

Inequality and Poverty in EU- SILC countries, according to OECD methodology

RESEARCH NOTE

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1. Introduction

This note describes main results on income inequality and poverty based on data from the 2005 EU-SILC (Community Statistics on Income and Living Conditions)¹. The methodology adopted follows the methodology used in comparative studies of inequality and poverty in the OECD countries by Burniaux et al. (1998), Förster and Pellizzari (2000), Förster and Mira d'Ercole (2005). The data and methodology is briefly described in section 2 of this note. Section 3 presents results on country rankings according to different indices of income inequality and Section 4 presents results on poverty. This note describes main results; the full table set is a companion to this paper.

2. Data and methodology

The analysis is based on data from the 2005 EU-SILC, which was extended to cover all Member States (except Malta) in 2005. Data on Norway and Iceland were also included, thus the study covers 26 countries. The data relate to the population living in private households in the country in question at time of the survey. Those living in collective households and institutions were, therefore, generally excluded. In the majority of countries the survey is based on a household sample, but in some countries a sample of individuals was drawn and their corresponding households were surveyed². The income concept used in this analysis is yearly net household disposable income, including any social transfers received and excluding direct taxes and social security contributions paid by workers. The reference period is the year 2004 except for Ireland where it is the twelve-month period before the date of the interview.

The income concept used in the OECD methodology is total annual household disposable income adjusted for differences in household size by use of an equivalence scale. The equivalence scale adopted assigns the square root of the household size to every household. The equivalised income is then assigned to each household member. In order to investigate the precision of estimates bootstrap standard errors of the Gini coefficient and poverty rates were 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

¹ This analysis was made possible by the contract between TÁRKI and Eurostat (contract number EU-SILC 2006/23). Empirical data analyses were carried out on the EU-SILC 2005/2 User Database version 2007/06/27. TÁRKI is solely responsible for the results of the data analyses and the inferences drawn.

² Information on survey sample sizes and design can be found in Table 1.

97.5th percentile. For a more complete description of the methodology the reader is referred to Burniaux et al. (1998).

A close personal cooperation with expert advisors on the OECD methodology helped the authors to achieve full comparability with earlier OECD publications on income distribution.³ In addition to the tables on income distribution additional data analysis has been carried out on the topics of material deprivation and disability, again under the guidance of OECD experts⁴.

3. Country inequality rankings according to different inequality indicators

Chart 1 shows the ranking of EU-SILC countries according to the Gini coefficient⁵. The chart also shows standard errors of the estimates of the Gini coefficient. The average of the Gini coefficient of income inequality is 0,317 for the EU countries (all countries represented in the EU-SILC except Norway and Iceland). The countries with the lowest Gini coefficient are Sweden and Denmark, both of these have a Gini of 0,228. This group of countries is followed by a group of fourteen countries with Gini coefficients between 0,25 but under 0,30. It is difficult to divide this group further because differences in the inequality index are small, confidence intervals around inequality estimates frequently overlap. Within this group we find Nordic countries Finland, Iceland and Norway, Central-European transition countries such as Slovenia, Czech Republic, Slovakia and Hungary and Western-European countries Austria, Germany, France and the Benelux countries, together with one Mediterranean country, Cyprus. Standard errors of the Gini estimates appear to be particularly large in case of Norway and Belgium. This is probably due to outliers at the higher end of the income distribution.

The sixteen countries discussed so far are characterized by inequality below EU average.

Countries, which show an inequality above EU average, can be divided into three groups. The first group composed of Ireland and three Mediterranean countries Greece, Spain and Italy all have a Gini coefficient between 0,32 and 0,33. The second group contains the Baltic states (Estonia, Latvia and Lithuania) together with Poland and the UK, where the value of the Gini index ranges from 0,34 to 0,38. The country, which exhibits the highest degree of inequality is Portugal, where the Gini coefficient is 0,42.

³ The authors wish to thank Michael Förster and Marco Mira d'Ercole for guidance regarding the methodology used in OECD studies.

⁴ Full tables sets are available upon request. Requests should be sent to Márton Medgyesi, medgyesi@tarki.hu.

⁵ $Gini = (1/2n(n-1)) \sum_{i=1, \dots, n} \sum_{j=1, \dots, n} |y_i - y_j|$, where y_i are individual incomes, n is sample size.

The ranking of countries is slightly different if the MLD or the SCV indices are used instead of the Gini. The MLD index⁶ is more sensitive to changes at the lower end of the income distribution. Chart 2 shows the values of the MLD index for the countries in the EU-SILC database. The ordering of countries on the chart follows the ranking according to the Gini coefficient. This allows detecting visually the countries who move up the rankings and those who move down when we switch from the Gini to another inequality index. As it can be seen from Chart 2, the main candidates for moving upwards are the Netherlands, Iceland and Norway. On the other hand Portugal is not the most unequal country according to the MLD index, both the UK and Poland show higher inequality.

Chart 3 shows inequality according to the SCV index⁷. The results obtained with the SCV index must be interpreted with caution. The SCV index is highly sensitive to income changes at the top end of the distribution, which makes it particularly vulnerable to outliers. Results for Norway and Belgium were omitted from the chart because the value of the SCV index exceeded manifolds the range obtained for other countries. According to the SCV index Portugal and the UK are the most unequal countries, but Ireland and – presumably again signaling an outlier problem – Finland move up to the third and fourth place. At the lower part of the ranking France and Austria move down the ranking.

Household incomes come from multiple sources. Household members might have labor incomes, incomes from leasing capital, but might also have self-employment incomes and they also get transfers from the state, NGOs or relatives. Households also pay taxes and transfers, which decreases household income. We grouped different income types under the following categories: labor income, capital income (including private transfers), self-employment income, state transfers and direct taxes. Table 3. shows the income composition of the “average” household in different countries. The Netherlands, Denmark, Sweden and the United Kingdom are the countries where the share of labor income is the highest. In these countries gross earnings even exceed disposable net income of households. At the other extreme we find Cyprus, the Czech Republic, Hungary and Ireland, where gross earnings equal approximately 75% of disposable income. The share of capital income is highest in Finland (11%), while in countries such as Estonia, Slovenia and Slovakia this share is below one percent. The 20% share of self-employment incomes in the Czech Republic and Ireland is the highest in the EU, but in Estonia only two percent of household incomes come from this source. State transfers make up for more than one third of household incomes in Sweden, Poland, the Netherlands, Hungary, Austria, Germany and Denmark. In countries like Cyprus, the Anglo-Saxon countries and the Baltic states, the share of state transfers is relatively low. Gross incomes are diminished by direct taxes the most in the Netherlands, Denmark,

⁶ $GE(0) = \text{Mean Log Deviation index} = (1/n)\sum_{i=1, \dots, n} \log(\mu/y_i)$, where y_i are individual incomes, n is sample size, μ is sample mean income.

⁷ $GE(2) = \text{SCV} = \text{var}(y_i)/\mu^2$, where notations are the same as above, and *var* stands for variance.

Sweden, UK and Belgium. In these countries direct taxes lower household incomes by more than 40 percent. In contrast, in countries such as Cyprus, Slovakia, the Czech Republic, Estonia, Lithuania and Ireland direct taxes only decrease incomes by 20 percent.

4. Main characteristics of poverty in the EU-SILC countries

4.1. Poverty rates and standard errors

The poverty rates discussed here are defined as the percentage of those having less than half of the median income. Chart 4 shows estimates of poverty rates together with bootstrap standard errors of the estimates. The average poverty rate for the EU countries is 10,9%. Countries with the lowest poverty rates –below 6% – are Sweden, Denmark, Finland and the Czech Republic. Norway, Netherlands, France, Iceland and Austria have poverty rates around 7%, while Hungary, Luxembourg, Slovakia, Germany, Slovenia and Belgium have poverty rates between 8% and 9%. Thus we can see, that the group of countries with below average poverty rate is largely the same as the group with below average Gini coefficient of income inequality. The poverty rate in Cyprus is the same as the EU average. Italy, Greece and Ireland have poverty rates just above 12%, while poverty rates of the Baltic states, Spain, Portugal and the UK are in the range of 14-15%. The highest poverty rate was detected in Poland, where 17% of the population is living of income below the poverty line.

4.2. Poverty gaps

The poverty rate is not sufficient to describe adequately the phenomenon of poverty. The poverty rate only measures the prevalence of low income in the society but it does not say anything about the depth of poverty. The poverty gap measures to what extent the average income of the poor is below the poverty line and thus provides a measure of the depth of poverty. As Chart 5 shows, the ranking according to the poverty gap⁸ is not the same as the ranking according to the poverty rate. While there are countries

⁸ The poverty gap discussed here is the difference between the mean income of the poor and the poverty line, that is the half of the median income of the population.

such as the UK and Poland where a high poverty rate goes together with a high poverty gap, in other cases this is not so. For example in the case of the Netherlands a relatively low poverty rate is associated to a high poverty gap. The countries with the lowest poverty rates, Sweden and Denmark also exhibit relatively high poverty gaps. On the other hand, there are countries such as Ireland for example where a relatively high poverty rate is associated with one of the lowest poverty gaps.

4.3. Poverty rates with and without taxes and transfers

The tax and transfer system might contribute significantly to lowering inequality and poverty. To have an idea about the effect of the tax and transfer system on the income distribution we compare poverty rates before the addition of taxes and transfers to poverty rates calculated on the after tax and transfer income distribution. Some countries (Italy, Spain, Portugal, Greece and Latvia) do not provide data on taxes, thus in these cases the before transfers distribution is used in the comparison. It is evident than in these cases our comparison underestimates the inequality-reducing effect of the tax and transfers system. Chart 6 shows both before and after tax and transfer poverty rates. It can be readily seen from the chart that the ranking of countries according to the before tax and transfer poverty rates are quite different from the ranking calculated on the basis of the after taxes and transfers income distribution. This reflects the fact that the effect of taxes and transfers on poverty differs among countries. For example Austria and France have a similar poverty rate after taxes and transfers, but France ranks much higher than Austria in the before taxes and transfers ranking.. As another example, the poverty rate before taxes and transfers is both around 30% in Denmark and Estonia, but the after taxes and transfers poverty rate is among the lowest in the former while among the highest in the latter. . The tax and transfers system contributes the most to the reduction of poverty in the Scandinavian states Denmark, Sweden and Finland. In these countries the after tax and transfers poverty rate is less than one fifth of the before taxes and transfers poverty rate. Countries where the tax and transfers system is the least effective in reducing poverty are Cyprus, Poland and Lithuania where the after taxes and transfers poverty rate is around the half of the before taxes and transfers poverty rate.

4.4. Poverty rates for the elderly and children

The overall poverty rate describes the occurrence of low income in the whole population but there can be significant differences in the income situation of various social groups. Chart 7 shows relative poverty rates among the children and the elderly in the EU-SILC countries. Relative poverty rates show in percentage terms how the occurrence of poverty in a given social group relates to the overall poverty rate. According to our results there are countries, like the Netherlands, Poland, the Czech Republic, Hungary and Luxembourg where the poverty rate of the elderly is considerably lower than the overall poverty rate, while the poverty rate of children is higher than the overall rate. A similar pattern can be found in Slovakia, Lithuania and the UK, but differences in poverty rates are smaller than for the former countries. In Cyprus, Slovenia and Finland we find the opposite pattern: poverty among the elderly is higher than the overall poverty rate, while poverty rate is lower than the overall rate among the children. We also find countries where both the elderly and children are characterized by a poverty rate lower than the overall rate, like the Nordic countries Sweden, Denmark and Norway. In other countries such as Ireland, Belgium and Mediterranean countries Spain, Greece, Italy, Portugal both children and elderly have a poverty rate higher than the overall rate. In countries like Germany, Estonia or France the poverty rate for the demographic groups considered are not very different from the overall rate.

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- Förster, M.F., Pellizzari, M. (2000): Trends and Driving Factors in Income Distribution and Poverty in the OECD Area. OECD Labour Market and Social Policy Occasional Papers No.42.
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Chart 1. Country ranking according to Gini index of income inequality with bootstrap standard errors of Gini estimates

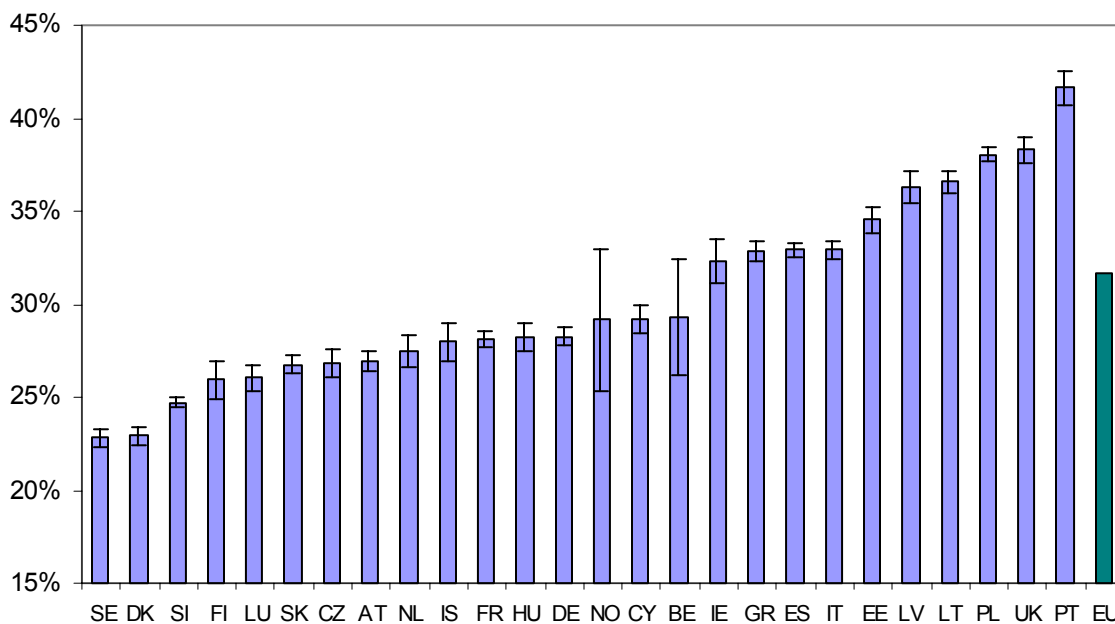
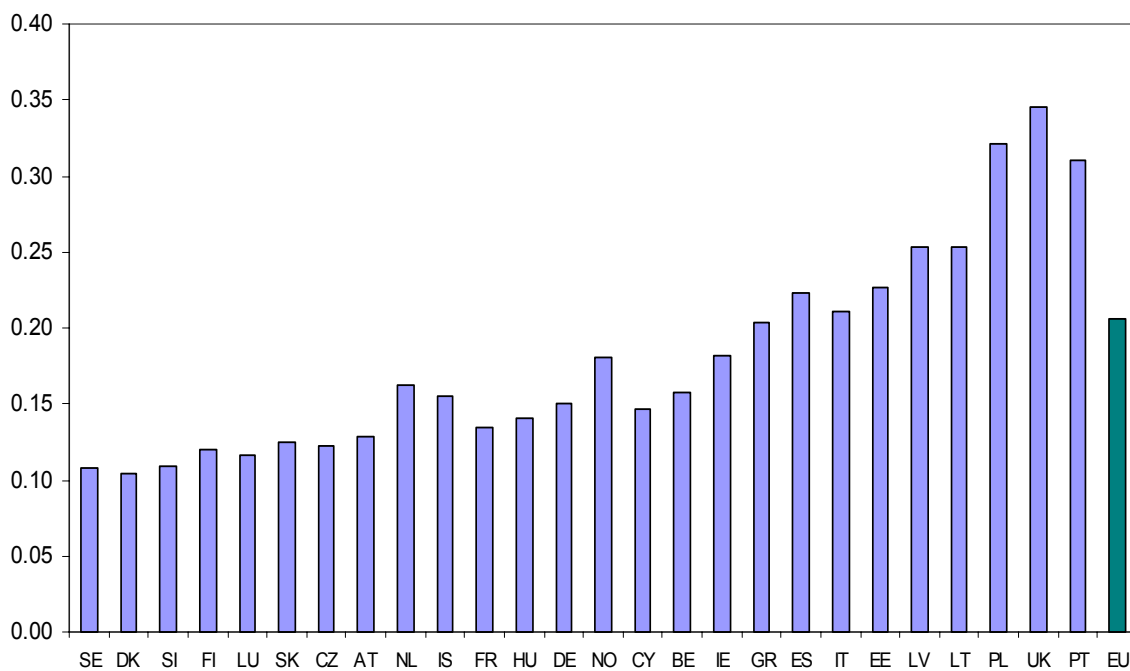
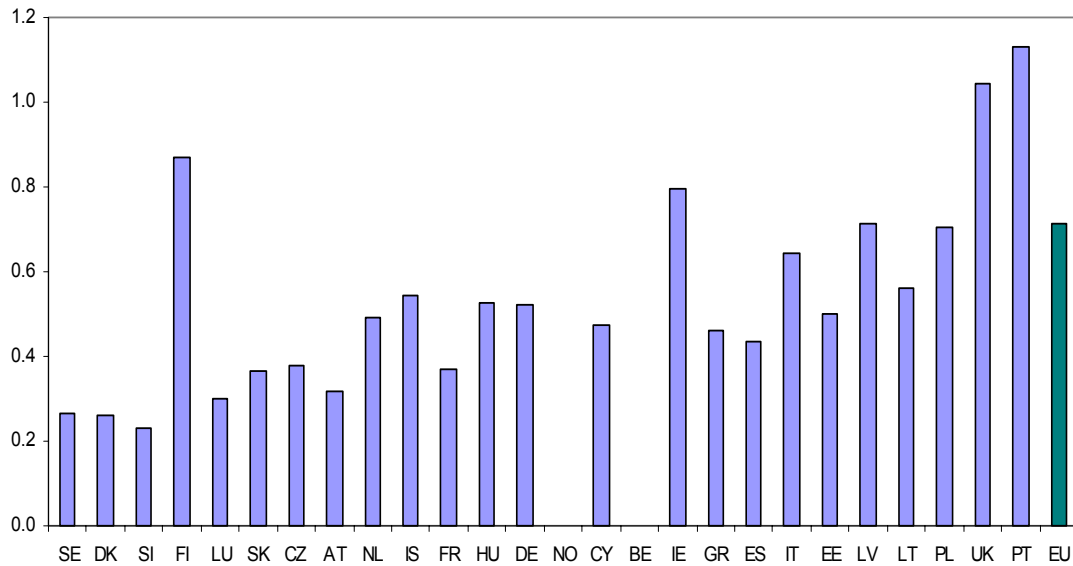


Chart 2. Income inequality in EU-SILC countries according to the MLD index



Note: Ordering of countries follows the ranking according to the Gini coefficient.

Chart 3. Income inequality in EU-SILC countries according to the SCV index



Note : Ordering of countries follows the ranking according to the Gini coefficient. SCV index has not been displayed for Norway (12.2) and Belgium (5.8) because of suspicion of outliers heavily influencing the statistic.

Chart 4. Country ranking according to poverty rate

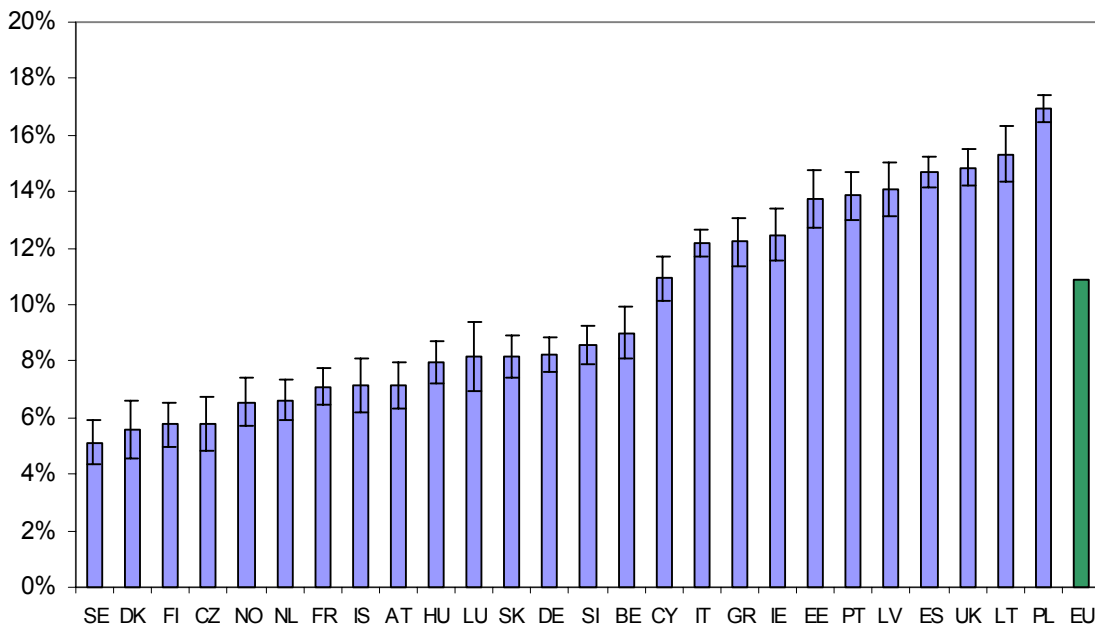
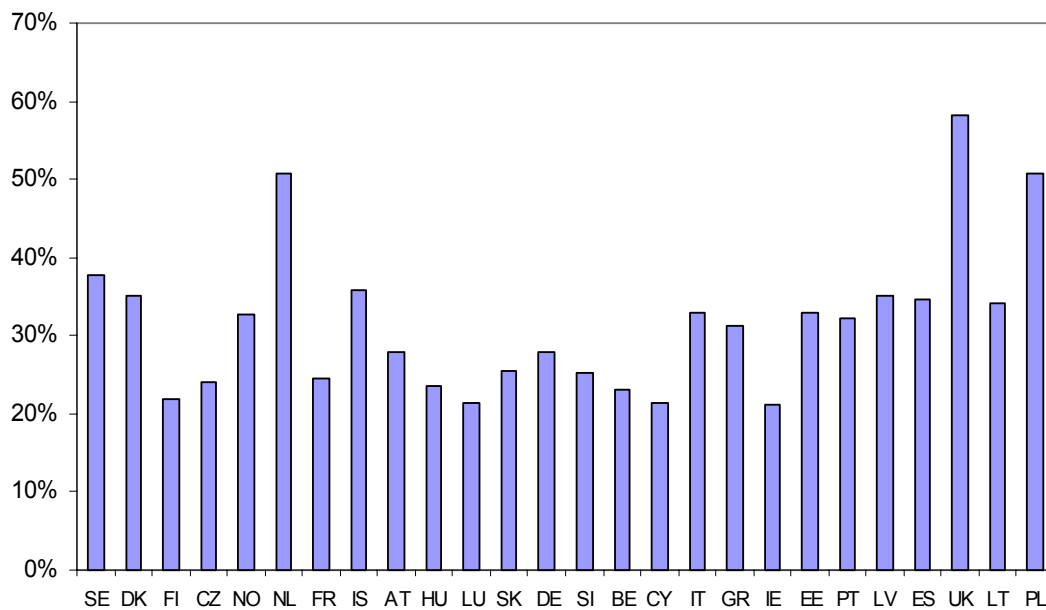


Chart 5. Poverty gap in EU-SILC countries



Note: Ordering of countries follows the ranking according to the poverty rate.

Chart 6. Poverty rates before/after taxes and transfers
Note : Ordering of countries follows the ranking according to the before tax poverty rate. In countries marked with asterisk, data on taxes was not collected. In these cases "before taxes and transfers" means before transfers.

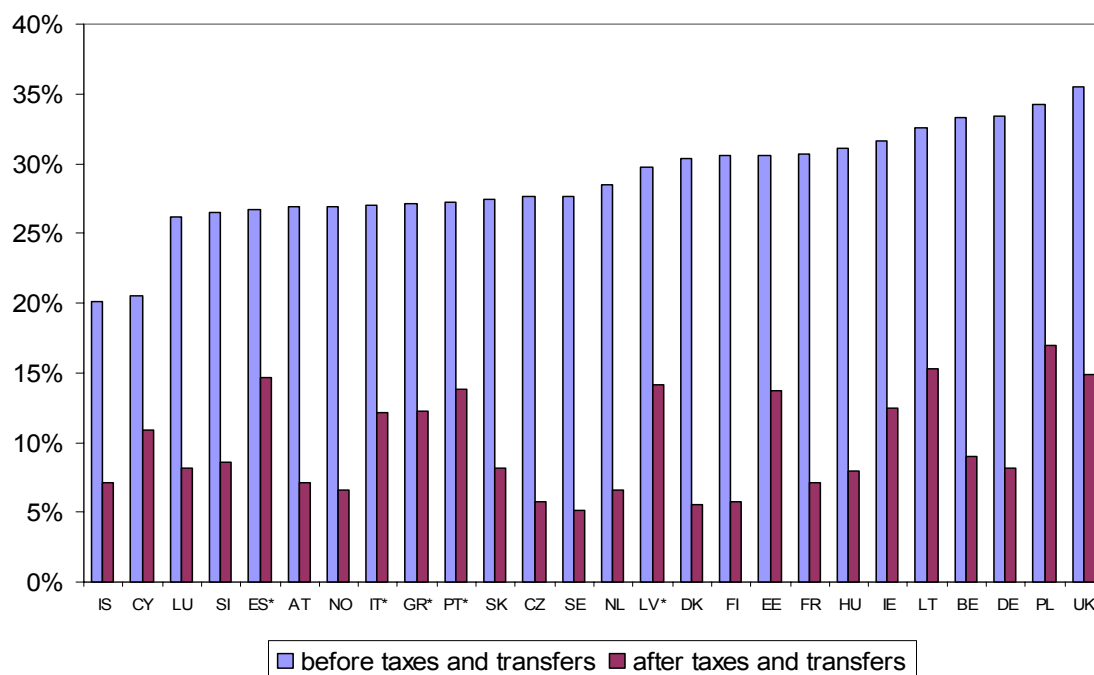
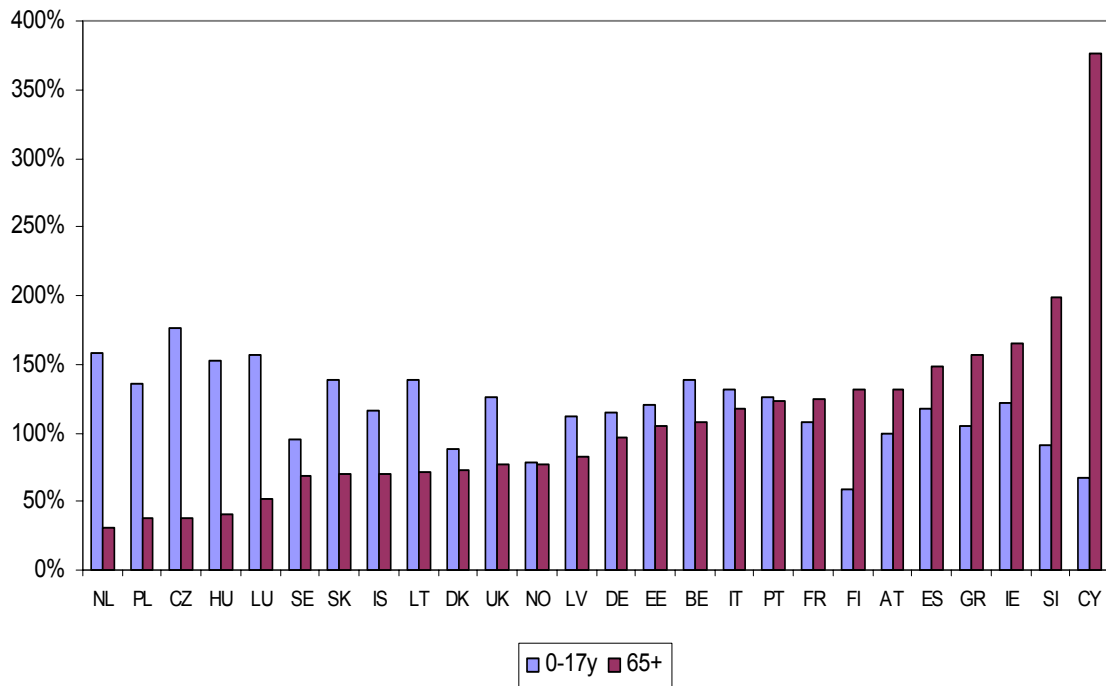


Chart 7. Relative poverty rate among the children and the elderly



Note : Ordering of countries follows the ranking according to the poverty rate of the elderly. Relative poverty rate is the poverty rate of the given social group divided by the overall poverty rate.

Table 1. Information on sampling size

	Type of units drawn	Sample size	
		Households	Individuals
AT	households	5418	10419
BE	households	5137	9974
CY	households	3746	8997
CZ	households	4351	8628
DE	households	13106	24982
DK	persons	5957	11901
EE	households	4169	9643
ES	households	12966	30375
FI	persons	11229	22961
FR	households	9754	18769
GR	households	5568	12381
HU	households	6927	14791
IE	households	6085	12032
IS	households	2958	6744
IT	households	22032	47311
LT	households	4441	9929
LU	Social security households+ households	3622	7535
LV	households	3843	7913
NL	households	9356	17852
NO	persons	5991	11913
PL	households	16263	37671
PT	households	4620	10715
SE	persons	6133	12191
SI	persons	8287	23862
SK	households	5147	12879
UK	households	9820	16675

Source: Eurostat: EU-SILC User Database Description, Version 2004-1, Luxembourg EU-SILC/BB D(2005).

ble 2. Income inequality according to different inequality indicators

	MLD	SCV	Gini
AT	0.128	0.317	0.269
BE	0.157	5.802	0.293
CY	0.147	0.475	0.292
CZ	0.123	0.377	0.268
DE	0.150	0.520	0.283
DK	0.104	0.260	0.229
EE	0.226	0.500	0.345
ES	0.224	0.434	0.329
FI	0.120	0.869	0.259
FR	0.135	0.370	0.281
GR	0.203	0.460	0.329
HU	0.140	0.524	0.282
IE	0.182	0.797	0.323
IT	0.211	0.645	0.329
LT	0.253	0.560	0.366
LU	0.117	0.301	0.261
LV	0.254	0.714	0.363
NL	0.162	0.492	0.275
PL	0.322	0.703	0.380
PT	0.311	1.130	0.416
SE	0.108	0.266	0.228
SI	0.110	0.229	0.247
SK	0.125	0.367	0.268
UK	0.346	1.042	0.383
NO	0.180	12.162	0.291
IS	0.155	0.542	0.280
EU average	0.206	0.713	0.317

Table 3. Income composition of households

Country	Income from work, %	Capital income, %	Self-employment income, %	Income from state 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

Source: EU-SILC (2005).

Note: In the case of Spain, Greece, Portugal and Latvia data on net incomes has been collected. Information on direct taxes is missing in these surveys, so we omit them in this table.

Table 4. Poverty rates and poverty gaps in EU-SILC countries.

	Poverty rate after taxes and transfers	Standard error of the headcount ratio	Poverty rate before taxes and transfers	Poverty gap
AT	0.071	0.004	0.269	0.279
BE	0.090	0.005	0.333	0.231
CY	0.109	0.004	0.206	0.215
CZ	0.058	0.005	0.276	0.241
DE	0.082	0.003	0.334	0.279
DK	0.056	0.005	0.303	0.350
EE	0.137	0.005	0.306	0.330
ES	0.147	0.003	0.267	0.346
FI	0.058	0.004	0.306	0.219
FR	0.071	0.003	0.307	0.244
GR	0.122	0.004	0.271	0.312
HU	0.080	0.004	0.311	0.235
IE	0.125	0.005	0.316	0.211
IS	0.071	0.005	0.201	0.359
IT	0.122	0.002	0.270	0.330
LT	0.153	0.005	0.326	0.341
LU	0.082	0.006	0.262	0.213
LV	0.141	0.005	0.297	0.352
NL	0.066	0.004	0.285	0.508
NO	0.065	0.004	0.269	0.328
PL	0.170	0.002	0.342	0.507
PT	0.139	0.004	0.272	0.322
SE	0.051	0.004	0.277	0.379
SI	0.086	0.003	0.265	0.252
SK	0.082	0.004	0.274	0.256
UK	0.149	0.003	0.355	0.582
EU average	0.109			