality.

Table 3.3: The role of between-group components in inequality change

Note: meaning of signs in parentheses are the following: ++/--: strong inequality-increasing/decreasing effect of changing relative mean incomes (contribution to inequality change is more than 25 per cent), +/- moderate inequality-increasing/decreasing effect of changing relative mean incomes (contribution to inequality change is 10–25 per cent).

Change of inequality	Explanatory factors		
	Age	Education	Employment
Important increase (+15%) IE, IT	IT (+)	IT (++)	IE (++)
Moderate increase (+5–15%) AT, DK	AT (-), DK (++)	AT (--), DK(+)	
No change (-5%–+5%) LU, GR, FR, FI, PT			
Moderate decrease (-5–15%) ES, BE, SE		ES (++)	
Important decrease (-15%)			