

**PRO-POOR ECONOMIC GROWTH,
INEQUALITY AND FISCAL POLICY:
THE CASE OF SPANISH REGIONS**

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ABSTRACT

This paper aims at discussing if substantive differences exist in terms of the distribution of economic growth by income groups in the Spanish regions. In order to do so, we use data from the Spanish Family Budget Surveys for various years to estimate Growth Incidence Curves, decomposition models of the poverty changes and Isopoverty Curves. Our results show that while economic growth has meant in the long term an improvement of the lower incomes percentiles in Spain, this improvement is not uniform for the different regions. We also find more limited possibilities for the reduction of poverty in the lower-income regions.

Key words: pro-poor growth, isopoverty curves, poverty, inequality.

JEL: D31, O18, H73.

I. INTRODUCTION¹

The study of the relationships between aggregate economic growth and poverty trends has received a considerable impulse in the last few years. On the one hand, the wide variety of international experiences has shaped a particular mosaic of efficiency and equality experiences. In some countries, mainly middle- and low-income ones, the implementation of severe adjustment processes ended, in general terms, with remarkable improvements in the economic growth rate, but with very different poverty outcomes. This is confirmed by the number of cases in which growth in mean income was compatible with significant poverty reduction, and cases where poverty increased. In high-income countries, the implementation of different fiscal consolidation policies –mainly in the European Union– also gave rise to very heterogeneous results both in income growth as well as in poverty reduction. This diversity has favored a remarkable development of empirical research on the new relationships between economic growth and income poverty.

On the other hand, the interest in testing the way in which economic growth reduces poverty has stimulated the substitution and the improvement of analysis methods traditionally used in the study of this relationship. From the predominance of *trickle-down* models that conditioned the evolution of inequality and poverty to the changes in a set of macroeconomic indicators², a rapidly expanding literature has focused on the analysis of different parameters of the income distribution. New methods for measuring pro-poor growth have become increasingly popular, providing evaluation functions based on new axiomatic criteria³. There has been a sharp increase of both alternative proposals to assess the pro-poor character of economic growth and a variety of new statistical tests of the robustness of the relationships considered.

The refinement of the methods used to verify the incidence of growth in different income groups has been accompanied by a remarkable increase in the number of works aimed at explaining the determinants of the relationship between economic growth and income poverty. This relationship is conditioned

¹ The authors wish to thank the Ministry of Education (SEJ2007-67911-C03-03/ECON) and the Junta de Extremadura (3PR05A112) for the financing received.

² Literature about this type of models is abundant, since the early contribution of Blinder and Esaki (1978). See, among others, Blank and Blinder (1986), Danziger and Gottschalk (1986), Cutler *et al.* (1991), Pissarides (1991) or, more recently, DeFina (2004) and Iceland *et al.* (2005).

³ See Kakwani and Pernia (2000), Ravallion and Chen (2003), Duclos and Woodon (2004), Son (2004), Essama-Nssah (2005), Jenkins and Van Kerm (2006), Grimm (2007) and Araar *et al.* (2007).



by a wide variety of factors. In practice, empirical work considering the disaggregate effect of economic growth on different income groups shows a huge range of elasticities of the various percentiles to changes in the rate of economic growth. Ravallion and Chen (1997) found a considerable variation in the elasticities of income poverty to economic growth in a huge number of countries. Whereas in most countries economic growth reduces poverty rates, a given income growth rate may generate very different results across countries⁴. A key factor in these differences is the positive effect of the redistributive policies on poverty reduction. Most equalitarian societies ensure a more efficient transformation of growth into poverty reductions (Jantti and Danziger, 2000).

One of the analytical proposals in the parametric approach to the relationship between economic growth and income poverty are decomposition methods which break down poverty changes into the variations arising from changes in mean income and changes in inequality. The availability of microdata makes possible to estimate the impact of growth when the distribution of income does not change and the effect of inequality when total income remains unchanged. For a large sample of countries, Bourguignon and Morrison (1998) showed that whereas a country with a Gini index of 0.25 may expect to have a poverty elasticity of -3.3, another country with an index of 0.60 could expect a one-point growth of mean income to reduce poverty by only 1.8 points. Implicitly, these results aim towards a remarkable capacity of the public intervention to translate economic growth into improvements of households located at the lower end of the income distribution.

The three big issues that conform the research agenda on the relationships between economic growth and income poverty –growth incidence by income groups, the contribution of inequality and economic growth to income poverty, and the role of redistributive policies– are especially relevant in the case of Spain. In the long run, the Spanish economy has registered an intense process of economic growth and a reduction of the most severe situations of income poverty. These outcomes hide, however, a huge dispersion of the results corresponding to the different regions (Autonomous Communities). The break in the reduction of regional economic differences is well-known, and it is in clear contrast to the intense process of regional convergence of previous decades. Evidence also exists that although in the long run a moderate convergence process in the within-regional distribution of income has been registered, very sharp differences still persist among the Spanish regions in terms of inequality

⁴ Whereas the average elasticity (the poverty variation deriving from the growth of mean income) is 2.6, in countries with a higher response of poverty to economic growth it is five times higher than in countries with lower elasticities. The most recent estimates for Latin America and the Caribbean show elasticity values around 1.4 points (Gasparini *et al.*, 2007).

and social welfare (Ayala *et al.*, 2006). In practice, Spain is one of OECD countries with higher differences in regional poverty rates.

These results coincide in time with an accelerated process of territorial decentralization that has increased the competences of the Autonomous Communities in matters related to public expenditures and taxes. Through certain basic components of the tax-benefit system, such as a particular regulatory capacity in the income tax or the full responsibility in the general income guarantee schemes, regional governments have a certain margin to modulate the relationships between economic growth and poverty in their territory.

This work has a three-fold purpose. First, to examine if substantive differences exist in terms of the distribution of economic growth by income groups in the Autonomous Communities. Second, to identify the extent to which heterogeneous patterns exist in the different contribution of economic growth and inequality to the evolution of poverty. Third, to analyze possible fiscal policy alternatives favoring a greater linearity in the relationship between economic growth and the evolution of poverty. In order to do so, we use recent developments of the new literature specialized in the assessment of the pro-poor character of economic growth. More precisely, we estimate growth incidence curves in each Autonomous Community and different tests to validate the pro-poor effects of regional economic growth rates. By means of simulated distributions of income, different decompositions of poverty variations into the double component of changes in mean income and changes in inequality are developed. Different tax policy and economic growth scenarios are also simulated for purposes of identifying the regional tax rates that, given a determined income growth rate, could reduce poverty rates (isopoverty curves). Data from the Family Budget Surveys of 1973/74, 1980/81, 1990/91 and 2006 are used for this purpose. This dataset is the only one that provides long-term regional poverty trends in Spain.

Our results show that for the Spanish population as a whole, economic growth has meant in the long term an improvement of the lower incomes percentiles. Notwithstanding, the tests of the pro-poor character of growth reveal that this improvement is not uniform for the different Autonomous Communities. These differences also arise when the general determinants of poverty are identified by breaking down the effects of changes in mean income and changes in inequality, with a greater contribution of the redistributive component in the poorer regions. The estimation of the isopoverty curves also reveals that in order to reduce poverty at the same level than the previous decades, lower-income regions would have to maintain growth rates remarkably higher to those of the richest regions or to carry out very ambitious redistributive policies.

The structure of the paper is as follows. In the following section, the data that will be used in the different empirical tests are reviewed. The third section examines the redistributive incidence of growth by income groups in the

different Autonomous Communities. The fourth section shows different poverty decompositions for each Autonomous Community. In the fifth section, regional isopoverty curves are constructed and the combinations of growth and redistribution that minimize poverty are estimated. The paper ends with a brief list of conclusions.

2. DATA AND POVERTY INDICATORS

The territorial analysis of long-term trends in poverty requires homogenous information from households in the different Autonomous Communities. Since the early 1990s, new datasets have become available that provide information on households' income and living conditions. Being several the possible sources of information, such as the Living Conditions Survey (ECV), or the European Community Household Panel (ECHP), the only source that includes a sufficiently long time period and regional information of household income is the Family Budget Survey (EPF). The surveys carried out almost every ten years between 1973/74 and 1990/91 offered territorial information sufficiently disaggregated by Autonomous Communities, with the possibility, although limited by problems of representativeness, to extend the analysis to the provincial scale. These surveys have been intensely used by some works focused on the territorial dimension of poverty in Spain⁵.

The possibilities of extending the series after the EPF 1990/91 to the subsequent time period were cut short by the disappearance of the survey at the beginning of the nineties. For almost a decade, the only source with regional information on household income and consumption that allows certain continuity of the series was the Continuous Family Budget Survey (ECPF). This source, which started in the mid-eighties and which uses a similar structure to the one of the basic budget surveys, underwent an important methodological change in 1997. The main modification was the increase of the quarterly sample, which was not representative until then at autonomous level, and considered up to 8,000 households. The rotary character of the survey allows for annualized samples, reaching nearly 10,000 households. This figure, even though it more than triples the one of the previous Continuous Survey, is significantly lower to the one of the ten-year surveys, that surpassed 20,000 observations. This difference could create some problems of homogeneity in the intertemporal comparisons.

Recently, a new Family Budget Survey was developed, with the idea of facilitate comparisons with the previous EPFs. This survey was conducted in

⁵ Ruiz-Castillo (1987), Bosch *et al.* (1989), Martín Reyes *et al.* (1989), García Lizana and Martín Reyes (1994), Martín-Guzmán *et al.* (1996), Goerlich and Mas (2001).

2006. The comparison of the samples of the last Family Budget Survey (2006) and the previous ones permits to appreciate a small decrease slightly over more than 1,500 households (table I). A relevant characteristic of the new sample as compared to the previous ones is the remarkable increase in the regions that had a lower number of observations in the 1990/91 survey. The coherence of the figures is confirmed by the consistency of the orderings of Autonomous Communities according to mean income. The picture that derives from the new EPF does not offer great discontinuities with respect to the one the previous surveys showed. The ranking of the respective regions does not differ, in addition, to the one arising from other sources that also offer data on household income in each Autonomous Community. If the differences in the position of each Autonomous Community with respect to the national mean were abnormally high with respect to the results of the basic surveys, this could be an indication of possible anomalies in the information of the new EPF. Those differentials are not higher, however, in the EPF 2006 than in the previous surveys, even in the cases of regions with smaller samples. Both in 1990/91 and 2006 Madrid, Navarra, País Vasco and Cataluña are among the five regions with the highest per capita income, whereas Extremadura, Andalucía, Castilla-La Mancha and Murcia are among the poorest five.

The intertemporal coherence of the figures does not avoid, in any case, the possibility of finding some biases in poverty indicators. To test the continuity of regional poverty indicators, we use households disposable income. It does not include, therefore, in-kind earnings or imputed rents. This variable is adjusted for each household by means of a parametric equivalence scale. We use the parametric scale proposed by Buhmann *et al.* (1988):

$$e_h = n_h^\phi, \quad 0 \leq \phi \leq 1.$$

where e_h , is the number of equivalent adults in the household, n the size of the household and the parameter ϕ may be interpreted as the elasticity of scale with respect to household size. For our estimates we will use $\phi = 0,5$.

The availability of data for the different dates in which the Family Budget Surveys were carried out ensures that there is information on poverty trends for each Autonomous Community at different moments in time. In this paper we consider indicators of poverty for 1973-74, 1980-81, 1990-91 and 2006. It is possible to calculate for each distribution in terms of proposed equivalence scale a poverty rate from a certain threshold z , calculated as a percentage of the mean (50 per cent):

$$P(y, z) = \int_0^z f(y) dy \quad (1)$$

where $f(y)$ is the density function of adjusted income and $P(\cdot)$ the percentage of households with incomes below the poverty threshold.

Table 1
SAMPLE SIZE, RELATIVE INCOME AND RELATIVE CONSUMPTION

	1973/74			1980/81			1990/91			2006		
	Numb. obs.	Mean Income	Mean Consumption	Numb. obs.	Mean Income	Mean Consumption	Numb. obs.	Mean Income	Mean Consumption	Numb. obs.	Mean Income	Mean Consumption
Andalucía	4486	79.6	80.4	4414	80.2	86.4	3674	84.4	86.9	2106	85.7	96.5
Aragón	1221	102.7	98.8	1301	99.8	101.1	1105	100.7	91.6	850	96.6	99.5
Asturias	728	98.2	94.4	691	104.9	93.5	443	102.8	105.4	649	106	98.6
Baleares	455	110.9	96.6	478	105.2	106.9	429	108.0	104.2	793	115.9	106.5
Canarias	942	99.8	105.7	866	84.3	88.9	772	87.1	92.0	907	94.7	92.4
Cantabria	479	98.6	115.3	528	108.1	120.1	362	100.7	96.6	531	102.8	93.7
Castilla y León	2856	82.6	80.3	3340	90.2	90.4	3162	94.3	88.4	1376	96.1	91.3
Castilla-La Mancha	1804	75.8	76.9	1805	71.5	74.7	1694	86.2	86.5	1160	87.7	81
Cataluña	2477	124.8	118.3	2368	123.6	109.1	1644	118.7	118.9	1949	109.6	116.3
C. Valenciana	1912	93.2	95.3	1768	98.8	100.7	1706	95.4	90.0	1564	97.4	100.8
Extremadura	1027	72.8	67.1	931	64.3	68.2	830	72.1	71.9	902	76.3	81.1
Galicia	1727	78.1	82.9	1580	81.2	90.3	1739	93.2	92.8	1311	89.2	97.4
Madrid	1421	129.9	136.6	1269	126.7	125.8	764	114.6	121.2	1172	118.7	117
Murcia	564	83.7	79.6	456	81.9	93.7	526	91.9	93.2	874	85.3	92.3
Navarra	398	104.4	110.4	364	119.3	123.0	367	108.6	124.2	676	116.1	111.8
País Vasco	1322	123.9	123.6	1204	116.4	117.5	1360	113.5	111.2	1783	111.1	114.4
Rioja	332	101.4	101.9	344	96.8	97.1	357	117.8	94.9	623	91.1	86.4
ESPAÑA	24151	100.0	100.0	23971	100.0	100.0	21155	100.0	100.0	19435	100.0	100.0

Source: Own making on Family Budget Survey 1973/74, 980/81, 1990/91, 2006.

In order to have different dimensions of poverty in each region, the family of indicators by Foster, Greer and Thorbecke (1984) is used:

$$FGT_{\alpha}(y, z) = \int_0^{\frac{z-y}{z}} \left[\frac{z-y}{z} \right]^{\alpha} f(y) dy, \alpha \geq 0 \quad (2)$$

where FGT_0 is equal to the poverty rate or the percentage of households below the threshold. The parameter α can be interpreted as poverty aversion.

Table 2
POVERTY RATES BY AUTONOMOUS COMMUNITIES (FGT $\alpha=0$)
 (threshold: 50% mean income, households, equivalence scale $\phi=0.5$)

1973-74		1980-81		1990-91		2006	
Extremadura	39.1	Extremadura	45.2	Extremadura	36.36	Extremadura	33.87
Cast.La Mancha	37.7	Cast.La Mancha	38.5	Andalucía	26.2	Andalucía	25.93
Galicia	36.2	Galicia	31.0	Cast.La Mancha	26.1	Murcia	23.98
Cast. y León	35.2	Andalucía	29.8	Canarias	25.6	Cast.La Mancha	22.79
Andalucía	33.4	Canarias	29.6	Murcia	21.8	Canarias	20.93
Murcia	26.0	Cast. y León	26.1	Cast. y León	20.0	Galicia	19.4
Aragón	19.6	Murcia	23.4	Galicia	19.6	C. Valenciana	17.33
Asturias	18.8	Aragón	21.2	C. Valenciana	15.4	C. León	17.08
C. Valenciana	18.8	C. Valenciana	14.9	Cantabria	14.3	Aragón	15.91
Canarias	18.6	Baleares	14.4	Aragón	13.7	Rioja	15.04
Navarra	16.3	Asturias	14.1	Madrid	12.1	Cantabria	12.42
Rioja	15.0	Rioja	12.6	País Vasco	11.4	Asturias	12.33
Cantabria	13.4	Cantabria	12.3	Navarra	11.0	Cataluña	11.75
Baleares	13.0	Navarra	12.0	Baleares	10.9	Navarra	10.23
Madrid	8.6	Madrid	10.9	Rioja	9.8	Madrid	10.08
Cataluña	7.7	País Vasco	7.9	Cataluña	8.8	País Vasco	9.66
País Vasco	6.0	Cataluña	7.6	Asturias	8.4	Baleares	9.2

Source: Own making on Family Budget Survey 1973/74, 980/81, 1990/91, 2006.

The estimates with $\alpha = 0$ offer a general measurement of the extension of poverty in each Autonomous Community⁶. Results shown in Table 2 allow both for a picture of the possible persistence of poverty in certain regions, and for a global vision of the change patterns within the comparative framework of the

⁶ Results for other values of α are available upon request.

Autonomous Communities. Two are the main characteristics that emerge from comparing the rates across time. First, there is a prevalence of certain regional poverty clusters in which entries and exits are rather limited. Over the last four decades, Extremadura, Andalucía, Canarias, Galicia, Castilla-La Mancha and Murcia, have permanently occupied the first places within the Communities where the poverty incidence is greater. In the opposite end, we can find País Vasco, Cataluña, Baleares, Navarra and Madrid.

There seems to be a certain convergence in poverty rates, given the trend –although not absolutely uniform– of a greater reduction of poverty in the Communities that started from higher values at the beginning of the seventies. This result seems to be in line with previous estimates that have found a double convergence- σ and β process in the within-regional distribution of income in the Spanish Autonomous Communities (Ayala *et al.*, 2006). The reduction of the differences has not been enough, however, to avoid distances between the regions from being still great.

3. THE DISTRIBUTIVE EFFECTS OF ECONOMIC GROWTH IN THE SPANISH REGIONS

The variety found in poverty rates responds to different factors related to the economic and demographic singularities of the Autonomous Communities. Sectoral growth patterns, differences in employment levels or in the demographic structure are only some of the differentiating aspects of poverty risks in each region. It is therefore not strange that although in the long-run most of the regions show positive rates of real growth, the translation of the increase in mean income into poverty reductions may be very different.

For economic growth to generate poverty reductions it is necessary that income of households located in the lower end of the distribution increase more than those of the rest of households. A straightforward approach, therefore, to the identification of the differences between the Autonomous Communities is the construction of Growth-incidence curves (GIC) by income groups. The availability of micro-data from households for different territories and time periods allows to estimate the GIC by means of the calculation of the variations in the mean of each income percentile.

Let $F_t(y)$ be the cumulative distribution function of income. By inverting the function in the percentile p_{th} we can obtain the corresponding income:

$$y_t(p) = F_t^{-1}(p) = L_t'(p)\mu_t \quad (y_t'(p) > 0) \quad (3)$$

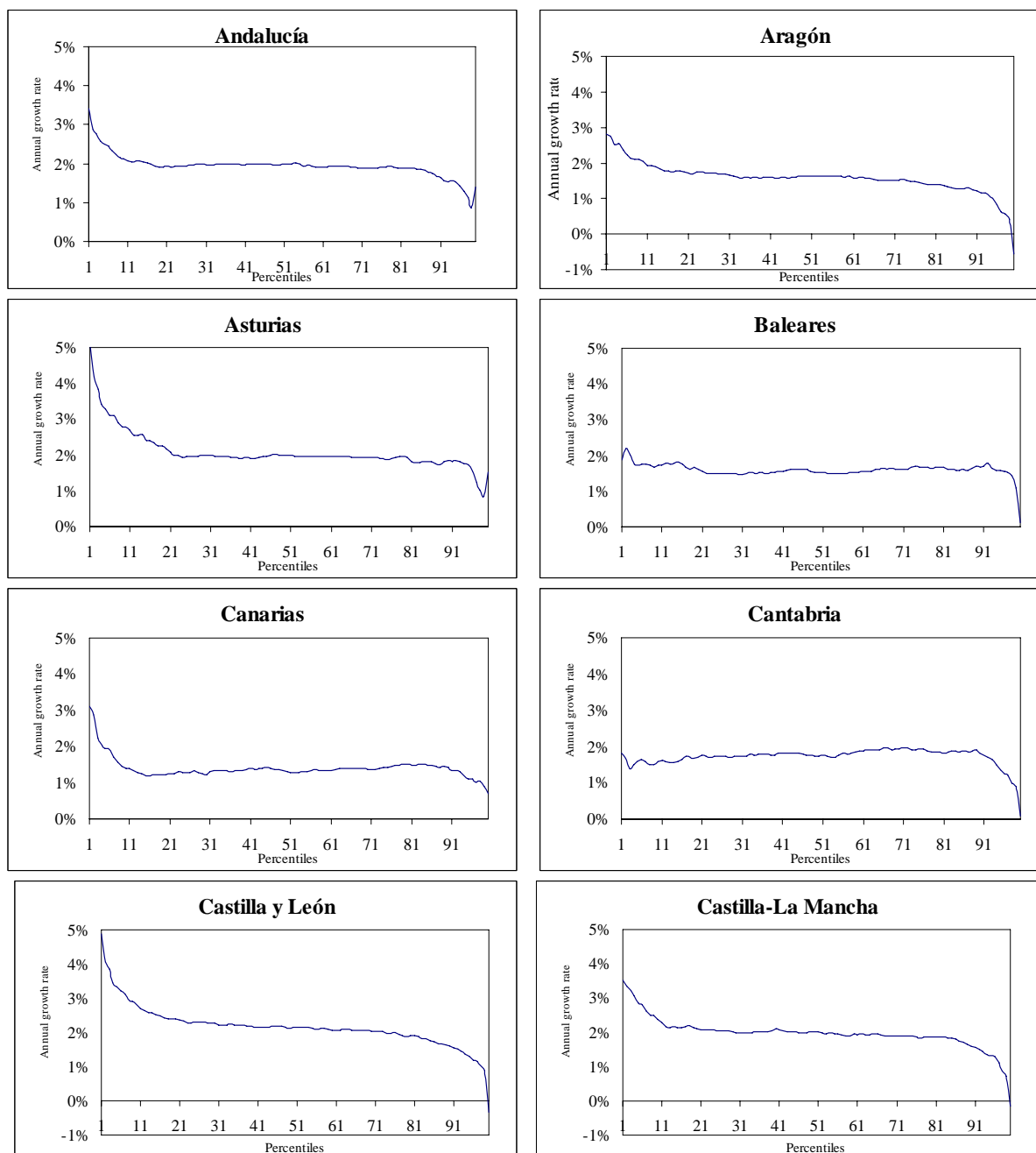
where $L_t(p)$ is a Lorenz curve– with slope $L_t'(p)$ – and μ_t is mean income. The Growth-incidence curves (GIC) can be estimated by using the change in income

for each percentile at two periods of time $[g_t(p) = (y_t(p)/y_{t-1}(p)) - 1]$. From (3) it can be deduced that:

$$g_t(p) = \frac{L'_t(p)}{L'_{t-1}(p)} (\gamma_t + 1) - 1 \quad (4)$$

where γ_t is the growth rate of mean income. If the Lorenz curve does not change between t and $t-1$, $g_t(p) = \gamma_t$. As shown by Ravallion and Chen (2003), if GIC stay over zero in all percentiles $[g_t(p) > 0 \text{ for all } p]$, then there is first-order dominance of the distribution at date t over $t-1$.

Figure I
GROWTH-INCIDENCE CURVES BY AUTONOMOUS COMMUNITIES, 1973-2006



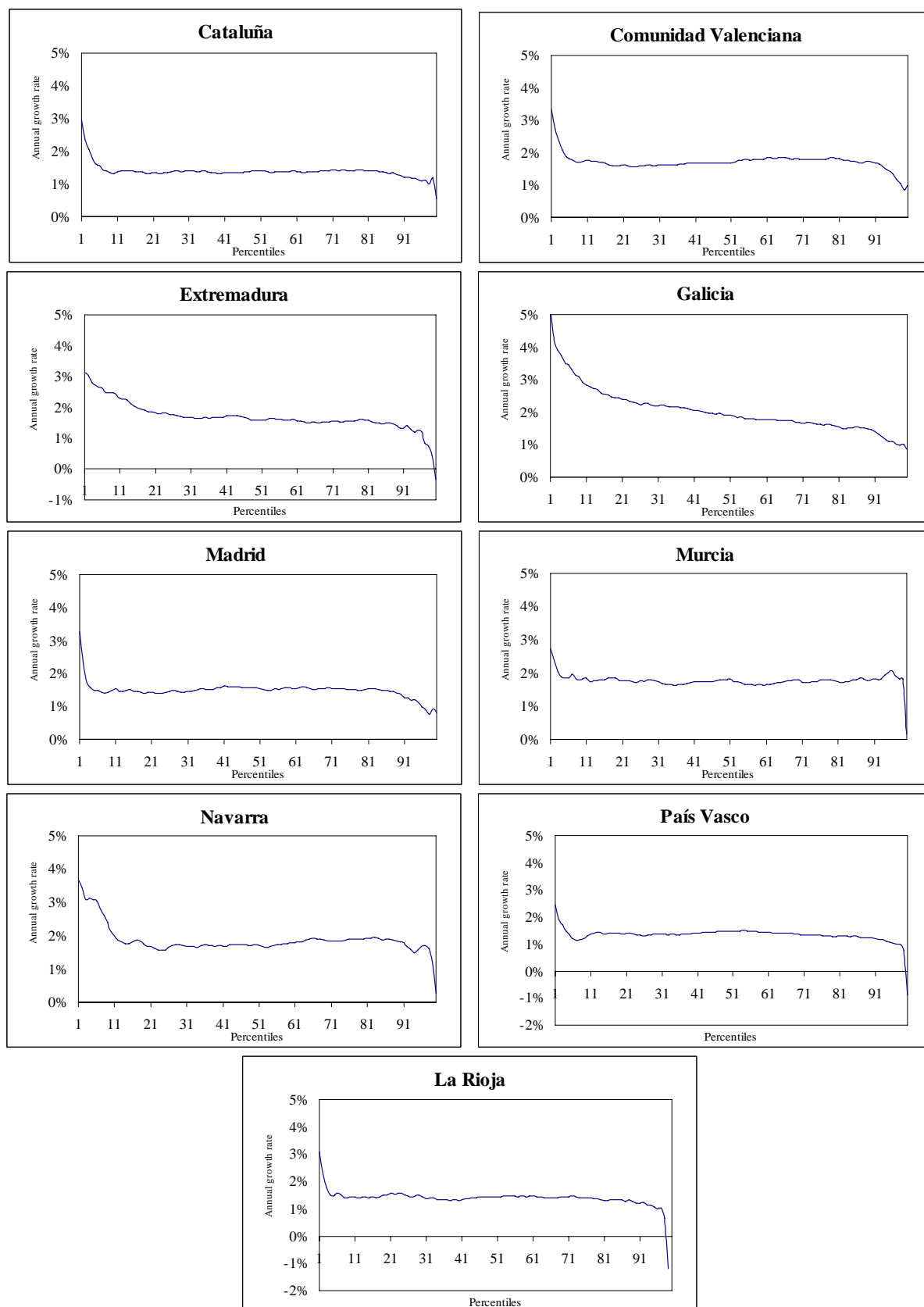


Figure 1 gives our estimates of GIC for the different Autonomous Communities. The horizontal axis shows the different percentiles of the distribution whereas the values of the real annual growth rate of equivalent income between 1973 and 2006 are shown in the vertical axis. In general, most of

the Autonomous Communities display curves with negative slope, which seems to indicate that the generalized experience has been one of reducing inequality. There are, nevertheless, remarkable regional differences as much in the intensity of income growth in the first percentiles as in the inclination of the GIC.

It is therefore difficult to speak of a common pattern in terms of growth progressivity, understanding the latter as the greatest gains in the lowest percentiles. In general terms, in the Autonomous Communities that started off with a higher income level at the beginning of the seventies, GIC have a more horizontal layout once extreme percentiles are eliminated from the analysis. It is the case of Madrid, Cataluña, País Vasco and Navarra. In the lower income regions, in general, a pattern is repeated with a much more marked inequality reducing growth rates that are specially high in those percentiles representing the most severe poverty. In Galicia, for example, real income growth rates in the long term range between the 5 and 3% of percentiles I and II, respectively. Something similar, although with more moderate growth also happens in Extremadura, Castilla-La Mancha, Castilla y León and, to a lesser extent, Andalucía.

Growth-incidence curves, although offering an intuitive vision of the long-term effects of economic growth on the different strata of the income distribution, are not sufficient, however, to establish unequivocal judgments on the pro-poor character of growth. The answer to whether or not the change from y_{t-1} to y_t has been pro-poor refers to the use of one evaluation function that may be subject to empirical test and that uses a concrete scale to measure the effect of growth. This line can be, for example, a change in the income of the poor above the mean income, or the one corresponding to a certain percentile.

Duclos and Wodon (2004) and Araar *et al.* (2007) offer a set of axioms for this type of evaluation functions. Let $W(y_{t-1}, y_t, \gamma_t, z)$ be a pro-poor evaluation function, that can be defined as the difference between the two evaluation functions for every period, analogous to a possible poverty indicator:

$$W(y_{t-1}, y_t, \gamma_t, z) = \Pi^*(y_t, \gamma_t, z) - \Pi(y_{t-1}, z) \quad (5)$$

The change from y_{t-1} to y_t shall be pro-poor if $W(y_{t-1}, y_t, \gamma_t, z) \leq 0$. This will depend, logically, on the way in which Π^* , Π and z are defined, the structure of which can be derived from certain axiomatic requirements. Among others, the focus axiom, population invariance, anonymity, normalization and monotonicity. This set of axioms defines a first order class of evaluation functions $\Omega^1(\gamma_t, z^+)$.

Starting from the FGT family of indicators described in the previous section, Duclos and Wodon (2004) show that a change from y_{t-1} to y_t will be deemed pro-poor in all evaluation functions $W(\cdot, \cdot, \gamma_t, z)$ within $\Omega^1(\gamma_t, z^+)$ if and only if:

$$FGT_t((1 + \gamma_t)z, \alpha = 0) \leq FGT_{t-1}(z, \alpha = 0) \text{ for all } z \in [0, z^+] \quad (6)$$

Checking this condition solely implies to verify if $FGT(\alpha = 0)$ of the initial distribution normalized by $(1 + \gamma_t)$ is greater than the one corresponding to the final distribution for all $z \in [0, z^+]$. Or, alternatively, if for all $p \in [0, F_1(z^+)]$:

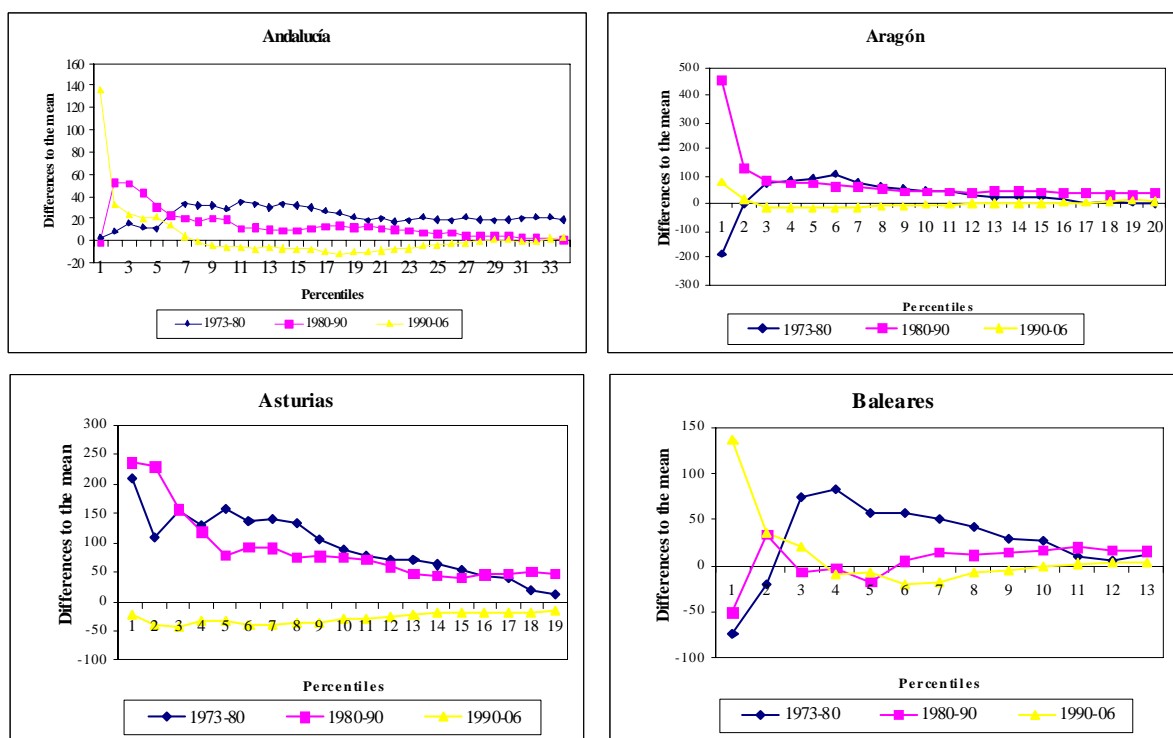
$$\frac{y_t(p)}{y_{t-1}(p)} \geq 1 + \gamma_t \quad (7)$$

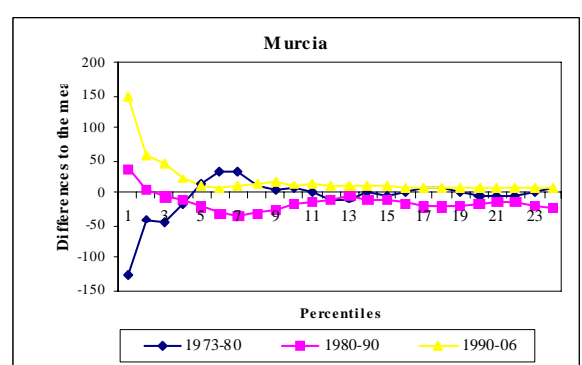
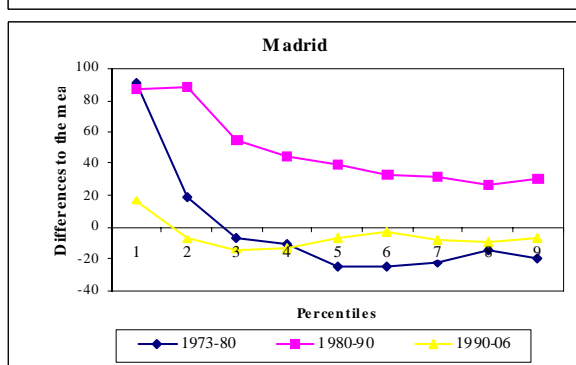
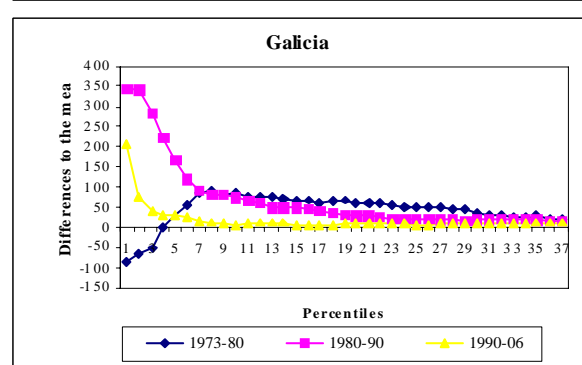
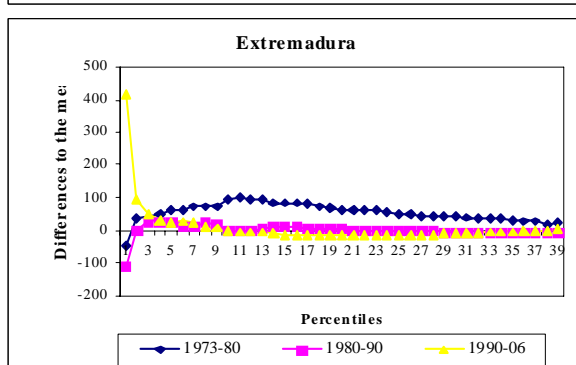
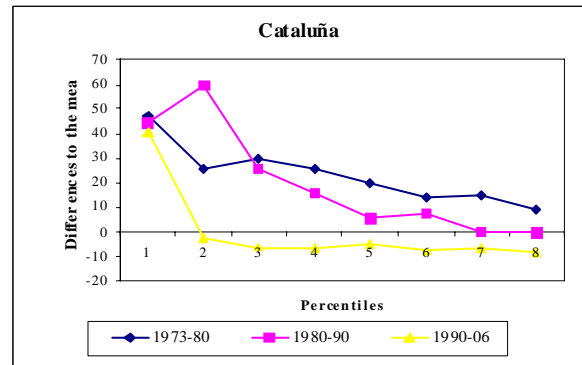
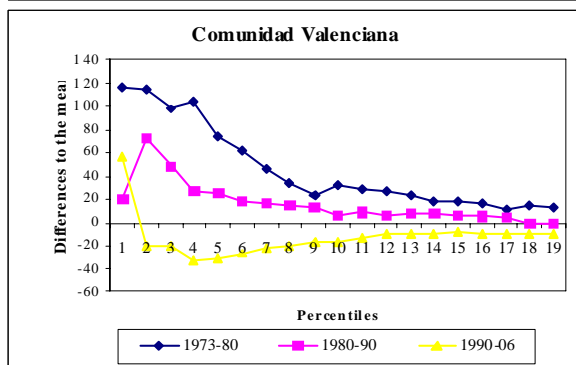
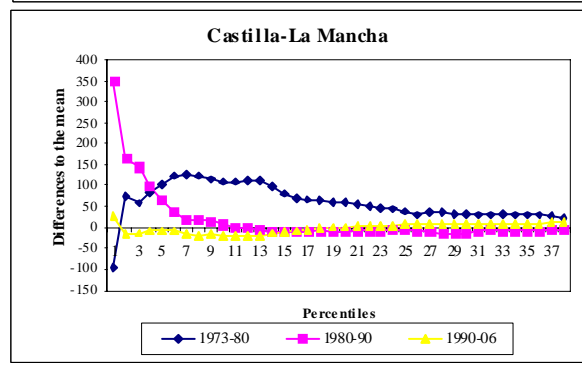
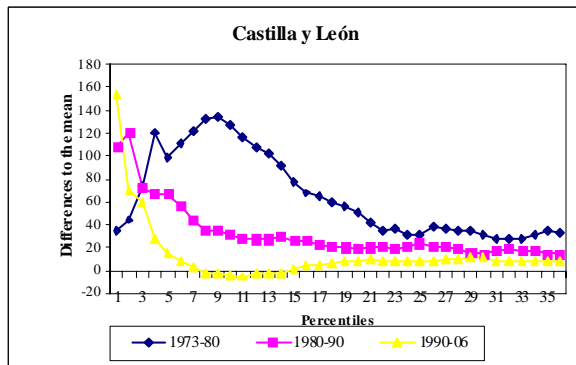
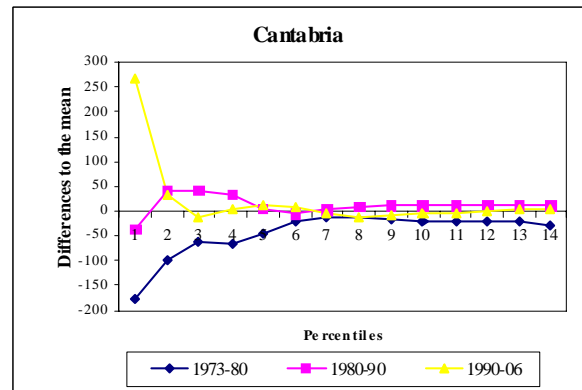
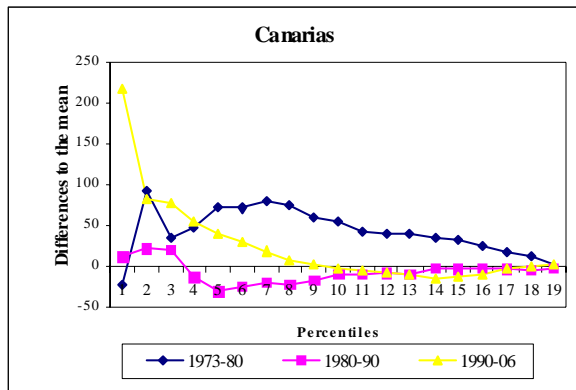
The simplicity of this test imposes, nevertheless, important demands to growth, since it requires that in expansion periods all percentiles under the poverty line must grow to a rate equal or higher than the population average. This demand can be relaxed accepting its fulfillment only in part of the lower end of the distribution of poor households and not in all the percentiles below the poverty line. The consideration of a new axiom –the evaluation function should assign a greater weight to the percentiles with lower income within the poor– allows to consider a second order class of pro-poor evaluation functions $\Omega^2(\gamma_t, z^+)$. The change from y_{t-1} to y_t will be pro-poor in all the assessment functions $W(\cdot, \gamma_t, z)$ within $\Omega^2(\gamma_t, z^+)$ if and only if:

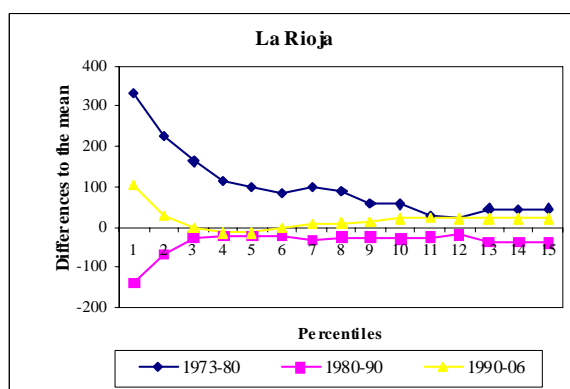
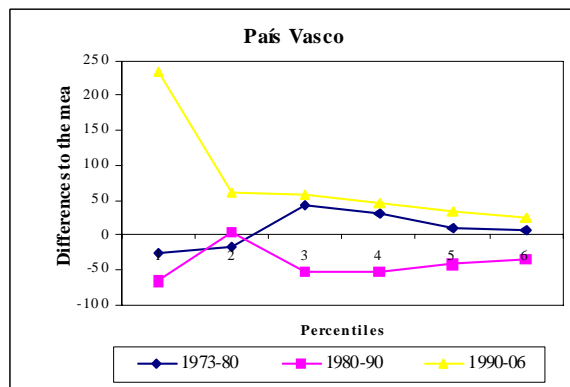
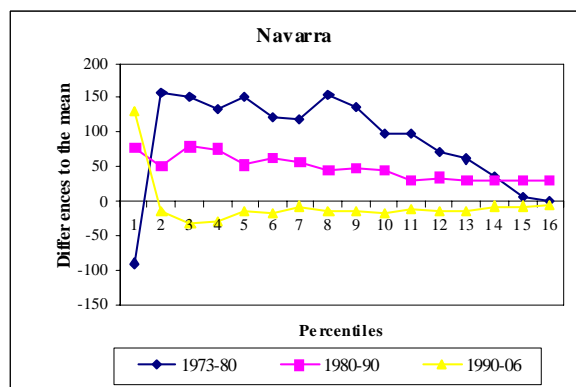
$$FGT_t((1 + \gamma_t)z, \alpha = 1) \leq FGT_{t-1}(z, \alpha = 1) \text{ for all } z \in [0, z^+] \quad (8)$$

Testing this condition solely implies to compare if the average *poverty gap* of the distribution in t normalized by $(1 + \gamma_t)$ is lower than in $t-1$ or if the income growth of the first percentiles under the poverty threshold is higher than the average for the total population.

Figure 2
PRO-POOR GROWTH, 1973-2006







It is important to point out, in any case, the differences that can be observed between the Autonomous Communities considered, which hinder the possibility of talking about homogenous behaviors. Whereas the income growth of the poorest households was much more contained in some regions that started from higher poverty levels, such as Canarias, Extremadura or Murcia, the abovementioned cases of Andalucía and Castilla y León hinder the possibility of speaking about a linear relationship between the initial income level and the pro-poor character of long-term growth. There are, therefore, territorial specificities that could be conditioning the transferring of improvements in mean income to poverty rates.

4. ECONOMIC GROWTH, INEQUALITY AND POVERTY IN THE SPANISH REGIONS

The base of the growth-incidence curves is the existence of changes in mean income and in the Lorenz curve that produce variations in poverty indicators. From this point two relevant questions arise: to what extent the changes in poverty measures respond strictly to these two parameters, and whether it is possible to strictly break down poverty variations into a double component of growth and inequality. Both questions acquire a special significance within the compared framework of the Autonomous Communities. The increase in the

dispersion of income growth in the different regions has been accompanied, notwithstanding, by a trend to convergence –although important differentials remain in inequality and poverty indicators. The identification of the contribution of each component can allow for a first frame of general determinants of this last process.

The question about the dependence of poverty variations from changes in mean income and inequality has received a wide number of answers in the literature⁷. From (3) it can be deduced, being P a poverty indicator, that:

$$L'(P_t) = \frac{F^{-1}(P_t)}{\mu_t} = \frac{z_t}{\mu_t} \quad (9)$$

and from there:

$$P_t = L^{-1}(z_t/\mu_t) \quad (10)$$

which establishes that poverty incidence is determined by the chosen threshold, the mean of the distribution and the Lorenz curve.

This relationship has originated different methodologies to break down poverty changes into the double component of average growth and changes in inequality. Some of the most well-known contributions are the pioneering ones of Datt and Ravallion (1992), Kakwani (1993), and Tsui's (1996) subsequent axiomatic development. In all these approaches the growth component is extracted as the change in poverty incidence due to the change in mean income while holding the Lorenz curve constant at a reference level (L_r). The redistributive component is interpreted as the change in poverty incidence as a result of a change in Lorenz curve while holding the mean income constant at a given reference level (μ_r). Changes in poverty between t and $t-1$ can be broken down, therefore, into:

$$P_t - P_{t-1} = G(t-1, t; r) + D(t-1, t; r) + R(t-1, t; r) \quad (11)$$

where R is a residual component and G , D are the growth and redistribution components, respectively:

$$G(t-1, t; r) \equiv P(z/\mu_t, L_r) - P(z/\mu_{t-1}, L_r)$$

$$D(t-1, t; r) \equiv P(z/\mu_r, L_{t-1}) - P(z/\mu_r, L_t)$$

The residual exists whenever the poverty indicator is not additively separable in μ and L . Only if the mean or Lorenz curve remained completely constant during the period analyzed, would the residual disappear. Some authors have tried to obtain exact decompositions incorporating the residual to the redistributive effect (Kakwani, 1993). Although this alternative

⁷ See, for instance, Kakwani (1980) or Deaton (1997).

introduces an element of arbitrariness, it avoids the parameterization of Lorenz curves to calculate the redistributive component, inevitable in Datt and Ravallion's (1992) proposal.

Assuming the limits of exact decompositions, in this paper we applied this methodology to the study of the long-term behavior of the Autonomous Communities. The availability of different years of the Family Budget Surveys permits to differentiate the changes in subperiods: 1973/74-1980/81, 1973/74-1990/91, 1973/74-2006. To construct simulated distributions, necessary to identify the two components of growth and redistribution, we will assume that each Spanish household increases its income at a rate equal to the mean income growth of the whole distribution. As indicated, the implicit assumption would be that inequality remains constant. We would have, therefore, three different distributions:

$$Y_{t-1} = f_{t-1}(y_{1,t-1}, y_{2,t-1}, \dots, y_{n,t-1})$$

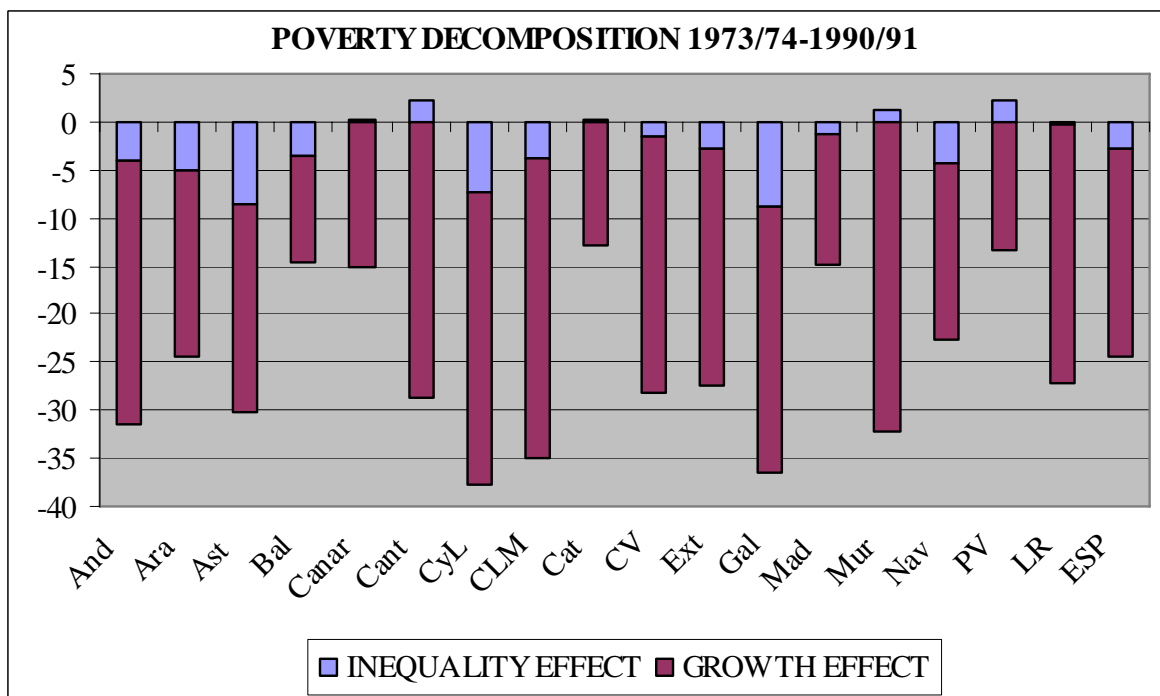
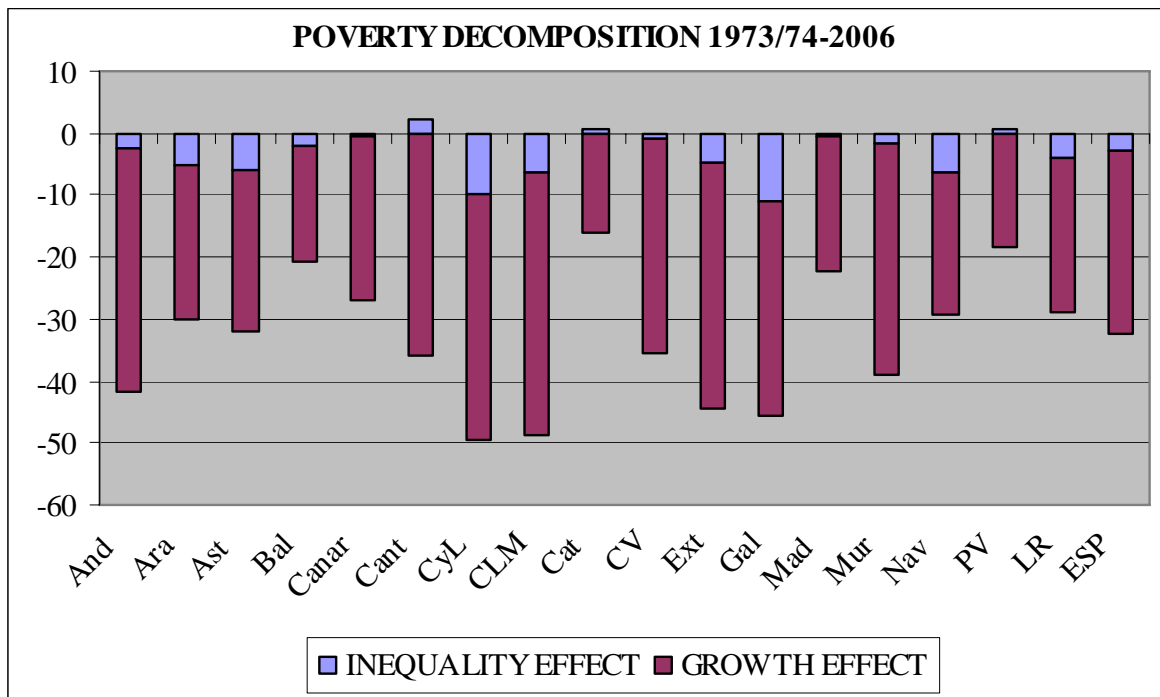
$$Y_t = f_t(y_{1,t}, y_{2,t}, \dots, y_{n,t})$$

$$Y_s = f_s(\gamma_t y_{1,t-1}, \gamma_t y_{2,t-1}, \dots, \gamma_t y_{n,t-1})$$

being Y_{t-1} , Y_t and Y_s , respectively, the income distribution of the initial period (1973-74), of the final period (alternatively, 1980-81, 1990-01 or 2006), and the one resulting from multiplying the incomes of each household in 1973-74 by the mean income growth (γ_t) between that year and the one considered to be the end of the period of analysis.

A natural difficulty of this approach is the consideration of a relative poverty threshold z that is made dependent on the mean income of each distribution. If all incomes increased in the same proportion, the poverty line would increase by the same factor, which would make relative poverty constant. In order to avoid this problem we chose to use a poverty line independent from the changes in mean income. Specifically, 75% of the Minimum Interprofessional Wage (SMI) is considered to be the threshold and it is adjusted by means of a parametric equivalence scale ($\phi=0,5$). The decision to choose the 75% of the SMI as the threshold responds to the similarity observed with poverty rates arising from considering as threshold the 50% of mean income for the year 2006. This is, in addition, one of the few indicators that allow comparisons in time. As it is also well-known, one of the advantages of using "official" thresholds –as defined in public policies– is that in democratic countries, these can be interpreted as the result of the preferences of the population revealed through the political processes (Atkinson, 1995). Their main disadvantage is the lack of analytical justification and conceptual coherence.

Figure 3
POVERTY DECOMPOSITION
 (regional rates of economic growth and inequality)



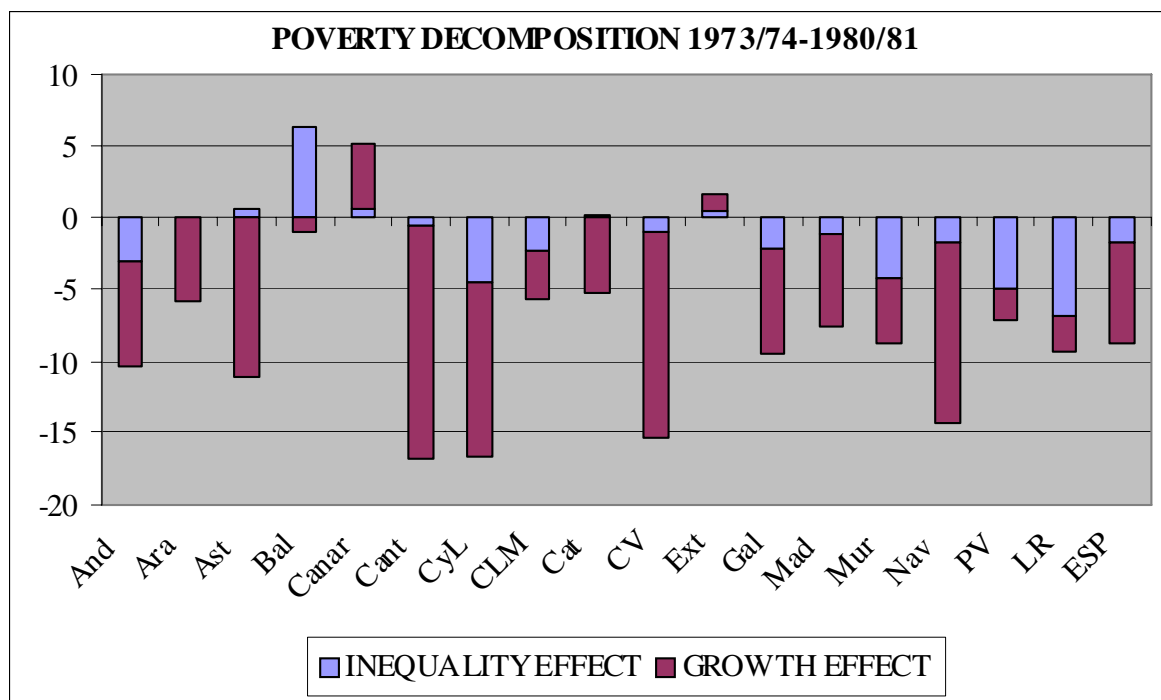


Figure 3 shows the results of the decomposition exercise suggested, differentiating sub-periods between the beginning (1973) and the end (2006) of the observation period, which permits the observation of the cumulative effect of changes in both components. The decomposition made for the Autonomous Communities as a whole reveals that, in average, almost one third of the poverty reduction derives in the long term from changes in inequality. The remaining two thirds would correspond to economic growth, which confirms the greater weight of this second component to reduce the situations of income insufficiency. This result is similar to the one obtained by previous works, concentrated on a shorter period of time⁸.

Results show, in general, a not very uniform evolution of the weight of both effects for the regions at a whole. In the seventies, which were marked by a remarkable slowing down of the economic activity, the generalized fall of industrial production and employment destruction, parallel to a remarkable growth of the redistributive capacity of the tax-benefit system, the dominant trait in several Autonomous Communities was a greater weight of changes in income distribution than in the rest of the period analyzed, although the effect of growth was predominant. In the following decade, which was marked by an outstanding economic reactivation during the second half, the influence of income growth on poverty reduction grew considerably.

The most outstanding data of the reality compared is, in any case, the existence of a not very homogenous pattern in each Autonomous Community in

⁸ Using the data from the Family Budget Surveys of 1980/81 and 1990/91, Ayala and Palacio (2000) obtained a slightly lower effect of inequality changes over poverty variation.

terms of the relative weight of both components. Although the predominance of mean income changes over poverty reduction generally stands out –some Autonomous Communities even registered increases in inequality– the analysis of the different territorial realities shows the existence of two slightly different experiences. In several of the regions that started off with the lowest mean income levels, such as Galicia, Castilla-La Mancha, Castilla y León and, to a lesser extent, Murcia, Andalucía and Extremadura, the magnitude of the inequality component is clearly more important than in the richer Autonomous Communities. Thus, the most moderate reduction of poverty in Madrid, Cataluña, País Vasco or Baleares, would be explained by a smaller intensity of the distributive change, as well as by the fact that they started off with income levels that were considerably higher than the mean at the beginning of the seventies.

The estimates show, therefore, that mean income growth would explain the observed reduction of poverty rates in most of the Autonomous Communities, although in some of them that reduction was visibly supported by a strong correction of inequalities in the income distribution.

5. REGIONAL POVERTY TARGETS: WHAT COMBINATION OF GROWTH AND REDISTRIBUTIVE POLICIES?

The parametric analysis of poverty determinants opens the door to different combinations of economic growth rates and changes in inequality. From this perspective, it is possible to assess ex-ante some options of economic policy aiming towards reducing poverty implemented by regional governments. In fact, it is possible to respond to questions such as how much each region would have to grow to reach a certain poverty target, or how different fiscal policy options would attempt to reach the same objective. In keeping with the ideas mentioned in the previous sections, to be able to isolate the specific effect of mean income growth on poverty, it should be distributionally neutral⁹. This assumption moves away, logically, from reality. No tax and transfer system will be able to compensate exactly for the effects of a given rate of economic growth over the Lorenz curve. These tools can help, however, some regional governments to assess how close or how far they are of a specific poverty target and which could be the real scope of some of its own redistributive instruments. Most of the available papers use very basic components of the tax-benefit system but with important effects on the income distribution.

⁹ As shown by Gasparini *et al.* (2007), the effects on poverty of a growth rate which is distributionally neutral shall depend on the income distribution below the threshold. If the percentage of individuals with incomes close to the threshold is relatively high, the neutral economic growth shall pull a higher proportion of the population out of poverty.



Among the different competences assumed by the Autonomous Communities in the area of redistributive policies, probably one of the most significant ones has been the increasing assumption of responsibilities in the design of the income tax. One of the possible projections of poverty evolution comes, intuitively, from the joint consideration of a wide range of distribution-neutral growth rates and the establishment of different tax rates in each Autonomous Community. In order to simplify the analysis, a possible base scenario could be a proportional tax rate.

One of the tools specially designed to represent neutral growth rates and different redistributive policies are isopoverty curves. These curves allow us to answer the double question of how much the economy would have to grow without changes in inequality to reach a certain poverty target, or how much inequality would have to be reduced to obtain that same objective if there were no changes in mean income. These curves are a relatively recent instrument that has been mostly applied in low- and middle-income countries (ECLAC, 2002).

The formalization of the curves was initially developed by Ferreira and Leite (2003), who also take (3) as starting point. For any given poverty target (P^*), a set of possible distributions F^* should exist with mean μ^* and an associated Lorenz curve that would produce a poverty level equal to a certain objective $P^* = L^{*-1}(z/\mu^*)$. A reasonable assumption in a partially decentralized tax-benefit system is that this poverty target differs in each Autonomous Community. Each one of them could decide to establish its own proportional tax rate (α), and then distributing the revenues equally across every person in the distribution (e). The result would be a hypothetical income distribution function $F^*(y^*)$;

$$y^* = (1 + \beta) \left[(1 - \alpha)y + e_{\mu_y} \right] \quad \text{with } 0 < \alpha < 1, \beta > 0 \quad (12)$$

where β represents a distribution-neutral growth rate. The mean income of this hypothetical distribution would be higher than the one of the initial distribution –increased by β –, whereas inequality would be lower by definition.

Therefore, it is possible to define the isopoverty curves of the $F(y)$ distribution for each poverty target P^* , given a poverty line z , as the set of combinations of α and β that transform that initial distribution into another one with a poverty rate P^* . Isopoverty curves are constructed in such a way that the higher is the economic growth –higher β –, the lower the public effort necessary to reduce inequality –lower α – to reach a specific poverty target. The negative slope of the curve reveals, therefore, a *trade-off* between redistribution and growth, whereas its convexity implies a decreasing marginal rate of substitution between α and β .

The application of this methodology to the different possibilities of growth and redistribution of the Autonomous Communities refers to the establishment of an explicit poverty target. Given that the main objective of this paper is to

analyze the heterogeneity sources in the relationships between economic growth and poverty in the different regions, a simple alternative is to examine which have been those combinations in the long-term and to use the maintenance of a poverty-reducing capacity similar to the one registered in the period observed as the objective function in each Autonomous Community. A difficulty deriving from the procedures used in the estimation of the isopoverty curves for other countries is the absence of official poverty thresholds or absolute poverty measures¹⁰. The approach followed to define the threshold has been to consider, again, as a reference line, the 75% of the SMI in 1980 and 2006, adjusted by a parametric equivalence scale ($\phi=0,5$).

In order to define the isopoverty curves for each Autonomous Community, it is necessary to identify the combinations of distribution-neutral growth rates (β) and tax rates (α) equally distributed (e) that would allow poor households in each region to reach a determined threshold (z):

$$y(1+\beta)^t(1-\alpha)+e=z \quad (13)$$

where $e = \alpha\mu(1+\beta)^t$. Replacing e in (13), we have:

$$[y(1-\alpha)+\alpha\mu](1+\beta)^t=z \quad (14)$$

where the values of α :

$$\alpha = \frac{z-y(1+\beta)^t}{(1+\beta)^t(\mu-y)} \quad (15)$$

and β :

$$\beta = \left[\frac{z}{y(1-\alpha)+\alpha\mu} \right]^{\frac{1}{t}} - 1 \quad (16)$$

can be identified.

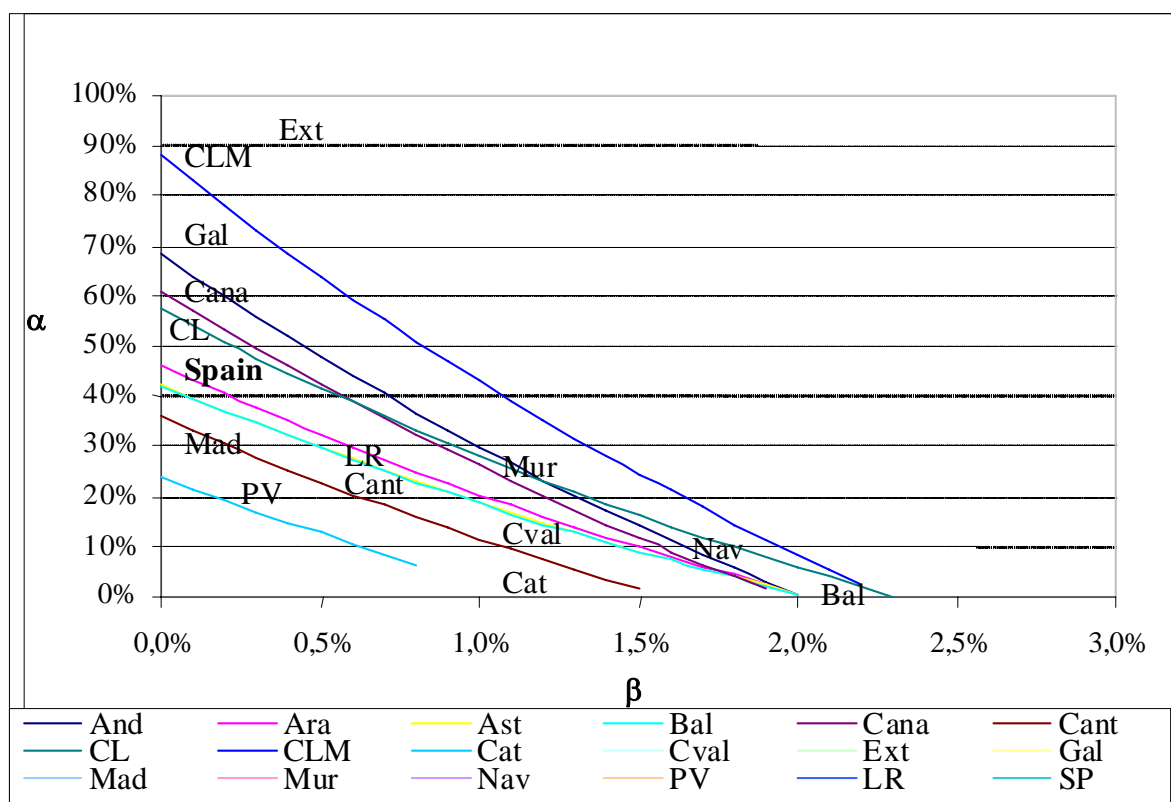
Figure 4 represents the isopoverty curves for each Autonomous Community taking the 1980-01 period as a reference, which permits to appreciate the growth and redistribution combinations that could produce in the future poverty reductions similar to the ones registered in this time period¹¹. There are several interesting aspects arising from the comparison of the profiles of the curves. First of all, the distance from the origin of some Autonomous Communities is noticeable. The most distant ones require higher combinations of growth rates and redistributive efforts than the rest of regions. In general, these are the

¹⁰ Most of the studies that have estimated isopoverty curves, mainly in Latin America, use the target of halving poverty by 2010, and as poverty threshold, the absolute poverty lines defined by the World Bank.

¹¹ We consider 1980-81 instead of 1973-74 as reference because the SMI was put into force the former year.

poorest at the beginning of the period of analysis, including Extremadura, Castilla-La Mancha, Galicia, Canarias and Andalucía. In the opposite end, we can find the richest Communities such as Madrid, Cataluña, País Vasco and Cantabria. In these regions, reaching lower poverty levels is compatible with relatively low growth rates and moderate reductions of inequality.

Figure 4
ISOPOVERTY CURVES



A second relevant element, closely related to the aforementioned one, is the existence of very different starting points for each Autonomous Community. In a hypothetical scenario of no growth, the needs of income transfers from some households to others are considerably higher in the regions with lower incomes. Some specific cases can be highlighted, like Extremadura and Castilla-La Mancha, that in lower growth scenarios would inevitably register much lower poverty reductions than the ones obtained in the observed period, given the inviability of possible distributive schemes based on very high tax rates or on income transfer policies with large distributive effects. Furthermore, to maintain the trends observed in poverty reduction in the absence of redistributive changes, regions like Andalucía, Canarias, Extremadura or Galicia, must have grown during two decades at a rate one point above the one Madrid or Cataluña would have needed. These hypothetical growth rates are, in any case, lower than the ones found in other countries with lower mean income than

Spain. In scenarios of constant inequality, the growth rates necessary to reach even very modest targets of poverty reduction are considerably higher in many countries than those estimated for the poorest Spanish regions (ECLAC, 2002).

With all cautions due to both the simulation nature of these estimates and the limits of the information used, these results have relevant implications for a better understanding of the possibilities and limits of the ongoing developments in some Autonomous Communities. Firstly, the regions with higher poverty rates need more intense redistributive efforts and the maintenance of positive growth differentials, as compared to the regions with lower poverty rates. Secondly, these requirements produce some questions on the effects that the decentralization process may have, both from the point of view of public expenditure and revenues, on poverty reduction. The inviability of large-scale redistributive policies in the regions with higher poverty rates, as shown by the high hypothetical tax rates necessary in the absence of economic growth, which are unattainable for most of the regions, requires the reinforcement of some of the centralized redistributive policies, both in terms of taxes as well as in terms of income maintenance programs.

6. CONCLUSIONS

The growing interest on the way in which economic growth gives rise to improvements of low-income households has encouraged a remarkable development of the analysis of the relationships between economic growth, inequality and poverty. Unlike the dominant lines of study of previous decades that linked income distribution changes to the variations of basic macroeconomic indicators, the new approaches focus the study of these relationships on the analysis of different parameters of the income distribution. The refinement of the methods, together with the reinforcement of the axiomatic content of the evaluation functions of the pro-poor character of growth, allows to answer different questions related both to the incidence of mean income growth on the different percentiles of the income distribution, as well as to the different influence of changes in mean income and inequality on poverty levels.

The possibility of decomposing the sources of poverty variations by means of the analysis of the income distribution becomes especially useful to know its major determinants in different territories. In this paper we consider different approaches to the basic reasons of poverty changes in each Spanish region responding to two questions: the extent to which the differences in income growth rates in each region have originated a significant regional differentiation of the situations of income poverty, and how this dispersion has been



compensated or reinforced by changes in the internal inequalities of each region. Among other implications, it is important to point out that if the possibilities of reinforcing the pro-poor character of economic growth mean that the regions with higher poverty rates must increase the capacity of their own redistributive instruments, it seems quite clear that the transfer of responsibilities to the territorial governments –without specifically increasing the resources of the lower income regions– could generate a break in the convergence process of poverty indicators registered in the last decades.

The different analyses made show that for the Spanish population as a whole, the economic growth has meant in the long term an improvement of the percentiles with lower incomes. Notwithstanding, the tests of the pro-poor character of growth reveal that this improvement is neither uniform for the Autonomous Communities as a whole nor manifests itself in terms of continuity during the time period studied. With the necessary precaution imposed by the limits of the data used, it seems that in general there are specific characteristics for each territorial reality that generate a different translation of income growth into improvements for those households with lower incomes.

These differences between the Autonomous Communities also arise when the general determinants of poverty are identified by breaking down the effects of changes in mean income and changes in inequality. For the Spanish population as a whole, the analysis made shows a greater influence of income growth than inequality in poverty changes in the long term, although both components have a reducing effect of poverty. There is, however, a remarkable heterogeneity between the Autonomous Communities, given the greater contribution of the redistributive component in those coming from the lowest mean income levels and where, in general, poverty has been most reduced.

The possibilities, however, for this process to remain in time seem restricted by the difficulties for the process of inequalities reduction to be extended throughout the lower income regions. The estimation of the isopoverty curves reveals that in the richer Autonomous Communities poverty can continue to decrease with relatively low economic growth rates or by means of the implementation of redistributive policies of limited scope. On the contrary, to continue the convergence process of poverty rates, the poorest regions would have to maintain growth rates remarkably higher to those of the richest regions or to carry out very ambitious redistributive policies. Both possibilities seem restricted both by the specific structural characteristics of these regions, as well as by more limited budgetary resources.

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SÍNTESIS

PRINCIPALES IMPLICACIONES DE POLÍTICA ECONÓMICA

El aumento del interés por el conocimiento del modo en que el crecimiento económico agregado se refleja en mejoras del bienestar de los hogares de menor renta ha dado lugar a un notable desarrollo del estudio de las relaciones entre el crecimiento económico, la desigualdad y la pobreza. A diferencia de las líneas de estudio dominantes en décadas anteriores, que relacionaban los cambios en la distribución de la renta con las variaciones de indicadores macroeconómicos básicos, los nuevos enfoques centran el estudio de estas relaciones en el análisis de diferentes parámetros de la distribución de la renta. El refinamiento de los métodos de análisis, con el refuerzo del contenido axiomático de las funciones de evaluación del carácter “pro-pobres” del crecimiento, permite contestar diferentes interrogantes relacionados tanto con la incidencia del crecimiento de la renta media en los diferentes percentiles de la distribución como con la diferente influencia de los cambios en la renta media y en la forma de la distribución sobre los niveles de pobreza.

La posibilidad de descomponer las fuentes de las variaciones de la pobreza mediante el análisis de la distribución de la renta resulta especialmente útil para conocer sus determinantes últimos en diferentes territorios. En este trabajo se ofrece una aproximación a las razones básicas de los cambios de la pobreza en cada Comunidad Autónoma atendiendo a dos cuestiones: en qué medida las diferencias en las tasas de crecimiento de la renta en cada región han dado origen a una notable diferenciación regional de las situaciones de insuficiencia de ingresos y cómo esa dispersión ha sido compensada o reforzada por los cambios en las desigualdades internas de cada región. Entre otras implicaciones, cabe destacar que si las posibilidades de reforzar el carácter “pro-pobres” del crecimiento pasan porque determinadas regiones –aquellas con mayores tasas de pobreza– incrementen la capacidad de sus instrumentos redistributivos propios parece claro que el traspaso de responsabilidades a los gobiernos territoriales, sin aumentar específicamente los recursos de las zonas de menor renta, podría generar un freno en la convergencia de los indicadores de pobreza registrada en las últimas décadas.

Los diferentes análisis realizados muestran que para el conjunto de la población española el crecimiento económico ha supuesto en el largo plazo una mejora de los percentiles con rentas más bajas. Los contrastes, sin embargo, del carácter “pro-pobres” del crecimiento revelan que esa mejora ni resulta uniforme para el conjunto de las Comunidades Autónomas ni se manifiesta con continuidad en el conjunto del período observado. Con las necesarias cautelas que imponen los límites de las bases de datos utilizadas, parece que, en general, existen características específicas de cada realidad territorial que originan una diferente traducción del crecimiento de las rentas en mejoras de los hogares con menores ingresos.

Estas diferencias entre las Comunidades Autónomas se manifiestan también al tratar de identificar los determinantes generales de la evolución de la pobreza

atendiendo al doble efecto de los cambios en la renta media y en la desigualdad. Para el conjunto de la población española, el análisis realizado pone de manifiesto la mayor influencia del crecimiento de la renta en los cambios en la pobreza en el largo plazo que su reparto, aunque los dos componentes ejercen un efecto reductor. Existe, sin embargo, una notable heterogeneidad entre las Comunidades Autónomas, dada la mayor contribución del componente redistributivo en aquellas que partían de los niveles de renta media más bajos y donde, en general, más se ha reducido la pobreza.

Las posibilidades, sin embargo, para que este proceso se mantenga en el tiempo parecen restringidas por las dificultades para que en las regiones de menor renta se prolongue el proceso de reducción de las desigualdades. La estimación de las curvas de isopobreza revela que en las Comunidades Autónomas donde la incidencia de la pobreza es menor ésta puede seguir reduciéndose con aumentos de la renta media relativamente bajos o mediante la implementación de políticas redistributivas de alcance limitado. Para que prosiguiera el proceso de convergencia en las tasas de pobreza, las regiones más pobres, por el contrario, tendrían que mantener tasas de crecimiento notablemente superiores a las de las regiones más ricas o poner en marcha políticas muy ambiciosas de redistribución de la renta. Ambas posibilidades parecen restringidas tanto por las características estructurales de las áreas de menor renta como por una dotación más limitada de recursos presupuestarios.

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