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**The Redistributive Effects of Pension Systems in Europe:
A Survey of Evidence**

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The Redistributive Effects of Pension Systems in Europe: A Survey of Evidence

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Abstract

Pension systems differ across European countries according to various characteristics. But every one operates some redistribution within cohort. This paper analyses the comparative intragenerational redistributive performances of public pension transfers using data from the Luxembourg Income Study. The analysis shows that there is wide variation among the countries but that these differences can be explained by the characteristics of the systems. It is also shown that redistribution does not occur the same way among subgroups of population and that older women are the less favoured by the pension systems.

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1. Introduction

The purpose of this paper is to provide evidence on the redistributive performance of public pension's scheme among European countries. Pension benefits represent an important share of GDP in most countries and even if they are expected to increase even more in the context of an ageing society, the necessity to protect elderly from poverty and precariousness is important. In its 2006 report on "Adequate and Sustainable Pensions", the European Commission points how one of the main achievements of social policies in Europe was that being old were no longer synonymous with being poor and that this success had mainly been achieved through the provision of public pensions.

The situation of elderly has been improved without any doubt due to the public pension programs and the redistribution they operate among the population. But these programs redistribute in several different ways and their redistributive impact can be examined from different perspectives. Indeed we can focus on the redistribution between different age groups (*intergenerational* perspective), between successive cohorts (*generational accounting* perspective) or even between different groups in a given cohort (*intragenerational* perspective). Moreover, the latter perspective can be approached in two different ways.

The first way is an *intragenerational longitudinal* approach, it compares the balance between the total contributions paid and total benefits received. So doing, one obtains the net present value of benefits and one can compute the rate of return of the contributions in terms of expected benefits. This makes it possible to conclude about the regressive or progressive character of the system. That is whether the net transfers are positively or negatively correlated with the lifetime earnings. The second way to analyse the *intragenerational* redistribution is a *cross-sectional* one. Basically one looks at the way pension benefits affect the income distribution of the population of elderly at a given period of time. This approach stresses the extent to which public transfers reduce inequality and poverty at a given point in time.

In this study we focus on the *intragenerational cross-sectional* perspective using the LIS database. Admittedly the longitudinal approach is the correct approach since it makes possible to indicate a system as being progressive or not. But the cross-sectional perspective is easier to implement and allows for making international comparison. It does not necessitate relying on lifetime data. Moreover it is politically more attractive. When people vote, they are concerned by their current situation and not by what they did in the past. Figures of poverty after pension transfers will then have more interest than internal rates of return of the system. Note that the cross-sectional and the lifetime approach can lead to conclusions which can be different. Some category of population may be characterized by better life expectancy and then by better expected return from the system while having lower benefit each period and therefore being generally poorer.

In two recent reports about the poverty of elderly people and pension policy in EU25 (Zaidi *et al*, 2006a and Zaidi *et al*, 2006b), it has been shown that the elderly populations are more often at risk of being poor in comparison to working age populations. Furthermore this risk may be higher for some category of population like women or older old. They also provide a detailed description of pension specific parameters that are likely to impact income situation of elderly and show how generosity of a system can have a negative impact on the poverty of elderly.

This paper is composed of two main parts. The first part presents the overall redistributive power of public pension transfers among European countries. That is to what extent these transfers succeed in reducing inequality and alleviating poverty among

elderly. After identifying the differences in terms of redistribution among countries, we make the link between these differences and the characteristics of pension systems and give an empirical confirmation to theoretical predictions. The second part investigates the redistributive impact of these public transfers among subgroups of the elderly population. This is done by looking at the existing differences according to gender and age.

The value added of this paper is to provide an overall picture of the elderly targeted redistributive transfers. It offers a survey of the existing links between the intragenerational redistribution degree in social security systems, the amount of public pension expenditures and the situation of elderly in terms of poverty and inequality. Furthermore, it gives a new empirical confirmation of why more redistributive systems achieve lower results in terms of poverty and inequality.

The next section briefly describes the methodology and the Luxembourg Income Study (LIS) data used and gives also a first overview of the situation in terms of poverty and inequality of the elderly. Section 3 presents the cross-sectional redistributive effects of public pension on inequality and poverty. It analyzes also how we can relate the existing differences between the countries with the characteristics of their systems. Section 4 considers the redistributive impact of pensions along two population cutting: gender and age. Section 5 concludes and summarizes the main results.

2. Poverty and inequality using the LIS database

The LIS database is the most important international data archive providing access to micro data. It includes household income surveys of thirty countries on four continents. These surveys provide income, demographic, labour market and expenditure information on three different levels: household, person and child. For the purposes of this paper, we used, for each European country, the last year of information available.

The unit of analysis is the household but we adjust the income in order to take into account for difference of family size. The equivalence scale we use is the square root scale which divides the household's income by the square root of the number of household's members. There exists a variety of equivalence scales used in empirical distribution studies but this one is recommended when one uses the LIS database. This is also the scale used by the OECD but not by Eurostat which relies on the "modified OECD scale"²

We focus through this study on the standard measures of distribution: head count relative poverty rates and Gini indices. Table 1 reports our estimation of these indicators and in order to give an overall picture, we compare our own calculations based on the LIS database with the same indicators coming from OECD and Eurostat³ (whenever they are available).

We do not observe, with a few exceptions, very different results for poverty. The poverty rates vary between 2% in the Netherlands to 36% in Ireland in OECD data, they vary between 4% in the Netherlands and Luxembourg to 25% in Greece in Eurostat data and between 4% in Luxembourg to 36% in Ireland according to the LIS database. In all three sources, we observe wide variances across nations.

² The modified OECD scale gives a weight of 1.0 to the first person aged 14 or more, a weight of 0.5 to other persons aged 14 or more and a weight of 0.3 to persons aged 0-13.

³ Eurostat data come from the European Community Household Panel (ECHP) and for the years to come from the new EU-SILC. OECD data, unlike LIS and ECHP, are drawn from national sources but an effort is made to harmonize concepts by using common terms of reference.

We find also on Table 1 the Gini and the interquintile ratio (S80/S20). The latter is the indicator used by Eurostat to evaluate the income inequality within European Union. On the one hand, there is little difference between Gini indicators coming from OECD and LIS. On the other hand, the quintile ratios are different between LIS and Eurostat. They are higher in later estimates but we have calculated the correlation coefficient between both and it is high (0.739) which confirms that both give about the same ranking. Let us remind that the equivalence scale used to adjust the income differs in Eurostat estimation, which might be an explanation of these differences.

[INSERT TABLE 1]

We see that European countries differ in the poverty and inequality prevailing in their elderly population. Since the main sources of income of people aged 65 and more are pension benefits, these results would be worst in the absence of public transfers. It is thus important to assess to what extent they have contributed to a reduction of the value taken by these indicators.

3. Pension systems and redistribution

The redistributive impact of public pension is assessed by comparing the value of the indicators of poverty and inequality obtained from disposable income including the public pension transfers with the value of the indicator obtained from disposable income excluding the transfers. The later value is really hypothetical since, in the absence of social transfers, households would have been forced to make different private arrangements. However, in the absence of reliable models of behavioural reaction to cut in pension benefits for all of the countries considered, it represents a reliable counterfactual and a reasonable approximation. Let us add that public pension benefits have to be understood in a broad sense that is they are composed of retirement pensions as well as survivors and welfare benefits. In this respect, we are not concerned with the sole pension benefits derived from a work career but by the overall transfer to elderly.

3.1. Redistributive impact

Table 2 presents the results. Following what has been explained above; we defined two indicators of redistribution: *Poverty Alleviation* and *Inequality Reduction*. They give the amount to which pensions contribute to the lowering of poverty and inequality.

We see that older people do not have sufficient earnings and private resources to eliminate poverty but the results are rather different according to countries. Some countries like Finland, Ireland, Netherlands, Greece or the UK have poverty rates before transfers really lower than others like Austria, Belgium or France. There are two main explanations for this difference. First some countries have higher labour force participation among elderly. Second, some countries rely more on occupational pension schemes which are included in the income before transfers. This is the case of Finland, the Netherlands and UK. A third reason might be the family structure of the household. In southern Europe, the household is often wider than in the North and includes others family members which contribute to the household income, this might be the case for Greece.

The third column gives the *Poverty Alleviation*. In Hungary, Luxembourg, Estonia, France and Austria, we have the largest effect on poverty with 82 to 94 percentage point reduction for the elderly. In Ireland, Greece, UK, Finland, and The Netherlands, the effect

on poverty is less. As we said before, the last three countries rely more on private pension schemes.

We also present on Table 2, the *Inequality Reduction* due to public pension transfers. More than half of the countries (12 countries) have a reduction of inequality due to public transfers that is more than 50% of the original level. Czech Republic, Denmark and Hungary have the most powerful effect with a reduction of 37, 36 and 38 points respectively.

[INSERT TABLE 2]

In order to identify more clearly the role of pensions in equalising the income distribution, we undertake a decomposition analysis by factor component of the Gini coefficient. The method applied here is the approach developed by Lerman and Yitzaki (1985). It allows analysing separately the percentage contributions of particular income components to overall inequality, the marginal impact on overall inequality of a component and how changes in components affect changes in overall income inequality. The Gini coefficient can be decomposed as follows:

$$G = \sum_{k=1}^K G_k R_k S_k$$

where S_k denotes the share of income component k in total income (in case of taxes, $S < 0$). G_k denotes the Gini coefficient for the income distribution of income component k . R_k denotes the Gini correlation between income from source k and total income, which is defined as the ratio of the covariance between the income component, y_k , and the rank of total income, r , to the covariance between the income component, y_k , and its own rank, r_k , that is,

$$R_k = \frac{\text{cov}(y_k, r)}{\text{cov}(y_k, r_k)}$$

The percentage contribution of an income component to overall inequality can be written as:

$$P_k = S_k \frac{R_k G_k}{G}$$

and the marginal effect of a small change in an income component k on G , holding all other factors constant, can be written as:

$$Z_k = S_k \frac{R_k G_k}{G} - S_k = S_k (\eta_k - 1)$$

where η_k is the Gini income elasticity for source of income k .

We do not present the percentage composition of inequality. Since in most countries, pensions account for more than 60-70 per cent of total household income, they have obviously a positive contribution to existing income inequality. What is more interesting is to look at elasticities of pension component of income. Would a marginal increase in pension benefits achieve a reduction or an augmentation of inequality?

Table 3 gives the marginal effect of total income component on income inequality. It gives the marginal increase in inequality that a 1% increase in the four main channels of elderly resources generates. Not surprisingly, without exception, public pension have a

negative impact on inequality particularly in Denmark, Estonia, the Netherlands and the UK. Earnings and capital income have as expected a positive but uneven effect on inequality. Private pensions have a positive effect in all but two countries, namely France and Ireland. Caution is needed as private pensions are negligible in many countries.

[INSERT TABLE 3]

3.2. Bismarckian versus Beveridgean system

Can we explain these differences of redistributive effects among European pension systems?

In Europe, pension systems are mostly based on the pay-as-you-go system (PAYG) but their institutional characteristics vary a lot. Traditionally, pension systems have been distinguished by two broad characteristics. The first one is the generosity of the system, that is, its size (extent of coverage). The second concerns the contributory aspect of the benefit rule. On one hand, we have pension systems that are earnings related (also called Bismarckian or contributory): they offer replacement rates that are stable across income levels. On the other hand, one finds pension systems that tend to have replacement rates that fall as income increases; they are labelled Beveridgean⁴. European pension systems are between these two extreme systems with France and Germany closer to the Bismarckian pole and the UK and the Netherlands closer to the Beveridgean pole.

Theoretically, since contributions are typically proportional to earnings, a pure Bismarckian system does not redistribute within generation while a pure Beveridgean appears to be quite redistributive.

Formally, we can use the basic two-period overlapping generation model. At each period t , two generations overlap: L_t workers and L_{t-1} retirees. Workers are distinguished according to their productivity w_i and the generation they belong to. Individual labour supply is given and normalized to 1. A worker of type i and of generation t consume c_i , save s_i and pay a payroll tax of $\tau_i w_i$. In the following period, he is retired and consumes d_i financed by the return on savings $R s_i$ and some pension benefits p_i . As we are in a PAYG system, the pension benefit is given by:

$$p_i = (1+n)\tau_i(\alpha w_i + (1-\alpha)\bar{w})$$

where n is the population growth rate, \bar{w} is the mean value of w_i and α is the Bismarckian factor, that is the fraction of pension benefits that is related to contributions. Benefits then consist of two parts: a flat part and a variable part that is fraction of individuals' contributions. When $\alpha = 1$, the pension system is purely Bismarckian or contributory; when $\alpha = 0$, pension benefits are uniform and the system is Beveridgean. In Europe, we do not find pure Bismarckian or pure Beveridgean systems but mixed systems that have more or less of α . With this simple expression, we can put forward some theoretical predictions on the relation between the redistributiveness (represented by $(1-\alpha)$) and the generosity of the system (represented by τ_i).

A number of recent theoretical works have studied the link between the size and the redistributiveness of the system [Casamatta *et al.* (2000, 2002), Conde-Ruiz and Profeta (2003), Moene and Wallerstein (2004)]. In these political economy models, people vote

⁴ The replacement rate is the ratio of post-retirement pension benefits to the pre-retirement earnings.

for the two characteristics of the pension systems τ_i and α . Their results point that there is a positive relation between generosity and the contributory feature. In other words, contributory pension systems tend to be more generous than flat-rate pension systems. The reason is that pension systems that are too redistributive in their structure are subject to slow erosion because of lack of political support. Furthermore since a Bismarckian system obtains larger political support and is more generous; one usually finds the idea of a minimum pension guarantee which can be sufficient to lift a sizeable fraction of poor retirees out of poverty. These results have led to the famous line “Programs for the poor are poor programs”. In a recent paper, Lefèbvre and Pestieau (2006) show for a panel of 14 OECD countries that Bismarckian contributory systems tend indeed to offer generous pensions that in turn benefit the poor.

In order to test these theoretical predictions we use two indicators of the structure of pension systems that correspond to τ and $1-\alpha$ in the above model. The generosity is given by the share of pension public spending in GDP and the contributory aspect is ironically given by an index of non-contributiveness. This index is defined as the ratio of the income share of public pensions in the first quintile to the same share in the top quintile. Countries with an indicator lower than 2 can be seen as Bismarckian. This last indicator is estimated from LIS database.

Table 4 reports the value of the generosity and the index of non-contributiveness. The share of pension expenditures in GDP varies from 3.4 per cent in Ireland to 15.4 in Italy. The index of non-contributiveness shows countries like Denmark, Finland, the Netherlands and the UK being far from the Bismarckian logic.

Thus we can now see if the type of system explains the redistributive differences that exist across European countries. Table 5 gives the correlations coefficients between the two indicators of redistribution from our LIS-based estimation as well as the characteristics of the system (generosity and non-contributiveness).

[INSERT TABLE 4]

First, one notes that the correlation between inequality reduction and poverty alleviation is positive and significant. Second, it appears that the correlation between generosity and non-contributiveness is indeed negative. This seems to vindicate the theoretical prediction that says that the more contributory a pension system, the more generous it will be. Does that mean that, being more generous, the contributory systems are more redistributive? The correlation coefficients on Table 5 give the answer. There is a negative correlation between poverty alleviation and non-contributiveness as well as between inequality reduction and non-contributiveness. Putting these pieces of evidence together we find that contributory (Bismarckian) systems are rich programs and rich programs are good for the poor.

These results are in line with previous quantitative sociological works which have raised the so-called “paradox of redistribution” (see Korpi and Palme, 1998). In this framework, they wonder if social policies should be targeted or be universal and if benefits should be equal or earnings-related. Using a proper typology of welfare states they conclude that “*the more we target benefits at the poor only and the more concerned we are with creating equality via equal public transfers to all, the less likely we are to reduce poverty and inequality*”. The explanation of this result is rather close to what we exposed above. The size of redistributive budget reflects the structure (and then the social choice) of welfare institution and there exists a trade-off between the size of redistributive

budget and the degree of low-income targeting. Providing high-income earners with earnings related benefits collect the approval of the majority and reduce inequality and poverty more efficiently than can flat-rate or targeted benefits.

[INSERT TABLE 5]

4. Redistribution among subgroups

We have until now be interested in the overall redistributive impact of transfers. The previous section has shown that there exists large differences among countries and that these differences may be explained by the institutional type of the pension system chosen by the population, that is, if it is more on a Bismarckian or a Beveridgean logic. In this section, we intend to look at the diverging redistributive effects there exist between subgroups of the elderly population. Some previous works have emphasized the fact that some groups of elderly are more subject to deprivation than others. We present successively the effect of public transfers on poverty and income inequality by category of elderly.

4.1. Poverty

Let us first begin with the *Poverty alleviation*. We make distinctions within the population according to the age, the sex and both the sex and the age crossed. Indeed it is often argued that due to lack of price and welfare adjustments, the very old and especially women are poorer than the younger old.

Figures 1 display the poverty and the poverty alleviation due to pensions for people according to the age (people aged 65-74 and those aged 75+). With sole exception of the Netherlands the very old are everywhere poorer than the old. In terms of poverty alleviation, the picture is rather mixed. In half the countries, the very old have benefited from less poverty alleviation than the younger old. The standard explanation for this outcome is that in most countries pensions are not indexed to economic growth. At best they are indexed to price increase. As a consequence, the older a retiree is, the likelier he is to have an income below a poverty line that is calculated for the whole population.

Figures 2 look at poverty and poverty alleviation according to gender. It appears that women are poorer than men, on average, 6.5 percentage points higher. This difference varies by countries, ranging from 21 percentage points in Ireland to 2 in The Netherlands. *Poverty alleviation* is lower on average for women than for men. This is true for every country, except Denmark, the Netherlands and Sweden. More, we see that women are poorer before transfers. That is these both effects (a smaller alleviation impact and a higher poverty before transfers) that lead to a worse situation of women in term of poverty. The main explanation for this is the difference in life expectancy; older women make up the majority of the elderly population. Moreover, women have often a shorter and less paid work career than men and end up with less resource even though the pension systems tends to correct part of this difference.

[INSERT FIGURES 1-8]

On Figures 3 and 4, poverty rates are represented according to sex and age of the person: 65-74 and 75 and older. These figures confirm the results obtained in Figures 1 and 2. The older you are the poorer you are; and women are poorer than men. Thus, oldest

women are the poorest individuals of the elderly population. This is due to the combined effect of a higher poverty rate before transfers and a smaller poverty alleviation impact of transfers. Women start with fewer resources out of transfers than men and this is truer as they grow older. Moreover the public transfers reduce poverty by a smaller amount for women than for men. From these figures, we can conclude that the sex distinction is more penalizing than the age distinction.

4.2. Inequality

We now consider inequality between and within subgroups of elderly. A first attempt might be to compare the inequality reductions in each subpopulation; nevertheless, we do not have a common denominator like the poverty threshold in the previous subsection. But an easy way to observe the difference is to decompose again the Gini coefficient according to some subgroups of population.

Pyatt (1976) has shown that the Gini coefficient can be decomposed in three terms. The first depends on the inequality within subgroups of the population. The second depends on the difference in average value of income between subgroups. Then, there is a residual that is not simple to interpret and depends on the extent to which the income distributions for different subgroups overlap each other. Formally, the Gini coefficient, G , can be decomposed as following:

$$G = \sum_i a_i G_i + \bar{G} + R$$

where G_i is the Gini coefficient for subgroup i , \bar{G} is the between inequality component and a_i is the product of population share and income share going to subgroup i . the component R denotes the residual that exists when incomes overlap between groups.

We perform the decomposition for the two distributions of income (before and after public pension transfers) and compare how the within and the between contribution to inequality vary. We do it only according to the age groups because the methodology exposed above suppose an overlapping effect which is difficult to interpret when one considers sex groups. Table 6 report the results.

[INSERT TABLE 6]

First we compare the within inequality of each groups before and after transfers. We observe that the inequality within the older population is bigger than within the younger population for more than half of the countries (this is true before and after transfers). We observe as well that the inequality reduction is again important and this for each group which makes keep rather constant the differences of inequality among groups before and after transfers as we noted above.

We turn now to the decomposition of inequality according to the two groups, we see that the within inequality stays rather constant when calculated before and after transfers. We see also that it is the most important contribution to overall inequality for every country except Belgium and Sweden. This is interesting since it means that if the inequality within each group has been reduced (as the Gini reduction shows it), the ranking of people income has not really been changed. The transfers pull up the income and reduce the variance within the population but do not change the place of each individual within the distribution. So there is variation of income within groups that takes

part to overall inequality but this variation has not been changed. More interesting is the contribution of the between inequality. We see that except for Austria, the between inequality has varied from the situation before transfers to the situation after transfers. This between-inequality component can be interpreted as the difference between the mean incomes of each age group. We see that for countries like Belgium, Estonia, Finland, Hungary, Italy, Luxembourg, Poland and UK, this difference has decreased. This means that the transfers have operated a smoothing of the distribution and so it can be interpreted as a contribution to a decrease of overall inequality. This is a confirmation of the redistribution effect of transfers on inequality.

5. Conclusions

This paper has examined the redistributive effects of public pension systems across European countries using data from the LIS database. We have used a cross-sectional perspective rather than a longitudinal perspective because it enables us to make international comparison and also because it is a more politically attractive way of talking about redistribution. The results show that European pension systems are rather different in terms of redistributive power. The Mediterranean countries and Ireland obtained the worst results in terms of poverty alleviation and inequality reduction. It is worth to note that the new European members from Eastern Europe obtained some of the best results and have a population of elderly which is rather less disfavoured than in some continental countries.

An important result of this study is the empirical confirmation of some theoretical predictions we obtain. Indeed we have shown that the more generous systems are those that are closer to a Bismarckian logic rather than a Beveridgean logic and that the Bismarckian systems redistribute more than other. Contributory systems are rich programs and rich programs are good for the poor. This is also in line with the so-called paradox of redistribution.

Finally, we performed a subgroups analysis of redistribution. The results show that first the older old benefit from less poverty alleviation because of lack of indexation of public transfers. Second, the women are the less favoured, they suffer a double handicap: a less attractive work history that gives them smaller pension entitlements and a longer retirement period that induces their pension benefits losing value due again to the lack of welfare indexation. Finally, the decomposition of the inequality indicator (Gini) according to age groups shows that the transfers have operated redistribution between the subgroups in reducing the gap between the mean incomes of each subgroup.

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Table 1: Comparison of inequality and poverty for elderly with three sources: LIS, OECD and Eurostat

	Reference years			Poverty rates			Gini		S80/S20	
	OECD	Eurostat	LIS	OECD	Eurostat	LIS	OECD	LIS	LIS	Eurostat
Austria	1999	1999	2000	9	10	14	25	26	2.2	4.1
Belgium	1995	1995	1995	13	14	16	25	26	1.9	4.9
Czech R.	1996	n.a.	1996	9	n.a.	7	n.a.	21	1.6	n.a.
Denmark	1994	n.a.	1992	5	n.a.	11	21	22	1.7	n.a.
Finland	2000	2000	2000	10	6	9	21	25	1.9	3.0
France	1994	1995	1994	8	11	10	28	28	2.3	4.8
Germany	2001	2000	2000	10	5	10	26	25	2.0	3.5
Greece	1999	1999	2000	24	25	28	38	34	2.9	7.0
Hungary	2000	n.a.	1999	5	n.a.	4	23	23	1.9	n.a.
Ireland	2000	2000	2000	36	19	36	29	32	2.5	4.5
Italy	2000	2000	2000	15	7	14	30	32	2.3	3.8
Luxembourg	2001	2001	2000	6	4	4	n.a.	23	1.9	3.0
Netherlands	2000	1999	1999	2	4	5	23	24	2.0	3.8
Poland	2000	n.a.	1999	4	n.a.	4	n.a.	25	1.9	n.a.
Spain	2000	2000	2000	14	11	23	n.a.	31	2.7	4.3
Sweden	2000	n.a.	2000	8	n.a.	8	20	23	1.8	n.a.
UK	2000	2000	1999	14	12	20	28	30	2.2	4.2

Source and notes: Own calculations from LIS (2006), Eurostat (2006), Förster and Pellizari (2000) and Förster and Mira d'Ercole (2005). Poverty rates are defined as the percent of population with income less than 50% of adjusted median disposable income. In OECD and LIS, the equivalence scale is the square root while in Eurostat, it is the "modified-OECD" scale. Gini coefficients are multiplied by 100.

Table 2 : Indicators of redistribution

	Year	Headcount poverty			Gini coefficient		
		Before transfers	After transfers	Poverty alleviation	Before transfers	After transfers	Inequality reduction
Austria	2000	95.8	13.7	82.1	54.6	25.9	28.7
Belgium	2000	94.0	16.4	77.6	53.5	26.2	27.3
Czech R.	1996	82.4	7.4	75.0	57.9	20.5	37.4
Denmark	1992	78.6	11.1	67.5	58.3	21.9	36.4
Estonia	2000	98.4	11.0	87.4	60.4	29.3	31.1
France	1994	93.0	9.8	83.2	56.4	28.4	28.0
Finland	2000	54.4	8.5	45.9	39.7	24.7	15.0
Germany	2000	85.7	10.1	75.6	57.7	25.1	32.6
Greece	2000	74.6	27.6	47.0	54.5	34.1	20.4
Hungary	1999	97.8	3.7	94.1	60.9	23.3	37.6
Ireland	2000	80.3	35.8	44.5	57.6	32.3	25.3
Italy	2000	88.1	13.7	74.4	59.1	32.3	26.8
Luxembourg	2000	93.9	3.5	90.4	53.8	23.3	30.5
Netherlands	1999	61.1	5.1	56.0	51.7	24.3	27.4
Poland	1999	79.8	3.5	76.3	58.6	25.1	33.5
Spain	2000	92.7	23.4	69.3	56.5	31.1	25.4
Slovenia	1999	97.5	17.9	79.6	50.0	25.8	24.2
Sweden	2000	85.6	7.7	77.9	54.9	22.5	32.4
UK	1999	69.1	20.5	48.6	54.9	29.5	25.4

Sources and notes: Own calculations from LIS database (2006). Poverty rates are defined as the percent of population with income less than 50% of adjusted median disposable income. Gini coefficients are based on incomes which are bottom coded at 1 percent of income and top coded at 10 times the median income and are multiplied by 100.

Table 3: Marginal changes of inequality

	Marginal changes in total inequality			
	Earnings	Property income	Private pensions	Public transfers
Austria	0.241	0.009	0.019	-0.269
Belgium	0.149	0.142	n.a.	-0.301
Czech R.	0.461	0.042	0.310	-0.389
Denmark	0.403	0.247	n.a.	-0.444
Estonia	0.459	0.018	n.a.	-0.426
France	0.052	0.083	-0.163	-0.080
Finland	0.294	0.244	0.035	-0.143
Germany	0.217	0.119	0.026	-0.293
Greece	0.138	0.044	n.a.	-0.207
Hungary	0.176	0.068	n.a.	-0.244
Ireland	0.358	0.030	-0.002	-0.388
Italy	0.186	0.111	0.015	-0.296
Luxembourg	0.157	0.203	0.594	-0.374
Netherlands	0.089	0.104	0.001	-0.571
Poland	0.133	0.010	0.009	-0.125
Slovenia	0.157	0.004	0.008	-0.169
Spain	0.296	0.032	0.077	-0.336
Sweden	0.263	0.009	0.228	-0.294
UK	0.152	0.142	0.019	-0.480

Source: own calculation from LIS (2006). Interpretation: a proportional increase of 1% of elderly earnings will increase inequality by 0.241% in Austria.

Table 4: Characteristics of the pensions systems

	Index of non-contributiveness	Generosity
Austria	1.3	13.3
Belgium	1.3	11.2
Czech	1.9	8.3
Denmark	4.0	10.7
Estonia	1.9	6.4
France	1.2	12.3
Finland	10.8	8.8
Germany	2.4	12.0
Greece	1.6	12.7
Hungary	1.3	8.0
Ireland	2.7	3.4
Italy	2.8	15.4
Luxembourg	3.3	7.8
Netherlands	3.2	10.9
Poland	1.1	10.9
Slovenia	1.3	11.0
Spain	2.1	8.8
Sweden	1.9	12.0
UK	4.5	12.7

Source: Eurostat (2006) and own calculations from LIS (2006)

Table 5: Correlations between the indicators of redistribution and the type of systems

	<i>Poverty alleviation</i>	<i>Inequality reduction</i>	<i>Non-contributiveness</i>	<i>Generosity (% GDP)</i>
<i>Poverty alleviation</i>	1.000			
<i>Inequality reduction</i>	0.639***	1.000		
<i>Non-contributiveness</i>	-0.549**	-0.526**	1.000	
<i>Generosity (% GDP)</i>	0.048	-0.097	-0.121	1.000

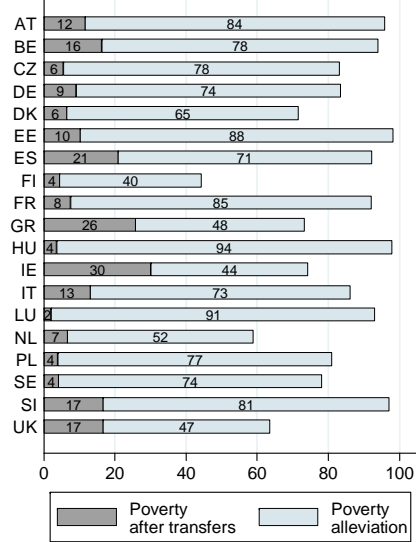
Notes: ***, *, *: significant at the 10%, 5% and 1% level.

Table 6: Age groups contributions to inequality

	Before transfers					After transfers				
	Inequality			Contributions to total inequality of age groups		Inequality			Contributions to total inequality of age groups	
	People aged 65-74	People aged 75+	Total	Within inequality	Between inequality	People aged 65-74	People aged 75+	Total	Within inequality	Between inequality
Austria	56.8	58.1	54.6	51.8	1.9	26.4	27.8	25.9	51.6	1.9
Belgium	52.2	63.5	53.5	48.8	15.7	24.7	29.0	26.2	50.6	0.1
Czech R.	50.4	54.4	57.9	53.9	5.3	17.2	18.7	20.5	54.9	9.7
Denmark	58.0	55.5	58.3	51.2	17.4	21.6	21.0	21.9	50.0	19.8
Estonia	57.8	60.8	60.4	52.6	6.8	26.5	29.3	29.3	53.3	2.3
France	55.2	54.1	56.4	56.0	3.7	28.7	29.1	28.4	55.7	8.1
Finland	36.8	42.9	39.7	53.8	17.8	27	27.3	24.7	54.4	11.3
Germany	57.5	57.1	57.7	54.1	1.9	24.3	25.1	25.1	53.7	3.4
Greece	45.2	46.9	54.5	52.9	1.4	33.7	35.8	34.1	51.6	5.9
Hungary	58.0	63.4	60.9	50.6	8.4	23.1	25.5	23.3	51.6	1.0
Ireland	57.2	54.0	57.6	54.5	7.4	34.2	33.2	32.3	51.9	12.9
Italy	61.1	60.9	59.1	52.0	6.1	32.5	30.3	32.3	52.0	5.6
Luxembourg	55.2	55.1	53.8	52.9	6.8	22.3	24.9	23.3	53.0	4.2
Netherlands	51.1	54.0	51.7	54.6	9.3	23.7	23.4	24.3	54.2	8.0
Poland	59.9	61.2	58.6	56.1	7.1	24.2	24.3	25.1	57.8	3.1
Slovenia	55.0	54.5	56.5	56.1	3.5	26.7	27.0	25.8	57.0	3.6
Spain	58.5	59.0	50.0	50.6	0.7	31.3	31.7	31.1	50.6	3.0
Sweden	54.8	47.4	54.9	46.0	29.9	22.2	19.6	22.5	47.6	29.0
UK	53.9	54.5	54.9	51.2	13.5	29	27.5	29.5	51.2	11.3

Source: own calculations from LIS database. Interpretation: In Austria, 51.8% of the inequality before transfers is explained by the inequality existing within each group while 1.9% is explained by the inequality existing between the two groups.

Figure 1a: people aged 65 to 74



Source: own calculations from LIS (2006)

Figure 1b: people aged 75+

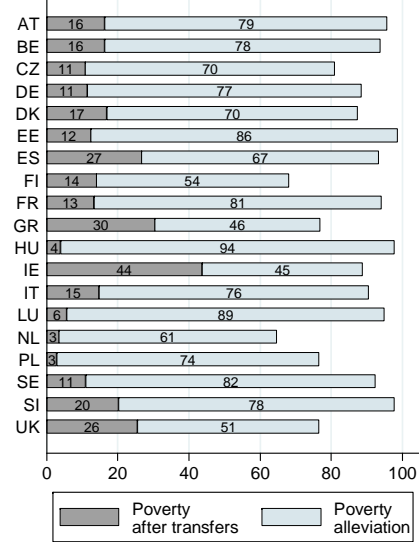
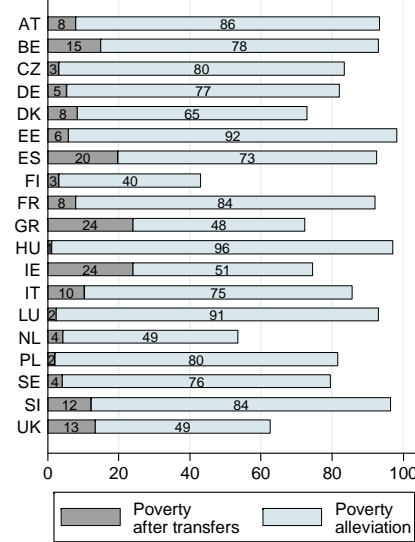


Figure 2a: men aged 65+



Source: own calculations from LIS (2006)

Figure 2b: women aged 65+

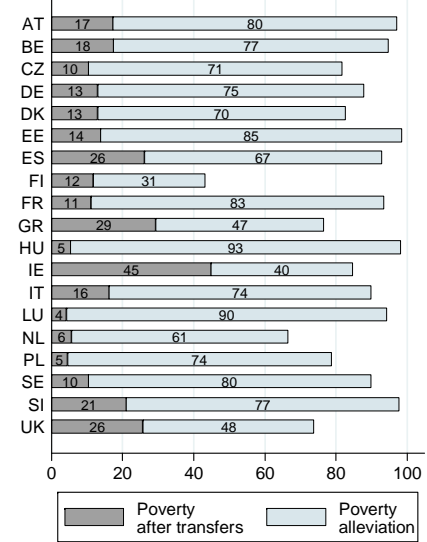


Figure 3a: men aged 65 to 74

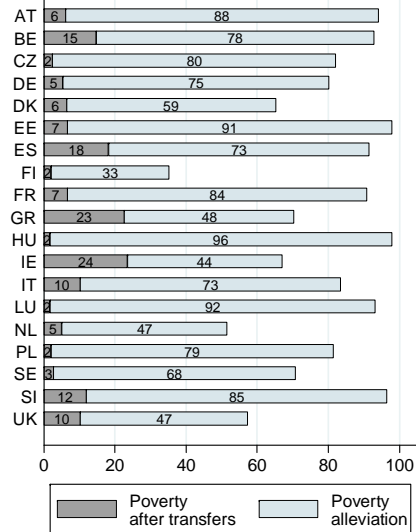
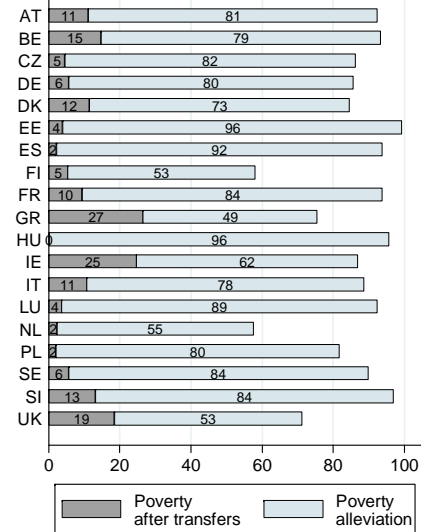


Figure 3b: men aged 75+



Source: own calculations from LIS (2006)

Figure 4a: women aged 65 to 74

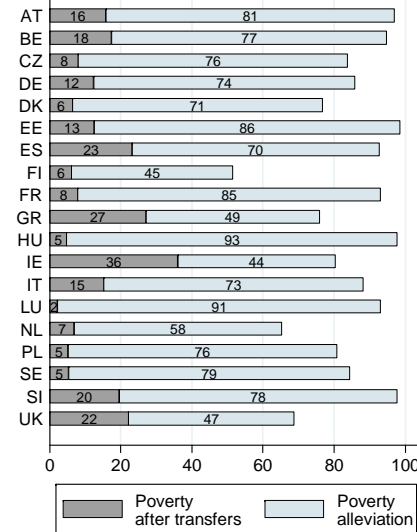
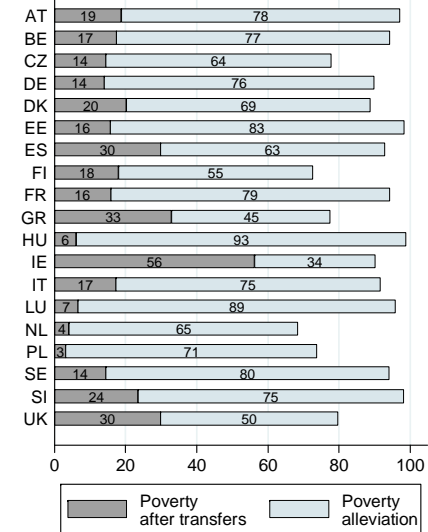


Figure 4b: women aged 75+



Source: own calculations from LIS (2006)