

The Distribution of Opportunities Among Children in Spain and Italy: Inequality and Polarization¹

draft

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Abstract

The aim of our paper is to focus on the distribution of opportunities among children - which does not necessarily correspond to the distribution of income of the parents or the household to which they belong - and its evolution through time in two different developed countries: Spain and Italy, during the 1980s and early 1990s. Starting by attributing to each child the equivalized income of the household to which they belong we analyze how the distribution changes once we impute to each child the provisions made by governments to reduce the effects of parental income on child well-being, namely health care and education.

We estimate non-parametrically the whole distribution of income with and without in kind transfers in order to highlight its evolution through time and the effect of the transfers on its shape.

Furthermore, we summarize the characteristics of the distribution and the movements observed by an index as the previous stage of analysis will provide us only with a graphical tool difficult to include in further stages of analysis. We believe that Lorenz-consistent inequality measures are generally not sufficient for this purpose as they fail to adequately distinguish between convergence to the global mean and clustering around local means. Measures that satisfy the Pigou-Dalton principle should be put side to side with measures of polarization.

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1. Introduction

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The paper is organized as follows. The next section presents the data and the methodology used in our analysis. The third section discusses the tools for dealing with distributional changes, the fourth section presents the distribution of income for the whole population in each country. The fifth section shows their distribution by age groups. Section six presents the distribution of income among children. The last section summarizes the main results.

2. Data and methodology

This paper focuses on Spain (Encuesta de Presupuestos Familiares, INE, 1980/1 and 1990/1) and Italy (SHIW 1986, 1991 and 1995). In order to assure the highest degree of

comparability among the two countries the data are taken from the LIS database. We will use household disposable income as our definition for “initial income” that includes wages, self-employment income, cash property income and cash social transfers, net of mandatory contributions and income tax. Despite the quality of this variable is not the same in all years and countries it is the best reference for any comparison. This income is adjusted to take into account the economies of scale in presence of different size and composition of households. The equivalent income in a household is obtained by dividing the disposable income by the number of equivalent adults according to the OECD scales⁴. Equivalent income is then assigned to each member of the household. The final units of our analysis are individuals.

In order to approximate the actual opportunities of members of a household, going beyond disposable income, we construct “final income” by assigning to each individual his/her portion of in-kind transfers perceived as participating in the amount of public expenditure in health care and education. The process for imputation is the following. First we compute the aggregate amount of public expenditure in health care and education for each country, according to different national sources. Second we impute to each individual the corresponding amount according to his characteristics (age, sex, if attending school, region,...). The appendix provides the details. Note that, unlike household income, these in-kind transfers cannot be redistributed within the household, for this reason they are directly assigned to each person.

Regarding education, all public capital and current expenditure in all levels are considered. The distribution among people take into account the level of schooling each person is attending provided he is going to school⁵. In the case of Spain we have also distinguished by autonomous region to account for regional differences in public expenditure in education arising from the decentralization process that begun in the early eighties.

For health care, all capital and current expenditure are included covering primary and specialized care, hospitals, pharmacy and other social services. Health care is generally considered as an insurance, hence in-kind transfers are assigned to each individual based on the

⁴ Assigning a weight 1 to the first adult, .7 to the rest of adults and .5 to each child (less than eighteen years old).

⁵ For children younger than fifteen years old, the level of education is estimated according to their age, assuming all of them go to school. For older people, we estimate the level of education according to their age, but we know whether they go or not to school.

available information on differences in the cost of assistance by demographic groups (distinguishing by age and sex).

As was already mentioned, the choice of LIS data, rather than national original data, has the big advantage of a greater comparability of disposable income, but it is not costless. It affects the definition of final income. Some information about households is lost, in particular we cannot identify which families in Spain were not covered by the public system of Social Security in 1980 – figure that was around 20% of population. As a consequence we need to assume that everybody was covered, overestimating the impact of health care for that year. This implies that we do not take into account the effect of changes in the share of protected people. This problem is not important in Spain in 1990 and in Italy in all years since protection was almost universal in those cases. We also lose some information regarding the level of education and children attending to school that we consider of minor relevance.

3. Changes in income distributions

To conduct this study we need different tools to describe distributional changes in both countries. For that, we describe first the national distribution estimating the corresponding density using non-parametric techniques.

By using the kernel method we can estimate the income distribution and its evolution through time for the whole population and for its subgroups.

The main idea of the non-parametric methods for estimating the density function of income is to let the data speak for itself. The estimate of the density function, $\hat{f}(y)$, is determined directly from the data of the sample, y_1, y_2, \dots, y_N , without assuming a priori its functional form. The only assumption made is that there exists a density function, $f(y)$, from which the sample is extracted. The non-parametric method used in this work is optimally derived from a generalization of the kernel density estimator to take into account the sample weights attached to each observation, namely from adaptive or variable kernel.

The adaptive kernel is built with a two stage procedure: a density is determined in the first stage in order to obtain the optimal bandwidth parameter; in the second stage the final density is computed. In detail the procedure is as follows:

1. Find a pilot estimate, $\tilde{f}(y)$ such that $\tilde{f}(y) > 0$ i defined as:

$$\tilde{f}(y_i) = \frac{1}{nh_N} \sum_{j=1}^N K \left(\frac{y_j - y_i}{h_N} \right) \quad i \quad (1)$$

where N is the number of observations of the sample, h_N is the bandwidth parameter and $K(\cdot)$ is the kernel function. In this paper the kernel function that has been used is the normal.

It has been proven⁶ that the final estimate is insensitive to the fine detail of the pilot estimate.

2. Define a local bandwidth factor, $\lambda(y_i)$:

$$\lambda(y_i) = \frac{\tilde{f}(y_i)^{-\frac{1}{2}}}{g}$$

where g is the geometric mean of $\tilde{f}(y_i)$:

$$\log g = \frac{\sum_{i=1}^N \log \tilde{f}(y_i)}{N}$$

The local bandwidth parameter for all y_i depends on the estimated density at y_i .

3. The final estimate is given by:

$$\tilde{f}_a(y_i) = \frac{1}{n} \sum_{j=1}^N \frac{1}{h_N \lambda(y_j)} K \left(\frac{y_j - y_i}{h_N \lambda(y_j)} \right) \quad i \quad (2)$$

where in addition to a global bandwidth parameter h_N a local one is included in the estimating procedure $\lambda(y_j)$.

⁶ Silverman (1986) pag.101.

The adaptive kernel has been modified in this paper in order to take into account the sample weights, ϑ_i associated to each observation. As a consequence every observation is weighted by ϑ_i and not by $1/N$ implying that the expressions used in (1) is:

$$\tilde{f}(y_i) = \sum_{j=1}^N \frac{\vartheta_j}{h_N} K \left(\frac{y_j - y_i}{h_N} \right) \quad i$$

while in (2) is:

$$\tilde{f}_a(y_i) = \sum_{j=1}^N \frac{\vartheta_j}{h_N \lambda(y_j)} K \left(\frac{y_j - y_i}{h_N \lambda(y_j)} \right) \quad i$$

where the sample weights are normalized in order to sum to one, $\sum_i \vartheta_i = 1$.

We estimate the density functions of the logarithm of income for two different reasons:

- the kernel estimator has some difficulties in dealing with densities that have a high degree of asymmetry. It is possible to show that the smallest MISE depends on f through $R(f'') = \int f''(y)^2 dy$, which is a measure of the total curvature of f . The magnitude of this quantity gives an indication of how well f can be estimated even when h_N is chosen optimally. Hence for a density with high skewness, kurtosis, several modes $|f''(y)|$ will assume relatively high values implying a larger value $R(f'')$. It has been shown⁷ that the density BETA(4,4) is the easiest to estimate and that the order among some densities is the following:

Beta (4,4)
Normal
Gamma (3)
Lognormal

⁷ For the proof see Wand and Jones (1995).

Densities close to normality appear to be easiest for the kernel estimator to estimate. Hence as the density of the level of income resembles to a Lognormal its logarithm will be similar to a Normal.

- We are interested in the movements over time of the distributions. These can be more easily detected by shrinking the long tails present in the distribution of the level of income.

The previous analysis does not allow to summarize how the distribution changed. For that we need some indices accounting for distributional changes.

During the last decades some consensus was achieved among economists about the way to undertake the analysis of inequality. A distribution is said to show less inequality than other one as long as it displays a Lorenz curve lying above, or equivalently if it can be obtained from the first one by a sequence of progressive Pigou-Dalton transfers. When the distributions display crossing Lorenz curves a wide set of indices consistent with the Pigou-Dalton Principle of transfers is accepted, according to different sensitivities to transfers at each point in the distribution. For instance the Gini coefficient puts more weight on transfers occurring at the most populated part of the distribution.

Nevertheless, during the past decade distributional changes considered as worsening the distribution in several countries have shown a specific pattern which could not be entirely captured by Lorenz-consistent measures, as they fail to adequately distinguish between convergence to the global mean and clustering around local points (that can be the mean of emerging groups).

This dissatisfaction with Lorenz consistent indices to capture this phenomenon motivated independent work by Wolfson (1994) and Esteban and Ray (1994) who have conceptualized the notion of polarization. A further extension of the analysis in the latter, Esteban, Gradín and Ray (1999) -hereafter ERG-, shows the measure proposed by Wolfson to be obtained as a particular case of a more general family of measures.

In our paper, jointly with the standard analysis of inequality, accounted by Gini coefficient, we will follow the ERG approach to summarize polarization of a given

distribution when we consider groups as intervals of incomes and the extension in Gradín (1999a) where groups are overlapping subpopulations according to relevant characteristics⁸.

Let us consider a distribution F of relative equivalent incomes -the original or a non-parametric estimate. Let $\rho = (y_1, y_2, \dots, y_k, p_1, p_2, \dots, p_k, z_1, z_2, \dots, z_k)$ indicate a partition of the population into k adjacent groups, with p_i population share, y_i conditional mean for group i and z_i indicating the cut-off income between group i and $i+1$.

From a statistical view, the partition ρ is a representation of F , which induces an approximation error, $\varepsilon(F, \rho)$. For $G(F)$ indicating the Gini index of inequality for the distribution F , the error is expressed as:

$$\varepsilon(F, \rho) = G(F) - G(\rho) \quad (3)$$

Polarization is assumed to be the result of each individual feeling identified with people of his own group and alienated towards people of other groups. Polarization in F is then expressed as polarization in the representation ρ minus the lack of identification within the groups -accounted by the error-:

$$P(F; \alpha, \beta, \rho) = ER(\alpha, \rho) - \beta \varepsilon(F, \rho) \quad (4)$$

where ER indicates the measure of Esteban and Ray (1994) given by:

$$ER = \frac{\sum_{i=1}^n p_i^{1+\alpha} p_j / \ln(y_i) - \ln(y_j)}{\sum_{i=1}^n p_i^{1+\alpha} p_j} \quad (5)$$

for $\alpha \in [1, 1.6]$ the sensitivity to polarization, and $\beta \geq 0$ the weight to the identification term.

The number of groups is assumed to be exogenous while their locations will be chosen so to minimize the error of the representation of F by ρ , as groups are not expected to be internally much unequal.

At the same time the method above described can be used to check how the society is polarizing with respect to different partitions suggested by economic theories. We might be interested in monitoring how the well-being of educational groups is evolving, if there are regional differences in incomes and hence regional polarization, if there is generational polarization as groups composed of individual belonging to the same age-class are owning different income in different years, if some workers of given sectors are earning more than

⁸ See Gradín (1999a) and D'Ambrosio (1998) for the analysis of Spain and Italy respectively with a similar approach.

others causing occupational polarization. In these case groups are no longer adjacent groups, they can overlap. Gradín (1999a) extends the ERG approach to deal with this case, showing that then the lack of identification is the result of intragroup inequality as well as overlapping between groups.

In this last case, polarization as defined in (4) might be negative. In order to normalize the index to take only non negative values, the minimum value that the index can take, $- \beta$, is subtracted and then we consider the following index:

$$P^*(F; \alpha, \beta, \rho) = P(F; \alpha, \beta, \rho) + \beta \quad (6)$$

4. The distribution of initial and final income in Spain and Italy

During the second half of the 1980s most European countries experienced an economic expansion. Table 1 reports changes in average incomes in Spain and Italy. Aggregate initial income considerably increased in real terms during the 1980s in both countries, 23% in Spain for all the decade, and 40% for Italy for the second half, while the recession in early 1990s caused a 8% reduction in aggregate income in Italy.

Introducing in-kind transfers increased opportunities of households by augmenting their final income, 12.5% in Spain in 1980, while this percentage was greater in 1990, 14.5%⁹. The case of Italy is more outstanding, these transfers expanded initial income 13.7% in 1986 and 23% in 1995. In both countries the transfer was larger in the case of health care. As a consequence in-kind transfers contributed to the expansion of income during the 1980s (an additional 2% in Spain, 7% in Italy) and curbed the recession during the early 1990s in Italy.

⁹ Actually this increase was a 20% larger, recall the overestimation of expenditure in 1980.

Table 1. Average income in Spain and Italy							
	Initial	with Education		with Health care		with both	
		change (1)		change (1)		change (1)	
Spain							
1980	588,170	614,878	4.54	634,767	7.92	661,474	12.46
1990	723,607	764,170	5.61	787,830	8.88	828,392	14.48
change 1980-90	23.03	24.28		24.11		25.23	
Italy							
1986	9,440	10,095	6.94	10,075	6.73	10,730	13.66
1991	13,197	14,249	7.97	14,738	11.68	15,791	19.65
1995	12,031	13,059	8.54	13,764	14.41	14,792	22.95
Change 1986-91	39.79	41.15		46.28		47.17	
Change 1991-95	-8.83	-8.36		-6.61		-6.32	
Notes:							
All incomes in constant terms, in pesetas and thousands of lire of 1990.							
(1) Change in percentage with respect to the value for the initial income in the same year							
Source: Own construction using LIS dataset							

We want to conduct the analysis of the income distribution. In order to capture the distributive effects of in-kind transfers, we compare the distribution of income before and after transfers take place (figures 1 and 2).

The effect of in-kind transfers is to move the whole density towards higher level of income shifting mass from the left tail both to the center and to the right tail for both countries and in all the years analyzed. In the 1990's this effect is more pronounced than in 1980's, especially for Italy 1991 and 1995 where the effect of the transfers is to reduce the dispersion of income present in the distribution due to a shift of mass from the left tail more to the center than to the right tail of the density.

Table 2 and 3 present the results of computing indices of inequality and polarization respectively. For the sake of simplicity, in the case of polarization we only report here a particular case, three groups, $\alpha=1$ and $\beta=1.3$.

Table 2. Income inequality in Spain and Italy: Gini coefficient							
	Initial	with Education		with Health care		with both	
		change (1)		change (1)		change (1)	
Spain							
1980	0.325	0.315	-3.19	0.303	-6.87	0.293	-9.85
1990	0.308	0.296	-3.89	0.285	-7.43	0.273	-11.37
change 1980-90	-5.52	-6.20		-6.08		-7.11	
Italy							
1986	0.309	0.297	-3.97	0.291	-5.92	0.278	-10.02
1991	0.293	0.282	-3.63	0.265	-9.54	0.253	-13.61
1995	0.348	0.335	-3.60	0.311	-10.73	0.298	-14.48
change 1986-91	-5.26	-4.92		-8.91		-9.04	
change 1991-95	18.71	18.74		17.14		17.51	
Notes:							
(1) Change in percentage with respect to the value for the initial income in the same year							
Source: Own construction using LIS dataset							

Table 3. Income polarization in Spain and Italy: the case of 3 groups, $\beta=1$, $\alpha=1.3$									
	Initial Income			Final Income					
				with Education		with Health care		with both	
	P	ER	ε	P	change (1)	P	change (1)	P	change (1)
Spain									
1980	0.093	0.138	0.045	0.090	-3.60	0.085	-8.40	0.082	-11.71
1990	0.086	0.129	0.043	0.083	-4.32	0.079	-8.65	0.075	-13.14
change 1980-90	-7.20	-6.49	-5.04	-7.90		-7.45		-8.70	
Italy									
1986	0.089	0.132	0.043	0.085	-4.68	0.082	-7.61	0.078	-12.38
1991	0.085	0.125	0.040	0.081	-4.33	0.075	-12.01	0.071	-16.73
1995	0.102	0.152	0.050	0.098	-4.35	0.090	-12.32	0.085	-16.58
change 1986-91	-4.67	-5.36	-6.81	-4.32		-9.20		-9.40	
change 1991-95	20.16	21.36	23.93	20.13		19.73		20.37	
Notes:									
(1) Change in percentage with respect to the value for the initial income in the same year									
Source: Own construction using LIS dataset									

Polarization declined in Spain during the 1980s regardless of the number of groups in the distribution and the coefficient of sensitivity to polarization. In each year the level of

polarization is lowered by the introduction of education and health care expenditures by more than 10%, being higher the decline in 1990. Introducing health care lowers the level of polarization twice as much as the amount corresponding to the introduction of education.

In a similar way, polarization decreased in Italy during the late 1980s, but strongly increased for the early 1990s. Introducing public expenditure lowers the level of polarization as in Spain, with increasing intensity between 1986 and 1991. The difference is that the reduction in 1991 is stronger in Italy than in Spain, being more than 15%. This was due to the increasing impact of health care, while there was a reduction for the impact of education in the cases of two and three groups. The distributional impact seems to be stabilized since that year, in 1995 the intensity of the reduction was slightly smaller than in 1991.

To understand why polarization increased or decreased in each period, table 4 reports the income ratio for extreme optimal groups. It is clear that the difference in their average incomes shrunk in Spain between 1980 and 1990, and Italy between 1986 and 1991, but the opposite was true in Italy for the 1991-95 period. Both in-kind transfers, especially health care, played an important role in reducing these ratios.

Table 4. Ratio for extreme optimal groups in Spain and Italy												
	Initial			with Education			with Health care			with both		
Spain												
n^{er} of groups	2	3	4	2	3	4	2	3	4	2	3	4
1980	2.54	3.97	5.35	2.46	3.79	4.57	2.38	3.60	4.71	2.31	3.45	4.47
1990	2.42	3.64	4.82	2.33	3.46	4.54	2.26	3.30	4.27	2.17	3.13	3.99
Italy												
n^{er} of groups	2	3	4	2	3	4	2	3	4	2	3	4
1986	2.44	3.63	4.81	2.34	3.47	4.81	2.31	3.35	4.35	2.21	3.20	4.12
1991	2.32	3.41	4.38	2.25	3.27	4.15	2.13	3.02	3.79	2.06	2.86	3.59
1995	2.72	4.37	6.17	2.62	4.14	5.72	2.42	3.69	5.05	2.33	3.49	4.74
Source: Own construction using LIS dataset												

As far as inequality is concerned, it declined for the 1980s in both countries, increased in Italy during the 1990s, with in-kind transfers affecting the values in a way similar to polarization.

Figure 1: Spain- Income distribution with and without in-kind transfers. 1980 – 1990.

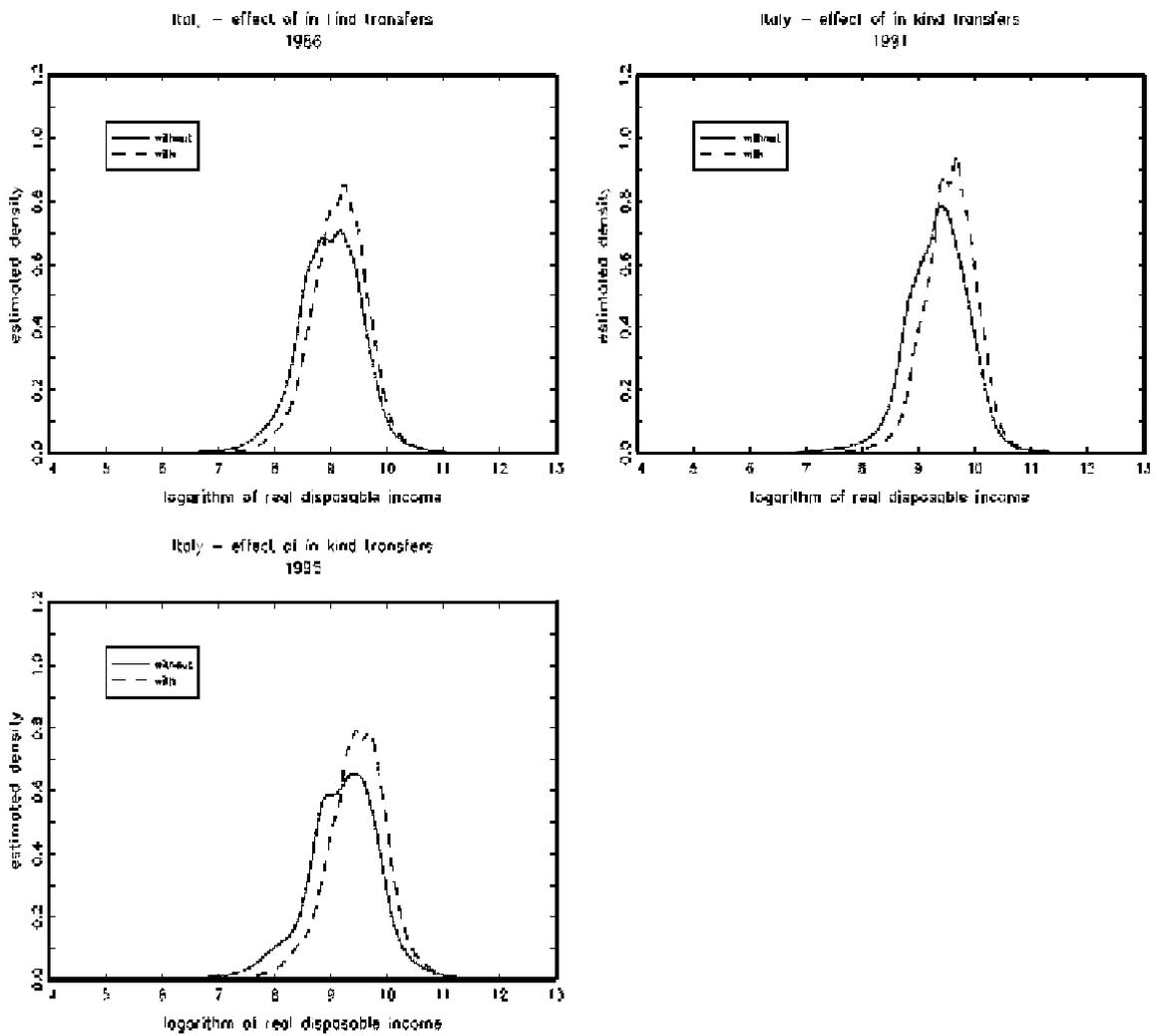


Figure 2: Italy- Income distribution with and without in-kind transfers. 1986 – 1991 - 1995.

5. Income distribution by age

In order to study the extent to which both distributions were polarized with respect to different generations, we brake each population into four groups according to their age: children (14 years old or younger), young adults (between 15 and 30 years old), adults (between 31 and 64) and the elderly (older than 64). Since in-kind transfers affect in different way age groups, we will also investigate how the distribution changes after introducing these transfers.

Observing table 5, that reports changes in average incomes, it is clear that children progressively loose positions in terms of average initial income, specially in Italy from 90% of the average income to 80% in ten years, with less intensity in the case of Spain, from 93% to 89%. Children became the poorest age group in both countries, with a big distance from the rest. Adults have the highest average income in all cases.

	Initial Income		Final Income									
			with Education			with health care			with both			
Spain	1980	1990	1980	1990		1980	1990		1980	1990		
<i>children</i>	0.93	0.89	0.97	0.97		0.90	0.87		0.95	0.94		
<i>young adults</i>	1.04	1.02	1.09	1.08		1.05	1.01		1.10	1.07		
<i>adults</i>	1.05	1.04	1.00	0.99		1.04	1.04		1.00	0.99		
<i>elderly</i>	0.92	0.98	0.88	0.93		0.96	1.05		0.92	1.00		
Italy	1986	1991	1995	1986	1991	1995	1986	1991	1995	1986	1991	1995
<i>children</i>	0.90	0.86	0.81	1.03	1.01	0.95	0.88	0.84	0.78	1.01	0.97	0.91
<i>young adults</i>	0.98	0.99	0.99	1.04	1.07	1.11	0.96	0.95	0.95	1.02	1.03	1.05
<i>adults</i>	1.06	1.07	1.06	0.99	0.99	0.98	1.06	1.05	1.04	0.99	0.98	0.97
<i>elderly</i>	0.95	0.96	1.04	0.89	0.89	0.96	1.04	1.10	1.18	0.98	1.02	1.09
Notes: Income relative to the global mean (=1)												
Source: Own construction using LIS datasets												

If children became poorer through time, on the other side of the coin there was an improvement in the relative position of elderly (from 92% to 98% of the average initial income in Spain, and from 95% to 100% in Italy).

As table 6 shows, in Spain all groups increased in size at the expense of children, that went down from 26% to 20% of population. In Italy the same occurred during the 1980s, while during the 1990s also both adult groups started to shrink in size. The global reduction in the proportion of children was not so big as in Spain, 2.6% for the decade.

Table 6. Population shares for age groups in Spain and Italy			
Spain	1980	1990	
<i>children</i>	0.258	0.196	
<i>young adults</i>	0.229	0.251	
<i>adults</i>	0.398	0.412	
<i>elderly</i>	0.115	0.141	
Italy	1986	1991	1995
<i>children</i>	0.176	0.153	0.150
<i>young adults</i>	0.247	0.257	0.237
<i>adults</i>	0.452	0.452	0.448
<i>elderly</i>	0.125	0.138	0.164
Notes: All population=1			
Source: Own construction using LIS datasets			

The lost in the relative position of children was smaller if we focus on final income in Spain, only from 95% to 94% of the average income, although was still important in Italy during the second half of 1980s, from 100% to 97%, and more during the first half of the 1990s, from 97% to 91%. Obviously, for children education expenditure had a more relevant impact on income than health care. The latter, indeed, decreased their income in relative terms, since the main beneficiaries were the elderly.

After adding in-kind transfers, Italian children were relatively better off than the Spanish ones in 1990, while the opposite was true with initial income. Despite children are the main beneficiaries of in-kind transfers (due to education), they remain the poorest group in both countries.

We now turn to look at the impact of changes in the distribution of income by age groups, incorporating also the intragroup distribution. Figures 3 to 7 show the respective densities obtained by adding both education and health care. In both countries in all the years the adult group is the one whose distribution is less affected by in kind transfers.

For Spain the effect of the transfers is more evident in 1990 where for children and elderly there is the additional effect of reducing the dispersion of income due to a shift of mass from the left tail more to the center than to the right tail of the density. It is worthwhile noticing the change in the shape of the densities of income without in-kind transfers for children and elderly from 1980 to 1990. Comparing the changes in the distributions of income without in-kind transfers in the ten years of analysis it can be highlight a shift of all the densities towards higher levels of income with this movement being extremely more pronounced for the elderly. As a consequence the elderly where the group that experienced the highest gains of welfare from 1980 to 1990.

For Italy the effect of in-kind transfers on the distribution of the elderly increased over time. For the children the transfers reduced the dispersion of income among them. The same holds for the elderly but only in the 90's. From 1986 to 1995 the distributions of all age groups moved towards higher levels of income with relevant differences between the groups. Going from 1986 to 1991 the groups that gained less was the one composed by the children as the density without in-kind transfers shifted less to the right than the densities of the other groups. In-kind transfers increased proportionally for all the groups. As a consequence in-kind transfers did not offset the previous effect. From 1991 to 1995 there has been a movement of mass of the density without transfers towards lower level of income. This effect is very small for the elderly and extremely pronounced for the children. The same considerations are valid if transfers are included. The net effect of the movements in the distribution from 1986 to 1995 in Italy was such as to let the children being the group that gained less.

Table 7. Generational polarization in Spain and Italy: the case of $\beta=1$, $\alpha=1.3$									
	Initial Income			Final Income					
				with Education		with Health care		with both	
	P	ER	ϵ	P	change (1)	P	change (1)	P	change (1)
Spain									
1980	0.714	0.0110	0.297	0.742	1.90	0.727	3.92	0.750	5.15
1990	0.732	0.0108	0.279	0.757	1.41	0.742	3.52	0.760	3.81
change 1980-90	2.51	-1.49	-6.08	2.01		2.11		1.20	
Italy									
1986	0.739	0.0146	0.276	0.758	-0.63	0.734	2.69	0.732	-0.88
1991	0.761	0.0162	0.255	0.798	-0.59	0.757	4.83	0.765	0.42
1995	0.707	0.0153	0.309	0.774	-0.21	0.705	9.55	0.750	6.06
change 1986-91	3.08	11.07	-7.67	3.12		5.23		4.44	
change 1991-95	-7.19	-5.66	21.11	-6.83		-3.00		-1.97	

Notes: (1) Change in percentage with respect to the value for the initial income in the same year
Source: Own construction using LIS dataset

Summarizing these changes through our indices of polarization in table 7, we observe that polarization by age groups increased in Spain, 1980-90, and Italy 1986-91, but declined about 7% in Italy 1991-95. Right the opposite of polarization with optimal groups.

The reason for increasing generational polarization had to do with increasing identification (age groups internally more equal), and in the case of Italy between 1986 and 1991 was reinforced by increasing polarization between age groups. Indeed, in that case the position of all groups improved in relative terms except children (in Spain all groups are worse except the elderly).

As table 8 shows, all groups experienced a decline in their internal dispersion during the 1980s. This decline was larger the greater the age in Spain, while there was almost no change in intragroup inequality for this group in Italy. During the 1990s in Italy all groups experienced a similar wide increase in inequality, less important in the case of the elderly. In both countries the elderly became the most identified group, with children in an intermediate position.

Table 8. Intragroup inequality by age groups in Spain and Italy												
	Initial Income			Final Income								
				with Education			with health care			with both		
Spain	1980	1990		1980	1990		1980	1990		1980	1990	
<i>Children</i>	0.317	0.306		0.286	0.268		0.303	0.291		0.273	0.254	
<i>young adults</i>	0.316	0.303		0.303	0.282		0.292	0.282		0.281	0.264	
<i>Adults</i>	0.332	0.313		0.332	0.313		0.308	0.290		0.308	0.290	
<i>Elderly</i>	0.324	0.288		0.324	0.288		0.289	0.248		0.289	0.248	
Italy	1986	1991	1995	1986	1991	1995	1986	1991	1995	1986	1991	1995
<i>Children</i>	0.301	0.289	0.352	0.255	0.250	0.294	0.288	0.266	0.320	0.245	0.231	0.269
<i>young adults</i>	0.317	0.297	0.359	0.301	0.281	0.344	0.303	0.277	0.329	0.290	0.263	0.319
<i>Adults</i>	0.313	0.292	0.352	0.313	0.292	0.352	0.295	0.265	0.315	0.295	0.265	0.315
<i>Elderly</i>	0.273	0.272	0.297	0.273	0.272	0.297	0.234	0.214	0.229	0.234	0.214	0.229
Source: Own construction using LIS datasets												

Introducing in-kind transfers increased polarization in Spain in both years, but with less intensity for 1990. In the case of Italy, while education transfers had no effect, health care also increased polarization, but with increasing intensity through time, since it made groups progressively more polarized between them and internally more identified.

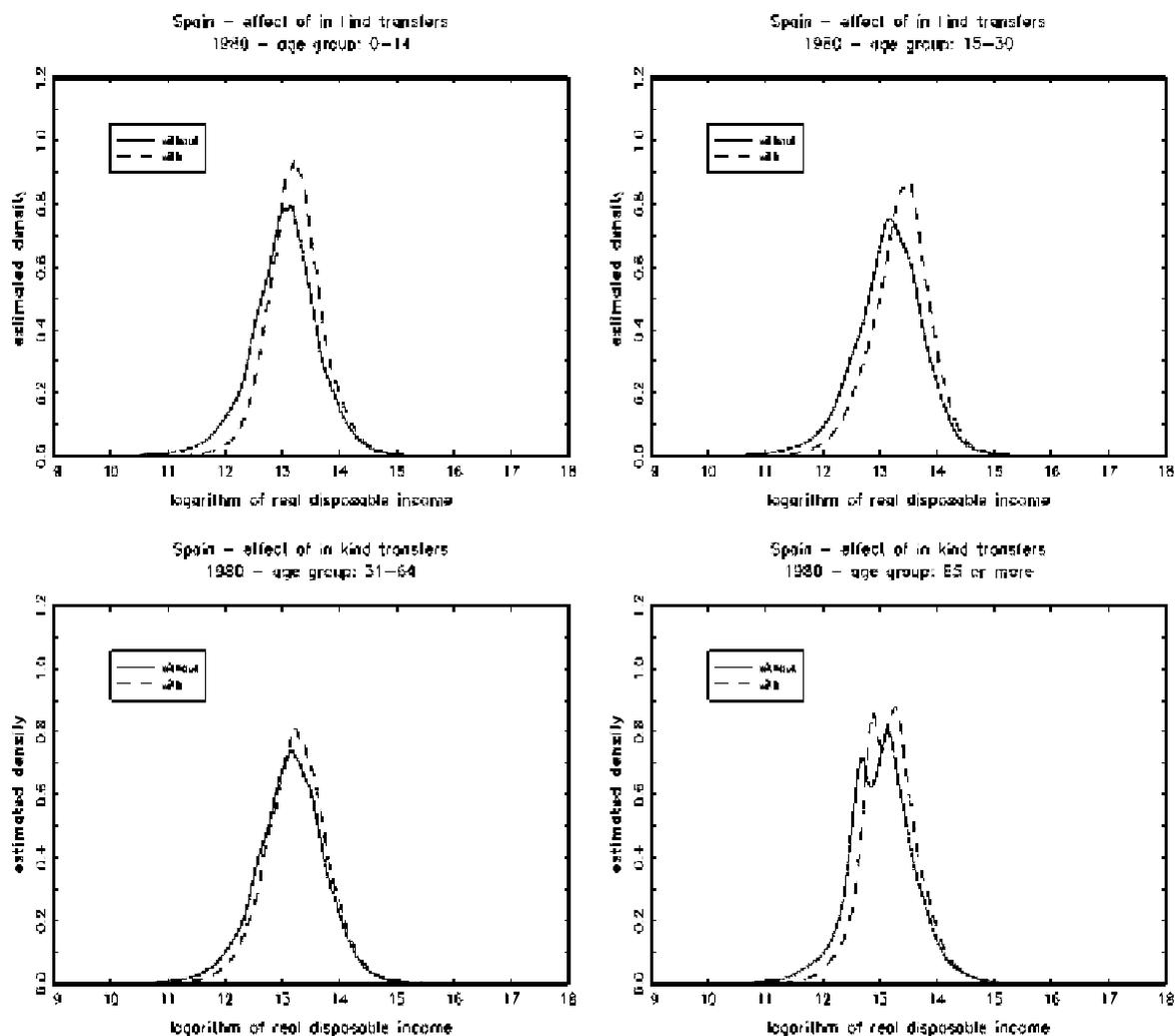


Figure 3: Spain- Income distribution with and without in-kind transfers. Age groups - 1980.

In Italy and Spain, in-kind transfers contributed during the 1980s to lower the increase in polarization when we only consider initial income, but it also restrained declining polarization in Italy during the 1990s.

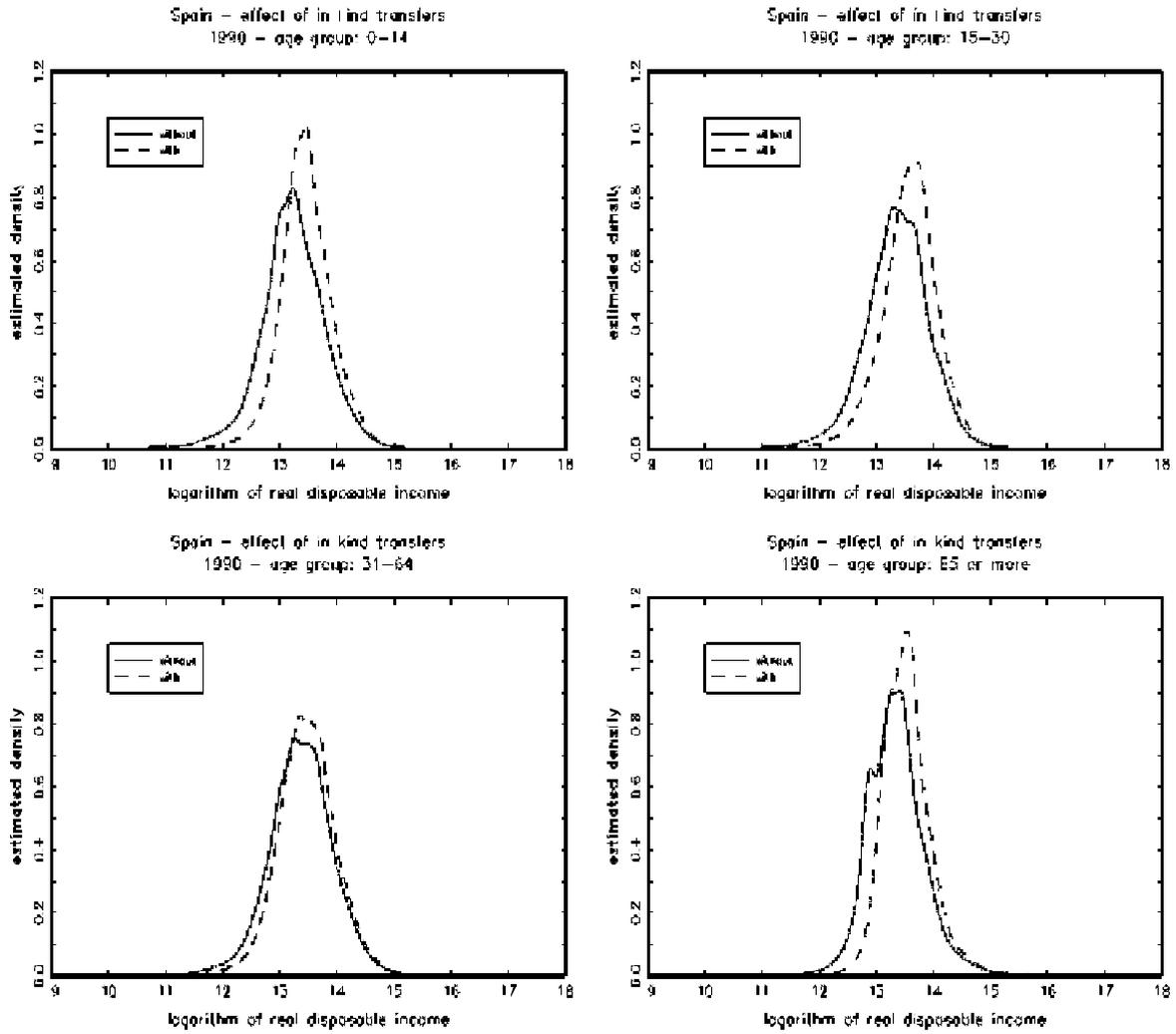


Figure 4: Spain- Income distribution with and without in-kind transfers. Age groups - 1990.

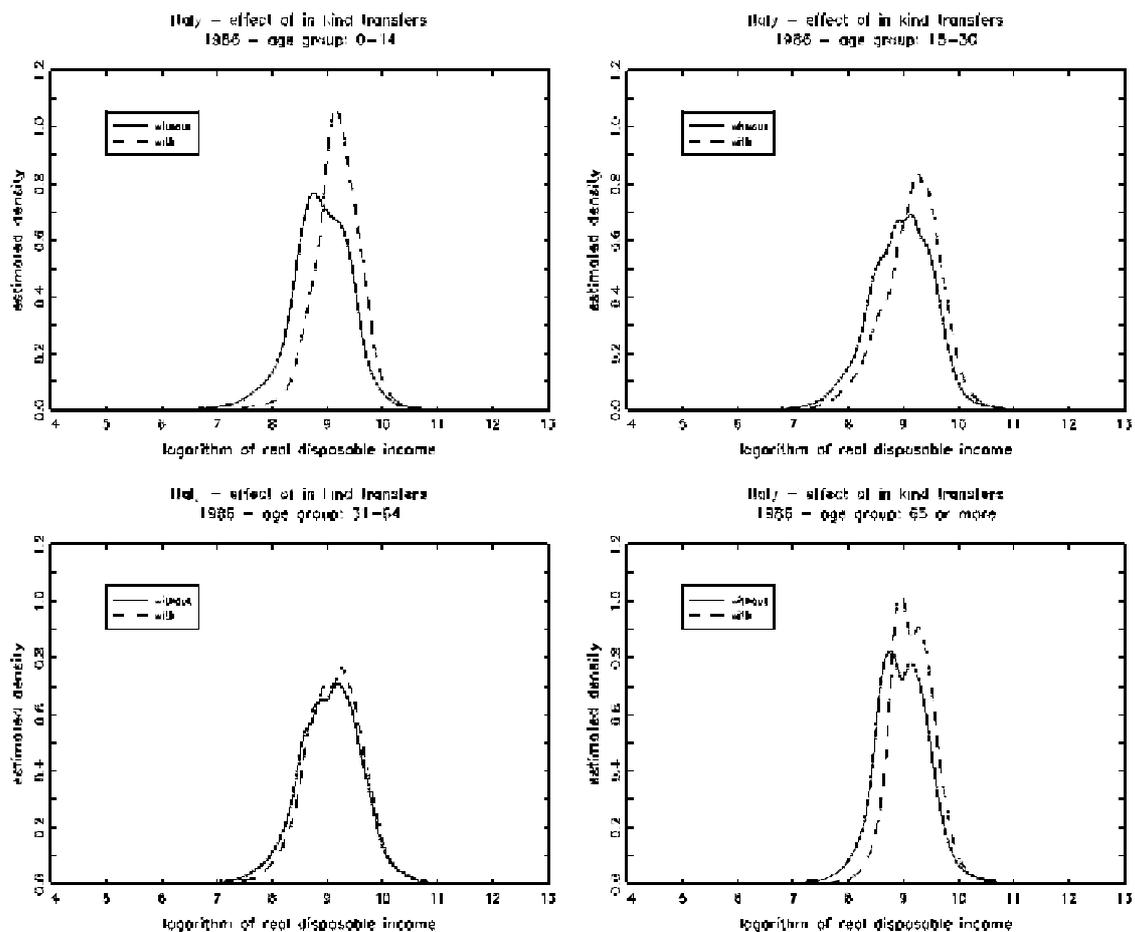


Figure 5: Italy- Income distribution with and without in-kind transfers. Age groups - 1986.

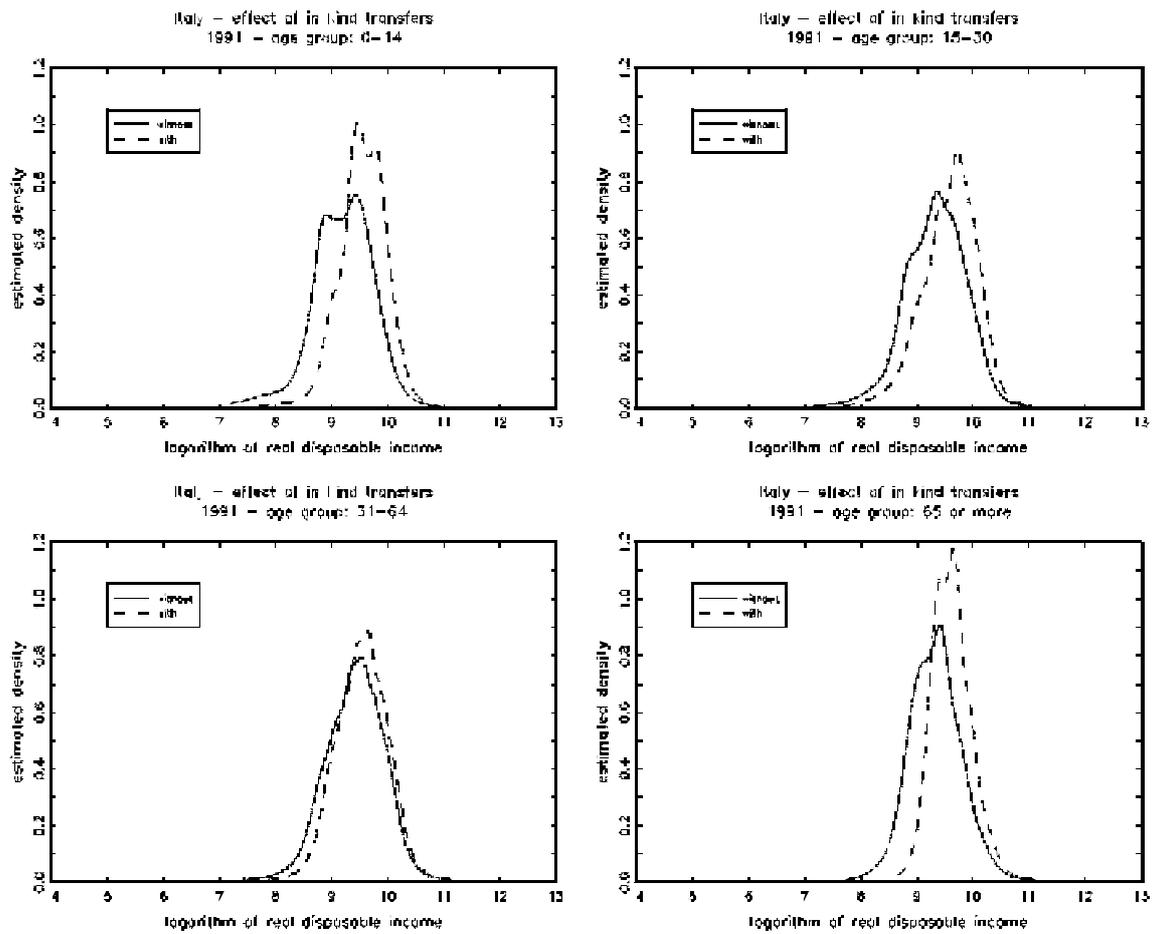


Figure 6: Italy- Income distribution with and without in-kind transfers. Age groups – 1991.

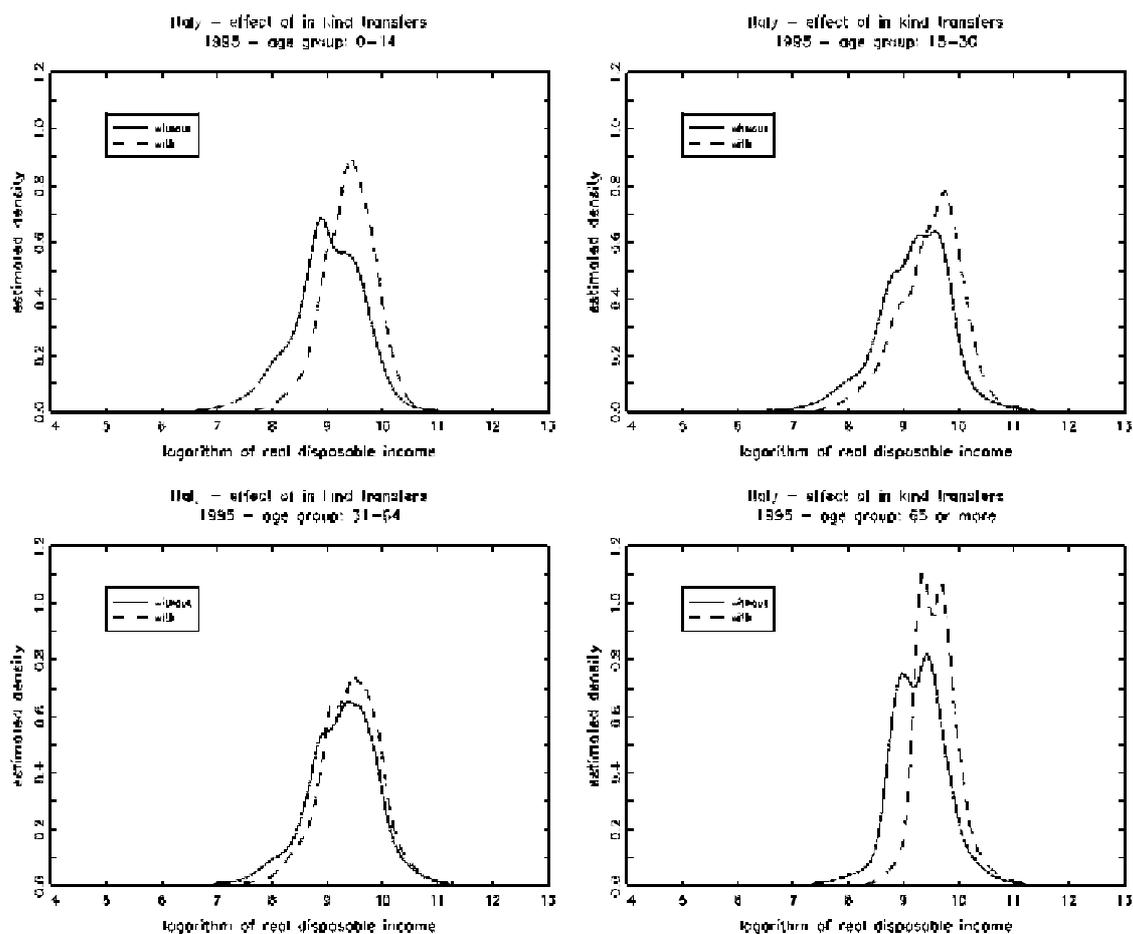


Figure 7: Italy- Income distribution with and without in-kind transfers. Age groups - 1995.

6. The distribution among children

So far we have focused on the relative position of children with respect to the other age groups. We now turn to investigating what were the changes that modified the distribution within this age group, and what factors are behind those changes.

It was already mentioned that inequality among children declined during the 1980s in Italy and Spain, strongly increasing in Italy during the 1980s.

Polarization within children declined in Spain during the 1980s as table 9 shows, but by a smaller amount than in overall population, approaching the level of polarization to that of the whole population, regardless of whether we include or not in-kind transfers. Polarization

among children remained stable or increased in Italy during the 1980s but strongly increased during the 1990s, becoming more polarized than the observed levels for the entire population.

In both countries the elderly display the lowest level of polarization within age groups. Furthermore they also experienced the largest reduction –see table 10-.

Table 9. Polarization in Spain and Italy within children: the case of 3 groups, $\beta=1$, $\alpha=1.3$									
	Initial Income			Final Income					
				with Education		with Health care		with both	
	P	ER	ϵ	P	change (1)	P	change (1)	P	change (1)
Spain									
1980	0.090	0.134	0.044	0.079	-12.23	0.085	-5.57	0.075	-16.82
1990	0.086	0.128	0.042	0.073	-14.49	0.081	-5.35	0.069	-19.54
change 1980-90	-4.52	-4.35	-3.99	-6.98		-4.30		-7.64	
Italy									
1986	0.089	0.132	0.043	0.085	-4.68	0.082	-7.61	0.078	-12.38
1991	0.085	0.125	0.040	0.081	-4.33	0.075	-12.01	0.071	-16.73
1995	0.102	0.152	0.050	0.098	-3.74	0.088	-13.96	0.083	-18.28
change 1986-91	-4.67	-5.36	-6.81	-4.32		-9.20		-9.40	
change 1991-95	20.16	21.36	23.93	20.89		17.49		17.92	
Notes:									
(1) Change in percentage with respect to the value for the initial income in the same year									
Source: Own construction using LIS dataset									

Table 10. Polarization in Spain and Italy within age groups: the case of 3 groups, $\beta=1$, $\alpha=1.3$						
	Young adults		Adults		Elderly	
	initial	final	initial	final	initial	final
Spain						
1980	0.085	0,074	0,086	0,079	0,080	0,072
1990	0.081	0,069	0,081	0,075	0,071	0,061
change 1980-90	-4.37	-6,77	-4,76	-4,64	-11,58	-15,21
Italy						
1986	0.089	0,076	0,086	0,081	0,076	0,065
1991	0.084	0,073	0,080	0,071	0,070	0,056
1995	0.096	0,087	0,095	0,084	0,076	0,059
change 1986-91	-5.66	-4,04	-7,51	-11,40	-7,93	-14,73
change 1991-95	15.28	18,61	19,12	17,32	8,45	5,77
Notes:						
(1) Change in percentage with respect to the value for the initial income in the same year						
Source: Own construction using LIS dataset						

What elements do determine the differences among children? Let us investigate how children might have become polarized with respect to some of their characteristics. We consider the following:

- The level of education completed by the householder: we distinguish between none, primary school, secondary school and higher education¹⁰.
- The region of residence: North, Center and South in Italy and three groups of autonomous region according to the 1980 initial income in Spain. For the latter we have used the three optimal groups minimizing intragroup dispersion.
- Household composition: we distinguish nine groups according to the number of children (none, one and more than one), and the number of earners (at most one, two and more than two).
- Employment status of the householder: we distinguish whether the householder is employed, self-employed/employee, retired and not working for other reasons (unemployed, looking for first job, housekeeping, rentiers, student,...).

¹⁰ In order to make homogeneous the available information for both countries, these levels were defined, using the original level for each country, in terms of potential years of education, respectively: "less than eight", "eight", "between eight and thirteen", "more than thirteen". The level of education was estimated through the age of each person, assuming all children below fourteen went to school.

According to LIS definitions, the householder in married couples is always the husband, but in the case the data were missing for him, the wife was considered as the householder¹¹.

One element that can explain an increasing process of polarization within children in a country is the increasing return to education in the labor market, improving the position of children whose householder has educational level and worsening the position for the rest. This seems, indeed, to be the characteristic generating the most polarized distribution in both countries, despite the evolution through time during the 1980s was quite different.

Table 11 presents the results for polarization according to the educational level of the householder, and tables 12 and 13 present respectively results for average income and population shares for each level.

There was an increase in the average level of education during the 1980s in both countries, with a substantial reduction in the proportion of people with the lowest level in Spain. However, some differences arise with respect to income distances between extreme groups, those without any formal education and those with a university degree. This distance was substantially shortened in Spain because of the fall in the relative income of the latter group, though it strongly increased in Italy. As a consequence, polarization between educational groups declined in Spain and increased in Italy for this period. Comparing both countries in 1990, we see that an Italian child in a household with university degree possessed 3.2 times the income of a child in a household where the householder had no education. In Spain this ratio was 2.7.

The groups becoming internally more identified in Italy and less in Spain reinforced these trends in income means.

During the early 1990s the process continued in Italy, but with a decline in the income distance between the groups in the middle, those with primary and secondary school.

Introducing in-kind transfers, specially education, substantially reduced the level of polarization between the groups, shortening distances between the extremes, with more intensity in Italy (a reduction between 20% and 30%) than in Spain (about 15%). But the final

¹¹ The problem is more important in Spain in 1980, since the original survey provides some information only for the householder, who was originally defined to be that person providing more income regularly to the household.

impact on polarization was not so big since it also increased the degree of internal identification.

Table 11. Educational polarization among children in Spain and Italy: $\beta=1, \alpha=1.3$									
	Initial Income			Final Income					
				with Education		with Health care		with both	
	P	ER	ϵ	P	change (1)	P	change (1)	P	change (1)
Spain									
1980	0.920	0.073	0.153	0.922	0.16	0.924	0.41	0.926	0.66
1990	0.906	0.062	0.156	0.910	0.51	0.910	0.54	0.917	1.25
change 1980-90	-1.59	-15.52	2.11	-1.25		-1.46		-1.02	
Italy									
1986	0.872	0.064	0.191	0.876	0.45	0.878	0.69	0.882	1.12
1991	0.920	0.071	0.152	0.912	-0.85	0.926	0.70	0.921	0.11
1995	0.872	0.075	0.203	0.867	-0.57	0.885	1.46	0.881	1.02
change 1986-91	5.47	12.16	-20.87	4.10		5.48		4.41	
change 1991-95	-5.22	4.59	33.86	-4.94		-4.50		-4.36	
Notes:									
(1) Change in percentage with respect to the value for the initial income in the same year									
Source: Own construction using LIS dataset									

Table 12. Average income for children by level of education in Spain and Italy												
	Initial Income			Final Income								
				with Education			with health care			with both		
Spain	1980	1990		1980	1990		1980	1990		1980	1990	
<i>none</i>	0.67	0.67		0.72	0.73		0.69	0.68		0.73	0.74	
<i>primary</i>	0.96	0.87		0.96	0.89		0.96	0.88		0.96	0.90	
<i>secondary</i>	1.45	1.21		1.39	1.17		1.43	1.20		1.38	1.16	
<i>university</i>	2.06	1.82		1.95	1.71		2.00	1.78		1.91	1.68	
Italy	1986	1991	1995	1986	1991	1995	1986	1991	1995	1986	1991	1995
<i>none</i>	0.55	0.50	0.52	0.63	0.61	0.69	0.57	0.54	0.56	0.65	0.64	0.71
<i>primary</i>	0.87	0.85	0.80	0.90	0.88	0.85	0.87	0.86	0.81	0.91	0.89	0.86
<i>secondary</i>	1.22	1.23	1.11	1.16	1.17	1.07	1.21	1.21	1.11	1.16	1.16	1.07
<i>university</i>	1.50	1.62	1.98	1.40	1.49	1.75	1.48	1.57	1.89	1.38	1.46	1.70
Notes: Income relative to the global mean (=1)												
Source: Own construction using LIS datasets												

Table 13. Population shares for children by level of education in Spain and Italy			
Spain	1980	1990	
<i>none</i>	0.280	0.145	
<i>primary</i>	0.570	0.582	
<i>secondary</i>	0.071	0.168	
<i>university</i>	0.078	0.105	
Italy	1986	1991	1995
<i>none</i>	0.038	0.015	0.022
<i>primary</i>	0.604	0.593	0.543
<i>secondary</i>	0.292	0.295	0.354
<i>university</i>	0.066	0.096	0.082
Notes: All population=1			
Source: Own construction using LIS dataset			

A highly polarized distribution among children arises also when we consider the number of earners in the households as well as the existence of other children, tables 14-16. Furthermore this kind of polarization strongly increased in both countries during the 1980s, while it declined in Italy during early 1990s. The former was due to the existence of groups increasingly polarized among them but internally more identified, the opposite was true for the latter. Like in the case of education in-kind transfers do not modify too much the polarization trends, simply smoothing it a bit.

All groups in Spain increased in size except those with more than two children. The most vulnerable group, with at most one earner and more than two children, experienced the largest decline in relative income, this was indeed the unique group with a fall in absolute terms. The groups with the best position and with the highest improvement were those children in households with no other child and two earners. The existence of additional earners, probably retired people, does not improve disposable income of the child.

In Italy the position of groups was similar to Spain. The best position was for children in households with two earners and a child, and the worst for children in households with one earner and more than two children. The distance between both groups was larger than in Spain in 1990. The 1980s are characterized by a deterioration in the position of children in households with one earner and more than two children, and an improvement in households with two earners, even if they had more children. This process changed during the 1990s.

The introduction of in-kind transfers in both countries, mainly education, improved the position of children in households with more than two children.

Table 14. Polarization for household composition among children in Spain and Italy: $\beta=1, \alpha=1.3$									
	Initial Income			Final Income					
				with Education		with Health care		with both	
	P	ER	ϵ	P	change (1)	P	change (1)	P	change (1)
Spain									
1980	0.798	0.021	0.224	0.812	1.79	0.809	1.38	0.822	3.12
1990	0.860	0.026	0.166	0.872	1.40	0.867	0.91	0.880	2.39
change 1980-90	7.77	22.50	-25.58	7.36		7.27		7.01	
Italy									
1986	0.860	0.026	0.166	0.869	1.01	0.867	0.80	0.875	1.77
1991	0.931	0.039	0.108	0.921	-1.01	0.935	0.80	0.929	-0.21
1995	0.866	0.041	0.175	0.869	0.27	0.879	1.45	0.882	1.79
change 1986-91	8.18	45.70	-35.06	6.01		7.82		6.07	
change 1991-95	-6.89	6.32	61.70	-5.69		-5.98		-5.02	
Notes:									
(1) Change in percentage with respect to the value for the initial income in the same year									
Source: Own construction using LIS dataset									

Table 15. Average income for children by household composition in Spain and Italy

	Initial Income		Final Income									
			with Education			with health care			with both			
Spain	1980	1990	1980	1990		1980	1990		1980	1990		
<i>n</i> <=1, <i>c</i> =1	1.12	0.98	1.09	0.95		1.13	1.00		1.09	0.97		
<i>n</i> <=1, <i>c</i> =2	1.04	0.89	1.02	0.90		1.04	0.89		1.02	0.90		
<i>n</i> <=1, <i>c</i> >2	0.83	0.68	0.86	0.73		0.84	0.69		0.86	0.74		
<i>n</i> =2, <i>c</i> =1	1.45	1.51	1.39	1.41		1.43	1.50		1.38	1.41		
<i>n</i> =2, <i>c</i> =2	1.27	1.33	1.24	1.29		1.26	1.31		1.23	1.27		
<i>n</i> =2, <i>c</i> >2	0.91	0.96	0.93	0.99		0.91	0.96		0.93	0.98		
<i>n</i> >2, <i>c</i> =1	1.29	1.21	1.26	1.19		1.28	1.20		1.25	1.18		
<i>n</i> >2, <i>c</i> =2	1.08	1.11	1.08	1.11		1.08	1.09		1.07	1.10		
<i>n</i> >2, <i>c</i> >2	0.84	0.81	0.88	0.86		0.85	0.82		0.88	0.86		
Italy	1986	1991	1995	1986	1991	1995	1986	1991	1995	1986	1991	1995
<i>n</i> <=1, <i>c</i> =1	0.90	0.90	0.91	0.89	0.88	0.92	0.90	0.92	0.92	0.90	0.89	0.92
<i>n</i> <=1, <i>c</i> =2	0.85	0.75	0.71	0.89	0.80	0.78	0.85	0.77	0.74	0.89	0.82	0.80
<i>n</i> <=1, <i>c</i> >2	0.63	0.57	0.64	0.72	0.66	0.74	0.65	0.60	0.67	0.73	0.69	0.76
<i>n</i> =2, <i>c</i> =1	1.42	1.50	1.53	1.31	1.37	1.38	1.41	1.46	1.49	1.30	1.35	1.36
<i>n</i> =2, <i>c</i> =2	1.23	1.30	1.30	1.18	1.25	1.23	1.22	1.27	1.27	1.17	1.23	1.21
<i>n</i> =2, <i>c</i> >2	0.84	1.08	1.11	0.87	1.08	1.09	0.85	1.07	1.10	0.88	1.07	1.08
<i>n</i> >2, <i>c</i> =1	1.29	1.34	1.38	1.26	1.32	1.36	1.27	1.31	1.33	1.25	1.30	1.32
<i>n</i> >2, <i>c</i> =2	1.08	1.07	1.12	1.10	1.08	1.15	1.08	1.06	1.10	1.09	1.07	1.13
<i>n</i> >2, <i>c</i> >2	0.96	0.83	0.72	1.04	0.86	0.83	0.95	0.84	0.74	1.04	0.86	0.83

Notes:

-Income relative to the global mean (=1)

-*n*=number of earners; *c*=number of children

Source: Own construction using LIS datasets

Table 16. Population shares for children by level of education in Spain and Italy			
Spain	1980	1990	
<i>n</i> ≤ <i>l</i> , <i>c</i> =1	0.075	0.094	
<i>n</i> ≤ <i>l</i> , <i>c</i> =2	0.248	0.269	
<i>n</i> ≤ <i>l</i> , <i>c</i> >2	0.319	0.195	
<i>n</i> =2, <i>c</i> =1	0.045	0.081	
<i>n</i> =2, <i>c</i> =2	0.098	0.156	
<i>n</i> =2, <i>c</i> >2	0.112	0.094	
<i>n</i> >2, <i>c</i> =1	0.016	0.032	
<i>n</i> >2, <i>c</i> =2	0.030	0.045	
<i>n</i> >2, <i>c</i> >2	0.057	0.035	
Italy	1986	1991	1995
<i>n</i> ≤ <i>l</i> , <i>c</i> =1	0.124	0.116	0.122
<i>n</i> ≤ <i>l</i> , <i>c</i> =2	0.273	0.259	0.281
<i>n</i> ≤ <i>l</i> , <i>c</i> >2	0.118	0.111	0.151
<i>n</i> =2, <i>c</i> =1	0.134	0.132	0.129
<i>n</i> =2, <i>c</i> =2	0.202	0.254	0.221
<i>n</i> =2, <i>c</i> >2	0.076	0.067	0.074
<i>n</i> >2, <i>c</i> =1	0.023	0.020	0.011
<i>n</i> >2, <i>c</i> =2	0.031	0.026	0.009
<i>n</i> >2, <i>c</i> >2	0.019	0.014	0.002
Notes:			
-All population=1			
- <i>n</i> =number of earners; <i>c</i> =number of children			
Source: Own construction using LIS datasets			

Regional polarization among children declined in Spain and increased in Italy during the 1980s, tables 17-19. In Spain the regions were less polarized, reducing the distance between the poor and the rich, and also less identified¹², while in Italy regions were internally more identified, and polarization between them was stable (keeping income distances). While in Spain the regions that were poor in 1980 increased its population share, in Italy this group (the South) reduced its relative population share.

¹² This result is also valid for the whole population but crucially depends on the choice of income as the relevant variable. In Gradín (1998) it is shown for the whole population that regional polarization increased during the 1980s.

During the 1990s, regional polarization declined also in Italy due to the combination of a strong increase in intragroup inequality and a smaller increase in the distance between the South and the North.

In both countries public expenditure in education benefited more the poorest regions, while health expenditure had almost no effect on relative incomes in both countries, except in Italy 1995, where it clearly benefited the poorest regions.

	Initial Income			Final Income					
				with Education		with Health care		with both	
	P	ER	ε	P	change (1)	P	change (1)	P	change (1)
Spain									
1980	0.828	0.049	0.221	0.832	0.47	0.836	0.91	0.840	1.42
1990	0.804	0.037	0.233	0.816	1.50	0.813	1.00	0.826	2.63
change 1980-90	-2.85	-23.22		-1.85		-2.75		-1.69	
Italy									
1986	0.834	0.051	0.217	0.854	2.40	0.841	0.85	0.860	3.15
1991	0.861	0.051	0.190	0.864	0.34	0.873	1.40	0.877	1.82
1995	0.834	0.068	0.234	0.848	1.69	0.849	1.85	0.862	3.42
change 1986-91	3.27	0.69	-12.38	1.18		3.83		1.94	
change 1991-95	-3.14	33.43	23.18	-1.83		-2.72		-1.62	
Notes:									
(1) Change in percentage with respect to the value for the initial income in the same year									
Source: Own construction using LIS dataset									

Table 18. Average income for children by region in Spain and Italy												
	Initial Income			Final Income								
				with Education			with health care			with both		
Spain	1980	1990		1980	1990		1980	1990		1980	1990	
<i>poor</i>	0.80	0.85		0.83	0.88		0.80	0.86		0.84	0.89	
<i>middle</i>	1.05	1.06		1.05	1.05		1.05	1.06		1.04	1.05	
<i>rich</i>	1.22	1.17		1.18	1.12		1.21	1.16		1.17	1.12	
Italy	1986	1991	1995	1986	1991	1995	1986	1991	1995	1986	1991	1995
<i>North</i>	1.17	1.20	1.25	1.14	1.16	1.19	1.16	1.19	1.23	1.13	1.15	1.18
<i>Center</i>	1.10	1.11	1.06	1.08	1.08	1.05	1.10	1.11	1.06	1.08	1.08	1.05
<i>South</i>	0.83	0.84	0.76	0.86	0.87	0.82	0.83	0.85	0.79	0.86	0.88	0.83

Notes: Income relative to the global mean (=1)

Source: Own construction using LIS datasets

Table 19. Population shares for children by region in Spain and Italy			
Spain	1980	1990	
<i>poor</i>	0.395	0.416	
<i>middle</i>	0.315	0.319	
<i>rich</i>	0.290	0.266	
Italy	1986	1991	1995
<i>North</i>	0.386	0.395	0.372
<i>Center</i>	0.156	0.168	0.179
<i>South</i>	0.458	0.437	0.448

Notes: All population=1

Source: Own construction using LIS datasets

Employment or occupational polarization –tables 20 to 22- remained stable for all the period considered in both countries because changes in polarization between the groups are often compensated with changes in the identification. Particularly relevant is what happened in Italy between 1991 and 1995, when polarization strongly increased, but this was completely offset by a strong decline in the level of identification (increasing error).

We can observe that the children who benefited more from economic growth during the 1980s in Spain were those whose householder was either self-employed or retired, while in Italy were not working for any reason. In Spain children in non-working households were

considerably worse off during that period, the same happened in Italy during the 1990s. In general, non-working and retired constituted the groups who benefit more from public expenditure in both countries.

Table 20. Employment polarization among children in Spain and Italy: $\beta=1, \alpha=1.3$									
	Initial Income			Final Income					
				with Education		with Health care		with both	
	P	ER	ϵ	P	change (1)	P	change (1)	P	change (1)
Spain									
1980	0.775	0.036	0.261	0.794	2.37	0.786	1.31	0.803	3.61
1990	0.773	0.030	0.257	0.800	3.52	0.782	1.20	0.809	4.75
change 1980-90	-0.36	-16.89	-1.27	0.77		-0.47		0.74	
Italy									
1986	0.761	0.025	0.264	0.798	4.83	0.770	1.24	0.805	5.83
1991	0.760	0.016	0.256	0.780	2.59	0.780	2.59	0.797	4.91
1995	0.766	0.050	0.284	0.787	2.86	0.787	2.77	0.807	5.37
change 1986-91	-0.12	-35.57	-3.07	-2.24		1.21		-0.98	
change 1991-95	0.72	205.22	10.90	0.98		0.90		1.16	
Notes:									
(1) Change in percentage with respect to the value for the initial income in the same year									
Source: Own construction using LIS dataset									

Table 21. Average income for children by level of education in Spain and Italy												
	Initial Income			Final Income								
				with Education			with health care			with both		
Spain	1980	1990		1980	1990		1980	1990		1980	1990	
<i>non-working*</i>	0.90	0.65		0.91	0.70		0.90	0.68		0.91	0.72	
<i>employee</i>	1.08	1.05		1.07	1.04		1.08	1.05		1.07	1.04	
<i>self-empl.**</i>	0.87	1.07		0.89	1.06		0.88	1.06		0.90	1.06	
<i>retired</i>	0.65	0.76		0.70	0.80		0.67	0.77		0.71	0.81	
Italy	1986	1991	1995	1986	1991	1995	1986	1991	1995	1986	1991	1995
<i>non-working*</i>	0.54	0.68	0.36	0.61	0.81	0.53	0.56	0.69	0.41	0.63	0.81	0.56
<i>employee</i>	0.99	1.01	1.08	0.98	1.01	1.06	0.99	1.00	1.08	0.99	1.01	1.06
<i>self-empl.**</i>	1.11	1.11	1.02	1.10	1.07	1.00	1.10	1.11	1.01	1.09	1.07	1.00
<i>retired</i>	0.80	1.01	0.95	0.87	1.07	1.04	0.81	0.99	0.94	0.87	1.06	1.03
Notes:												
-Income relative to the global mean (=1)												
- * All type of inactivity except retired, or unemployed												
- ** Self-employed or employer												
Source: Own construction using LIS datasets												

Table 22. Population shares for children by level of education in Spain and Italy			
Spain	1980	1990	
<i>non-working*</i>	0.147	0.089	
<i>employee</i>	0.652	0.677	
<i>self-empl.**</i>	0.149	0.170	
<i>retired</i>	0.052	0.065	
Italy	1986	1991	1995
<i>non-working*</i>	0.019	0.005	0.085
<i>employee</i>	0.700	0.738	0.650
<i>self-empl.**</i>	0.243	0.244	0.222
<i>retired</i>	0.038	0.013	0.042
Notes:			
-All population=1			
- * All type of inactivity except retired, or unemployed			
- ** Self-employed or employer			
Source: Own construction using LIS datasets			

Analyzing the contribution of the densities of different subgroups to the total density of income among children with in-kind transfers we observe the following:

Spain has witnessed a decline in the groups with no education and an increase in the groups with secondary and higher education as already reported. In Italy instead the shift is from primary towards higher level of education with the group composed by the lowest level being extremely small in all the years.

From 1980 to 1990 there has been a convergence towards the same level of income among the Spanish autonomous regions. In Italy the opposite holds: there has been a divergent movement among the geographic areas with the South composing the left hand tail of the Italian distribution and the North and Center the right hand one.

As far as the decomposition based on employment status it can be noticed the decline in not working head in Spain and an increase of the contribution of the same group in Italy.

7. Concluding remarks

If we are concerned with the social exclusion of children in the Spanish and Italian societies, there are clear symptoms to be worried about. Despite the number of children tends to diminish, their position with respect to the rest of age classes is worsened through time, especially in Italy. The worst position belongs to children in households with many other children and at most one earner. This group represents respectively 20% of all children in 1990 in Spain - despite it is reducing its size- and 15% in Italy in 1995 -increasing in size during the early 1990s-.

The public intervention of the state providing essential services as education and health care to children has contributed to mitigate this tendency, increasing opportunities for children, but it was not able to avoid it. This deterioration of children contrasts with improvements in the social position of the elderly.

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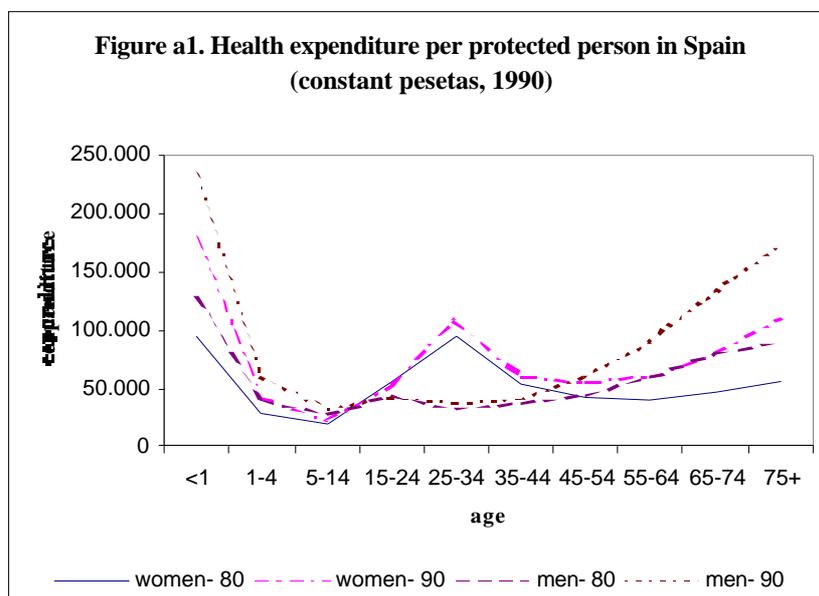
Appendix

Here we provide a few details for the computation of in-kind transfers.

Spain:

Total expenditure in health care in Spain was, according to Bandrés (1993) 1,487,946 and 2,554,100 millions of 1990 pesetas respectively in 1980 and 1990. This expenditure includes expenditure in different social and health in-kind care: hospitals, primary and specialized care, medicines, social services (attention to the elderly, disabled people,...) from the central state and the autonomous regions.

In order to compute the in-kind transfer we consider the existence of differences in cost by age and sex. In the absence of information about actual costs, we use the information about the use that different population groups make of health services. The estimation was made using a survey based on the use hospitalization, the “Encuestas de Morbilidad Hospitalaria” of the Instituto Nacional de Estadística. Based on this “use” as weights we obtain expenditure per protected person, reported in figure a1.



For the case of education, we have used the data of expenditure and number of students by region and level of education corresponding to the courses 1980/81, 1990/91 in Uriel et al. (1997). In the case of university we only considered the expenditure for all the country as there are autonomous regions with no universities and geographic mobility among these students is larger. According to this, dividing the aggregate expenditure (current and capital) by

the number of students in each case (each region, each level), the average expenditure per student was respectively for 1980 and 1990 in 1990 pesetas: 79,120 and 127,686 for primary education, 156,280 and 233,049 for secondary education and 190,978 and 354,486 for university.

Italy:

The data for in-kind transfers are derived from the official statistics reported on the *Relazione Generale sulla Situazione Economica del Paese*, an official publication printed yearly where expenditures on education and health sustained by the central government are reported.

The data provided on education are mean expenditure sustained per pupil and per school level by the Ministry of Public Schooling. The data on indivisible expenditure are attributed to each pupil by the contribution of the mean expenditure for that pupil to the total expenditure. The expenditures reported do not include the expenditures made by local governments for any kind of school hence in the in-kind transfers we do not include funding of kindergartens and maternal schools.

Public expenditure for health have been attributed to each person depending on age by means of the official coefficients used for dividing the national health fund (*Fondo Sanitario Nazionale*) between the Italian regions in 1999. The coefficients are classified according to age in three groups: pharmaceutical, specialists and hospitals. The pharmaceutical coefficients provide an additional grouping according to sex. Some imputation were necessary for computing expenditure for public hospitals, for special care provided within public hospitals and for counselling and prevention - not reported - from the reported expenditure on good and services and employment. Capital expenditure has been attributed to each group depending on the contribution of the group to total expenditure. A detailed description of the method and of the amounts can be provided upon request.

Figure a2. Health expenditure by age groups (thousands of italian lire)

