

## INCOME MOBILITY IN SPAIN: HOW MUCH IS THERE?

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Traditional cross-sectional research is unable to measure the degree of income mobility in an income distribution. Using longitudinal data and various income stability indices, this paper measures the level of permanent inequality (immobility) in Spain for the period 1985–92. Results indicate that the transitory component of inequality is large and the level of income mobility increases over time while income inequality decreases slightly. More stability is found at the top than at the bottom of the income distribution and the range of the registered movements is rather short.

### 1. INTRODUCTION

Measuring the level of permanent income inequality or income mobility is complementary to measuring income inequality in a given income distribution. The social relevance of the extent of mobility in the income distribution is underlined by the fact that it is generally perceived as an essential ingredient in policy formulation. Moreover, a wide range of people believe in the existence of a certain trade-off between income inequality and income mobility.

Within industrialized countries, empirical studies reveal that for the United States (U.S.), a country with high income inequality, the increase of income inequality during the 1980s and 1990s was accompanied by a rather high level of permanent inequality or low income mobility (Burkhauser and Poupore, 1996). Aaberge *et al.* (1996) show that countries with lower income inequality than the U.S. such as Sweden, Norway and Denmark register a remarkably similar level of income mobility. Research on the income distribution in the U.K. (Jarvis and Jenkins, 1995 and 1996) indicates that after the 1980s, when the increase in income inequality was especially large, the level of income mobility was, if not high, higher than that found for the U.S. The Spanish income distribution, in contrast with that of these countries, experienced a slight decrease in income inequality during the 1980s (see *inter alia* Ruiz-Huerta and Martínez, 1994; Ayala *et al.*, 1995; Alvarez *et al.*, 1996). The interest of measuring income mobility in Spain is twofold. First, the yet unexplored issue of the degree of income mobility in Spain will supplement the knowledge on the nature of the distribution of income in this country. More precisely, an accurate interpretation of the reduction in income inequality during the 1980s, of large social and political relevance,

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should take account of the evolution of income mobility in the period. Second, the study of the trend in income mobility over time in a country where income inequality decreased will add evidence to the discussion of the existence of a trade-off between income inequality and income mobility.

Up to now and to the best of my knowledge, there are no studies in the literature that have tried to measure the degree or pattern of mobility within the Spanish income distribution. Studies on income distribution in Spain have concentrated on the evolution of inequality and poverty over time and have avoided the issue of intra-distributional mobility. The aim of this paper is to try to give a measure of the degree and pattern of income mobility of the Spanish income distribution and to compare the results obtained with those of other countries (mainly the U.K.) by equalizing equivalence scales and accounting periods.

The data used is the Spanish Household Panel Survey (ECPF).<sup>1</sup> This dataset contains information on a continuous income variable which includes all monetary household income in a quarter and a wide range of household demographic and socioeconomic characteristics. Unlike most of the available panel surveys [e.g. Panel Survey of Income Dynamics (PSID) for the U.S. or the German SocioEconomic Panel (GSOEP) for Germany] the ECPF is quarterly based. While annual panels permit the comparison between annual, biannual and even ten-year income mobility they are unable to consider any period shorter than a year. Shorter than annual accounting periods for income can provide an interesting contrast in terms of the persistence of a given household welfare situation.

The remainder of this paper is organized as follows. Section 2 is devoted to the measurement of income mobility in Spain using intuitive and simple measures of mobility and comparing results with those obtained for other countries. In this sense, currently existing difficulties for research on these issues due to the lack of adequate data are overcome by taking advantage of the quarterly interview structure of the Spanish Household Panel Survey (ECPF). Section 3 looks at the changes of income mobility in time and relates them to the evolution of income inequality. Finally, in Section 4, the pattern of the income mobility is studied in detail in order to determine from where and to where income movements take place. The last section concludes.

## 2. THE DEGREE OF INCOME MOBILITY IN SPAIN

High mobility is compatible with inequality stability or instability as well as with high or low income growth. This means that measuring the level of mobility in the income distribution complements results on inequality through time. Two crucial issues in the study on income mobility are the actual definition of the income variable, i.e. what does income actually include; net or gross income;

<sup>1</sup>The ECPF (Encuesta Continua de Presupuestos Familiares) or Spanish Household Panel Survey is a quarterly rotating panel survey conducted in Spain since 1985 by the Spanish Statistical Office (INE). Its primary aim is to provide information on household budgets in order to adapt weights on the goods which form the representative bundle in the calculation of retail price indices. The sample consists of 20,985 different households who are observed between one and eight times between the first quarter of 1985 and the last quarter of 1992, both inclusive (see Figure A1). The maximum interview period of a household is two years (eight quarters).

monetary or non-monetary income; etc. . . . , and the income accounting period. A further issue is the use of household or individual income. We assume that household income is equally shared so that our variables of interest are equivalent income per household and equivalent income per person, depending on the weight we give to each household observed.

In this study, *disposable income* is equivalent (using a McClements or OECD scale) household income before housing costs. The definition of income includes employment and self-employment income, income from regular transfers (including pensions and unemployment benefits), investment income and all other household incomes. It excludes social insurance contributions, and it is net of pay-as-you-earn taxes. Cantó (1998) provides some results on the effect of income mobility of the use of different equivalence scales. The lowest mobility levels are obtained at values of the elasticity of equalized income to household size (Buhmann *et al.*, parameter  $s$ ) around 0.7. The OECD scale mean estimated value for the Spanish sample is 0.77 while the McClements is slightly lower. Thus results should approximate a lowest bound for income mobility.

Most studies on income dynamics underline the importance of the accounting period in the measurement of the instability of individual or household income. If there are random movements up and down the income distribution, the increase in the length of the accounting period will increase the persistence or stability of income over time and therefore, will reduce the apparent poverty rate. Also, the income inequality literature highlights the importance of the accounting period in the measurement of inequality, indicating that the increase in the length of time in which income is measured reduces the level of observed income inequality. Both effects are due to the fact that averaging incomes over time lessens the degree of dispersion in the population and hence reduces the proportion of individuals or households appearing in the tails of the income distribution. With respect to the income accounting period, a sensitivity analysis is undertaken for each of the measures considered and special accounting periods are chosen in order to compare results with those obtained for other countries.

In the following sections two groups of results are discussed: results for Spain for which no comparisons with other countries are undertaken and results for Spain calculated for comparisons with other countries (mainly with the U.K.).

### 2.1. *A First Measure: The Correlation Coefficient*

Let us begin by the most straightforward measure: the correlation coefficient. This measure indicates the relationship between amounts of income in two subsequent periods. In a first approach to the problem, we have considered equalized income and logged equalized income as the relevant variables. In terms of samples, the coefficient is calculated for both measures for different income accounting periods<sup>2</sup> and for a constant sample.

As expected, results in Table 1 indicate that the increase in the accounting period increases the correlation coefficient between household income at  $t$  and at  $t - 1$  using a balanced panel (constant sample results). The increase is larger from

<sup>2</sup>Given attrition, sample sizes for different periods differ.

TABLE I  
A FIRST INDEX OF INCOME MOBILITY: THE CORRELATION COEFFICIENT

Accounting Period	Households, OECD Scale				Individuals, McClements Scale			
	Y	Log(Y)	Constant Sample (4,423 obs.)		Y	Log(Y)	Constant Sample (11,812 obs.)	
			Y	Log(Y)			Y	Log(Y)
Quarter (No. observations)	0.739 (17,657)	0.816 (17,445)	0.686	0.815	0.749 (51,009)	0.819 (50,502)	0.757	0.821
Two quarters (No. observations)	0.829 (13,230)	0.849 (13,181)	0.817	0.832	0.829 (37,117)	0.875 (36,556)	0.859	0.881
Three quarters (No. observations)	0.837 (8,331)	0.862 (8,314)	0.827	0.859	0.861 (22,543)	0.899 (22,543)	0.859	0.901
Year (No. observations)	0.835 (4,429)	0.859 (4,423)	0.835	0.859	0.867 (11,182)	0.904 (11,586)	0.867	0.904
Quarter (Year waves)* (No. observations)	0.660 (10,799)	0.760 (10,631)	0.585	0.765	0.705 (29,715)	0.775 (29,359)	0.622	0.794

Note: Y is income and Log(Y) is logged income.

\* Income here is defined as household or individual equivalent income in a given quarter and the coefficient of correlation is calculated for the households' first interview quarter and the same quarter in the subsequent year.

quarterly to six-month income than thereafter. This equalizing effect is caused by within-period mobility. As shorter periods of time are considered in the measurement of individual or household income, the smaller the under-estimation of within-period mobility.

Table 1 also shows the effect of the timing of the interview in the panel on the values of the correlation coefficient. For a quarterly income accounting period, interviews a year apart register a 6.8 percent lower correlation coefficient than interviews with a time gap of three months (0.816 to 0.760).

Results on this correlation coefficient can be compared to those obtained for the U.K. by Jarvis and Jenkins (1996) (for Spanish comparable results see Table 1).<sup>3</sup> The U.K. results for single yearly waves using a monthly income accounting period oscillate between 0.56 to 0.69 depending on the waves considered. For the ECPF, the correlation coefficient of individual income between a given moment and a year later goes from 0.64 to 0.77 depending on the waves considered.<sup>4</sup> If quarterly income data underestimate within-period mobility (month), a first conclusion could be that the level of equivalent income mobility in Spain and in the U.K. is within a similar range.

<sup>3</sup>These authors use data from the British Household Panel Survey (BHPS). Their definition of income is monthly after tax equivalent individual income using a McClements scale. Using the ECPF with a BHPS structure, we have used quarterly household income (the shortest receipt period available) between waves a year apart. In terms of resembling their income definition, we have equalized income using the McClements scale and we have divided households into individuals. The individuals considered are those whose households are observed to have the same number of members during all interviews (87 percent of households in the data). The final sample of individuals includes 62,187 observations.

<sup>4</sup>The 0.705 result in Table 1 refers to the 1st and 5th interviews, other results can be obtained for the 2nd and 6th, the 3rd and 7th or the 4th and 8th interviews.

## 2.2. An Inequality-Based Measure of Income Mobility

In 1978 Shorrocks was the first author to use the correlation between stability and inequality in order to develop a measure of intra-distributional mobility (see Shorrocks, 1978b). He asserts that in the income stability research one must consider two basic issues: the degree to which measured income inequality is affected by the choice of accounting period and the way one characterizes income movements over time.

Shorrocks proposed an index  $R$  which is closely linked to the first of these issues. This index measures the degree to which incomes are equalized as the accounting period is extended. The index takes advantage of the fact that  $m$ -period inequality can never exceed a weighted sum of the single period inequality values where weights  $w_k$  represent the proportion of the aggregate  $m$ -period income received in period  $k$  ( $w_k = \mu^k / \mu$ ). Therefore, cumulating incomes over time tends to reduce inequality.  $R$  has a simple interpretation, can be applied consistently and takes values between 0 and 1. A value of 0 means a complete equalization of incomes over the longer accounting period and a value of 1 means no equalization as the accounting period grows.

Thus, the impact of the length of the accounting period on measured inequality can be summarized by the ratio:

$$R = \frac{I(Y)}{\sum_k w_k I(Y_k)} \leq 1$$

in which the “long-run” inequality value  $I(Y)$  is expressed as a proportion of the weighted average “short-run” inequality value  $I(Y_k)$ . The inequality measure used in the calculation of  $R$  should be a convex function of relative incomes (almost all inequality measures meet this restriction).

The advantage of  $R$  is that it can also be regarded as a measure of the degree to which the incomes of individuals change over time: the degree of mobility or income stability. This is because if income movements are seen in terms of their impact on measured inequality, as the accounting period is lengthened incomes tend to be equalized. If  $R = 1$ , there is complete immobility and if  $R = 0$ , there is complete mobility in the data. Clearly, the lower  $R$ , the more mobility there is.  $R$  captures the main features of movements within the income distribution without imposing any particular theoretical structure on the data.  $R$  can also be considered a measure of “permanent inequality.” The larger the value of  $R$ , the larger the permanent component of a set of income inequality measures. Thus  $R$  equals 0.90 indicates that 90 percent of the average level of inequality estimated each quarter persists over the 2 year period.

Within  $R$ , however, various immobility indices are contained depending on the measure of inequality used to calculate it. The Gini inequality index is less sensitive than other indices to tail observations. This implies that it is most sensitive to differences in income between observations in the middle of the distribution. The coefficient of variation or the Theil entropy measure of inequality are more sensitive to differences at the top of the distribution relative to differences at the bottom or the middle.<sup>5</sup> The value of  $R$  using the Gini should then be higher

<sup>5</sup>This is due to the use of differences between household income and mean household income in the calculation of these indices.

TABLE 2  
IMMOBILITY INDICES IN A BALANCED PANEL (CONSTANT SAMPLE), SPAIN AND UK

	Household—OECD Scale			Individual—McClements Scale				
	Spain			Spain			U.K.	
	<i>R</i> (Gini)	<i>R</i> (Theil)	<i>R</i> (C.V.)	<i>R</i> (Gini)	<i>R</i> (Theil)	<i>R</i> (C.V.)	<i>R</i> (Gini)	<i>R</i> (Theil)
One quarter	1	1	1	1	1	1	1	1
Two quarters	0.95	0.89	0.91	0.94	0.90	0.93		
Three quarters	0.93	0.85	0.89	0.94	0.86	0.91		
Four quarters	0.92	0.82	0.87	0.93	0.84	0.89		
Five quarters	0.91	0.79	0.83	0.92	0.81	0.85		
Six quarters	0.91	0.78	0.83	0.91	0.80	0.85		
Seven quarters	0.90	0.77	0.83	0.91	0.79	0.86		
Eight quarters	0.89	0.76	0.81	0.90	0.78	0.84		
Nine quarters							0.92	0.82
<i>Observations</i>	(4,429)	(4,429)	(4,429)	(11,812)	(11,812)	(11,812)	(7,910)	(7,910)
Monthly Income* (yearly waves)	—	—	—				0.95	0.87
Quarterly Income**								
Yearly Income***	0.95	0.88	—	0.95	0.89	—		
Yearly Income*** (yearly waves)	—	—	—	0.97	0.94	—		
<i>no. of observations</i>	(4,429)	(4,429)	—	(11,812)	(11,812)	—	(7,910)	(7,910)

Note: Results for Spain are calculated using the ECPF. Results for the U.K. are taken from Jarvis and Jenkins (1996).

\*Income here is defined as household or individual equivalent income in a given month and the index is calculated for the first interview month and the same month in the subsequent year.

\*\* Income here is defined as household or individual equivalent income in a given quarter and the index is calculated for the first interview quarter and the same quarter in the subsequent year.

\*\*\* Income here is defined as total individual equivalent income in a year and the index is calculated for two consecutive years.

than those obtained using other indices. Results for Spain (see Figure 1) confirm this and indicate that “permanent inequality” is higher the more weight given to middle incomes.

Results for Spain on the *R* index are presented in Table 2 where, again, a sub-sample of households is used to form a balanced panel of the ECPF (households who answer all eight interviews). A clear result emerges: the larger the income accounting period, the more likely a household is to suffer an income change.

Taking advantage of the results in Table 2 some derivation of the importance of within-year mobility in Spain can also be made. The inequality-reducing impact of income mobility is almost double when one considers quarterly income using the Gini [ $1 - R(\text{Gini}) = 0.09$  for five quarters considering each wave] than when one considers quarterly income in yearly waves [ $1 - R(\text{Gini}) = 0.05$ ]. Similar results are obtained using the Theil index:  $1 - R(\text{Theil}) = 0.21$  for five quarters considering each wave while  $1 - R(\text{Theil}) = 0.12$  considering quarterly income in yearly waves. Hence, within-year mobility is rather large. Regarding time periods of more than a year, results obtained by Benus and Morgan (1975) show that the comparison of annual income versus two or more years income indicates that the increase of the accounting period at this period length reduces inequality very little. In any case, if quarterly or even annual incomes exaggerate the degree of inequality then, in the extreme, one should use life-time income in order to measure “real inequality.” However, it may be of little consolation for some poor

household to know that they can be better off in the future, especially if they have no way of borrowing against this expectation.

Considering Spanish household quarterly income between waves a year apart (see Table 2, top left results), from 11 to 24 percent of quarterly income inequality is found to be transitory. For the U.K., Jarvis and Jenkins (1996) obtain a value of  $R$  of 0.95 using the Gini and 0.87 using the Theil index.<sup>6</sup> The results on  $R$  for Spain are extremely similar to those obtained for the U.K.: 0.95 using the Gini and 0.89 using the Theil index. Thus, if within-quarter (e.g. monthly) mobility could be computed for the Spanish sample a similar or slightly higher stability would be found for Spain.

These results, however, assume the use of comparable datasets. One should insist on the need for further research on comparability problems in the study of household income dynamics.<sup>7</sup>

Shorrocks (1981) takes the rigidity index  $R$  further and constructs a so-called “stability profiles.” The shape of these curves helps first, to view sample group differences in mobility and second, to identify whether income changes are primarily short-run fluctuations which might be associated with “transitory incomes” or whether they indicate changes in “permanent income.” In order to illustrate previous results on  $R$  and in a first attempt to differentiate degrees of income mobility for different household types, stability profiles have been constructed for Spain (see Figure 1).

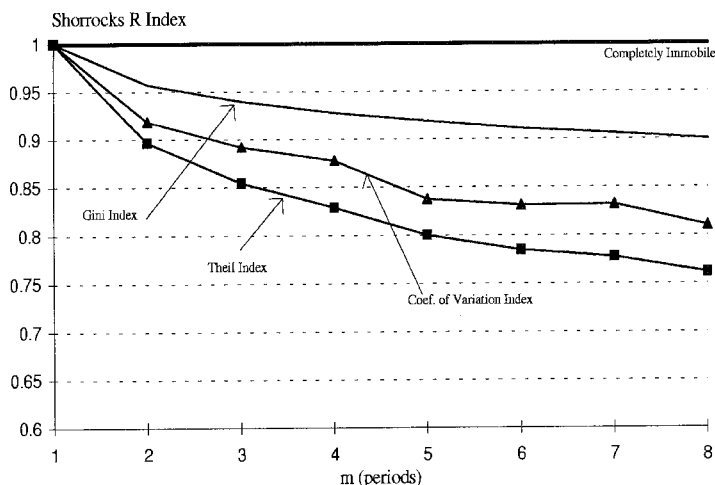


Figure 1. Stability Profiles for Spain, Households, Balanced Panel

Source: Own construction using ECPF.

Note: The sample size is constant for all  $R$  index calculations and is equal to 4,429 households who are observed during all eight interviews in the survey.

<sup>6</sup>They use data on two waves of the yearly based BHPS (monthly income).

<sup>7</sup>A further reason for caution in the interpretation of results is that some of the results for Spain could include some *selection* of households. It could be the case that households which are observed during the whole sampling period are those who are least income mobile, i.e. immobile households could be an increasing percentage of the sample as the number of interviews increases.

The curves depicted in Figure 1 show a permanently decreasing pattern of the  $R$  index, in a continuous egalitarian trend as the time-horizon is stretched: the structure one would expect if total life-time incomes were identical and total inequality and  $R$  tend to 0 as  $m$  (periods) increases. In this sense, however, no conclusions on life-time permanent or transitory income changes can be obtained when the accounting period covers only two years of data. As Shorrocks (1981) indicates, one needs around 4–5 years of data to be able to make some statements on these issues. A general result from Figure 1 is that the inequality-reducing impact of income mobility in a two-year period and centering on middle incomes (Gini) is relatively small (10 percent after two years) compared to that when centering on high incomes (Theil): 20–25 percent.

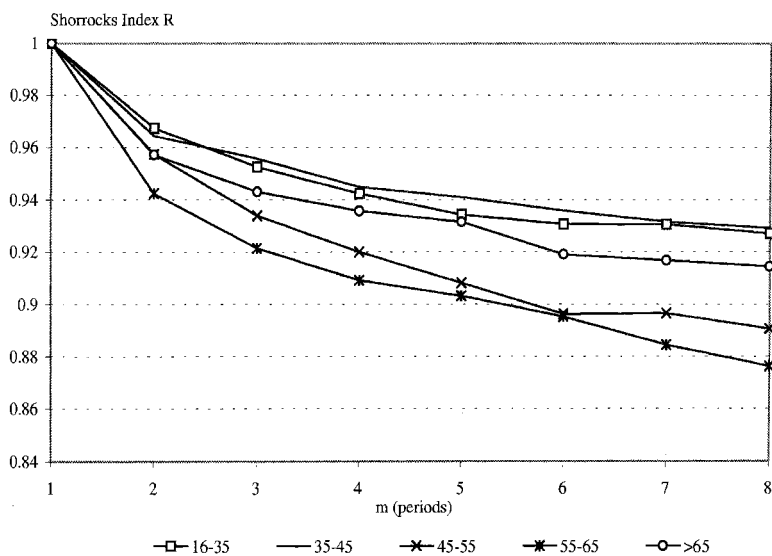


Figure 2. Stability Profiles Using the Gini by Head's Age, Spain

Source: Own construction using ECPF.

Note: The sample size is constant for all  $R$  index calculations and is equal to 3,460 households who are observed during all eight interviews in the survey and whose composition did not change along the period.

The dynamics of household income are often studied looking at the dynamics of earnings of household members—see for example Lillard and Willis (1978); Creedy *et al.* (1981); Gottshalk (1982); Gustafsson (1994) or Bigard *et al.* (1998)<sup>8</sup>—and rarely looking at the dynamics of total household equivalized income.<sup>9</sup> All results on the dynamics of individual earnings are barely comparable to household equivalent income mobility results. This is due to the expected instability of equivalized income over time due to demographic and socioeconomic changes in the household at certain stages of the household's life (i.e. household

<sup>8</sup>A good review of this literature appears in Atkinson *et al.* (1992).

<sup>9</sup>Initial work in this field appears in Hart (1976) and (1981); Atkinson and Cowell (1983); Creedy (1985). More recent contributions are Berghman and Nirven (1991), Bird (1991) and Hungerford (1993).



members' life-cycle). In fact, explaining household income dynamics is a difficult job. It is harder than explaining individual earnings dynamics, mostly because of the much larger range of events that affect its value. Labor market decisions of different household members as well as increases in earnings of any member, together with the arrival or departure of members from the household, imply changes in the value of income or equivalent household income.

As Bigard *et al.* (1998) indicate, mobility decisions are likely to differ along the life-cycle of the individual. Thus, the stage of life of household's members is an important determinant of its potential income mobility. We have constructed the household members' life-cycle indicator using a proxy: the age of the household head. Stability profiles are calculated for different age groups and are depicted in Figure 2. In order to best capture the "age effect," we have selected a sample of households in which no changes in composition occur during the two year observation period (78 percent of total balanced sample).

Looking at the results for  $R$  in the different age groups, even if there is no clear correlation of  $R$  with age, the group of households with a higher income instability in a two year window for this Spanish sample are those whose head is over 45 and below 65 years of age. Most likely, these households are those whose youngest members are more likely to enter the labor market and whose oldest members are transiting into retirement. This imposes a higher total equivalized income mobility for these groups. The groups of households with higher income stability have heads with ages in the range between 16 and 45 years of age or over 65. Within the first group, the most stable ones range from 35 to 45 years of age indicating that these household's socioeconomic structure is rather permanent over a two-year time horizon. Finally, the group of households whose head is over 65 years of age show a small transitory component of income. This group includes pensioner households whose socioeconomic characteristics were already expected to be rather permanent over time.

### 3. INCOME MOBILITY OVER TIME

All the reported results on income mobility in Spain refer to a mean for the period starting in March 1985 and finishing in December 1992. We have made no attempt to distinguish between levels of mobility for each period. It is, nevertheless, particularly interesting to determine the evolution of income mobility during the period in order to find out in what way income mobility in Spain is shifting and, therefore, to be able to answer questions like: Which years register a higher value of income mobility? Is income mobility increasing or decreasing as income inequality decreases? If mean income mobility is similar to that found in the U.K., does one expect this to change?

The measure we have chosen to present results on changes of the level of income mobility over time is the Shorrocks index of mobility  $M$ . This index is proposed in Shorrocks (1978a). Unlike the  $R$  measure, this index is very useful to compare transition matrices for identical income receipt periods in different moments in time. The index uses the information in the diagonal of the transition matrix (i.e. the percentages of households who do not change decile) and relates it to the total possible mobility within the diagonal:  $M = [n - \text{trace}(P)] / (n - 1)$ ,  $n$  being the number of groupings (decile = 10) and  $P$  the decile transition matrix.

The maximum level of the mobility index using decile matrices is 1 (obtained if all households move to a different decile and given that the minimum trace of the transition matrix is 1) and the minimum is 0 (obtained if all households remain in the same decile).

The level of income mobility in Spain has been permanently increasing from 1985 up to 1991. It is only in 1992 when it shows some decrease (see Figure 3). During the first part of the period, as shown in Figure 3, income inequality was

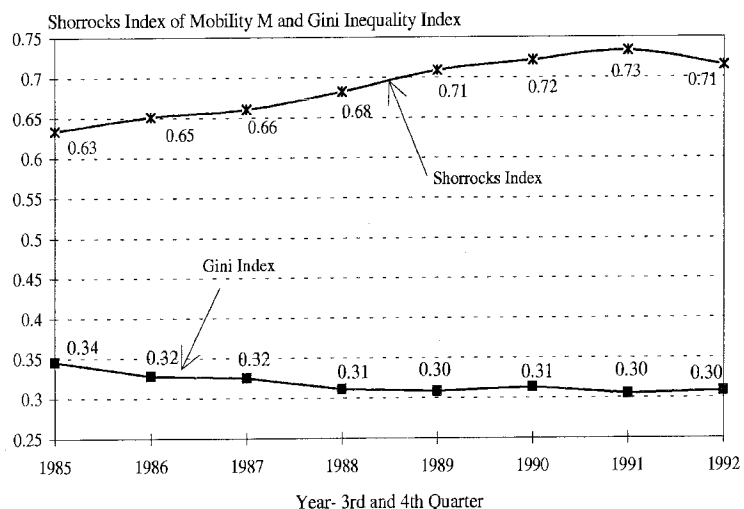


Figure 3. Shorrocks Index of Mobility and Gini Inequality Index Over Time, Spain

Source: Own construction using ECPF.

Note: *M* Mobility is mobility between two consecutive quarters.

decreasing while from 1988 onwards income inequality stabilizes. The income distribution during the years from 1985 up to 1991 registered an always larger percentage of households in the distribution moving somewhere away from their initial decile in the next quarter. In fact, if the income distribution tends to concentrate (a reduction of inequality), deciles reduce their width and households are more likely to move. If this was to be unaffected by other variables, one would expect that increases in inequality would reduce mobility and decreases in inequality would increase mobility. Even if not directly implied by this result, a further implication of it could be that if two given countries register a similar degree of income inequality their income mobility indices would also show some similarity. The actual level of inequality measured in Spain at first interview (a mean for the period 1985–92) is a Gini index of 0.302. For the U.K. at the BHPS first interview (1991) the Gini index is reported by Jarvis and Jenkins (1996) to be 0.309, quite similar to the Spanish one. This empirical evidence seems to follow the expected pattern.

In terms of the trend in inequality both countries are, in principle, quite different. The degree of inequality in Spain between 1985 and 1989–90 has been permanently decreasing and from 1990 onwards is quite stable while in the U.K., inequality displayed an increasing trend in the early 1990s (see Jenkins, 1996).

The degree of mobility in Spain has been almost permanently increasing from 1985 until 1991 and was slightly decreasing in 1992. Unfortunately, results of income mobility over time for the U.K. are not yet available from the BHPS. In this sense, it is difficult to determine if the trend of income mobility for, at least, a representative group of countries, is, in some way, influenced by the evolution of inequality and in which direction the effect goes. One could say that for a similar income inequality some similar income mobility is found for these two countries, but little can be inferred in terms of the causality between these facts.

#### 4. WHO MOVES AND TO WHERE

The first difficulty one encounters in the study of the pattern of income mobility within the income distribution is the need to define discrete groups of households according to their level of equivalent income. The choice of income groups is largely arbitrary and, in general, tends to take the form prevalent in the literature to allow for the comparison of results. The income distribution has been divided in deciles and transition matrices have been constructed for various income accounting periods and different moments in time. The knowledge of the departure and destination decile of all households allows for the study of mobility in terms of pattern and range.

The ECPF interview structure permits the comparison of the levels of mobility for quarterly, six-month, nine-month and yearly income.<sup>10</sup> Results appear in Tables 3, 4, and 5.

TABLE 3  
OVERALL MOBILITY MEASURES USING INCOME DECILES, HOUSEHOLDS (OECD SCALE)

Observations	Accounting Period			
	Quarterly (17,657)	Six Months (13,230)	Nine Months (8,331)	Yearly (4,429)
Overall mobility				
% Sample remaining in same decile group	37.1	45.8	43.5	39.3
% Sample remaining in same decile or neighbor group	75.5	80.7	80.2	78.9
Range and direction of move				
% Movers moving just one decile above	30.0	33.1	29.7	21.9
% Movers moving just one decile below	30.9	31.3	35.1	43.3
% Movers moving one or two deciles above	42.3	45.3	41.0	30.1
% Movers moving one or two deciles below	41.0	39.2	45.0	55.6
% Movers moving more than two deciles	16.7	15.5	14.0	14.2
% Movers moving more than two deciles above	9.8	9.7	8.5	7.1
% Movers moving more than two deciles below	6.8	5.7	5.4	7.0

There is much mobility from year to year and within the year (see Table 3). The range of the moves is rather short. Regarding a yearly accounting period, 79 percent of households remain in the same or neighboring decile and only 14

<sup>10</sup>This structure is similar to that of the Survey of Income and Program Participation (SIPP) or the Census Population Survey (CPS) in the U.S.

TABLE 4  
INCOME MOBILITY AND PERSISTENCE OF LOW INCOME HOUSEHOLDS (OECD SCALE)

	Accounting Period			
	Quarterly	Six Months	Nine Months	Yearly
Overall mobility				
% Sample remaining in same decile group	42.8	48.7	46.9	44.2
% Sample remaining in same decile or neighbor group	76.1	81.8	81.2	82.2
Range and direction of move				
% Movers moving just one decile above	34.7	35.5	30.9	23.1
% Movers moving just one decile below	23.4	27.4	33.7	44.9
% Movers moving one or two deciles above	51.7	50.5	46.5	34.3
% Movers moving one or two deciles below	27.0	30.7	37.0	50.3
% Movers moving more than two deciles	21.2	18.7	16.3	15.3

Note: A low income household is a household whose total equivalent income is within the first three deciles of the income distribution.

TABLE 5  
INCOME MOBILITY AND PERSISTENCE OF HIGH INCOME HOUSEHOLDS (OECD SCALE)

	Accounting Period			
	Quarterly	Six Months	Nine Months	Yearly
Overall mobility				
% Sample remaining in same decile group	48.7	58.2	57.9	53.9
% Sample remaining in same decile or neighbor group	84.9	89.3	89.3	87.7
Range and direction of move				
% Movers moving just one decile above	28.9	37.0	33.2	25.6
% Movers moving just one decile below	41.6	37.4	41.4	47.7
% Movers moving one or two deciles above	32.0	40.6	36.3	28.0
% Movers moving one or two deciles below	54.1	47.5	53.5	59.0
% Movers moving more than two deciles	3.9	11.9	10.2	13.0

Note: A high income household is a household whose total equivalent income is within the last three deciles of the income distribution.

percent of households jump more than two deciles (Table 3, last column). If they do change their income level, the persistence of this move is larger if the movement is downwards than if it is upwards (large upward moves are as likely as large downward moves using yearly income, but the former is more likely using within-year income).

The differences in stability of income due to the accounting period considered are important. Income receipt periods greater than a quarter but below a year, particularly six-month periods, register a higher level of stability in income with respect to shorter or larger accounting periods (Table 3, second row: 80.7 and 80.2 instead of 75.5). The larger the income accounting period, the lower the stability of very short-range upward moves (one decile moves) and, also, very short-range downward moves are more stable (see Table 3, 3rd row of results and see Table 3, 4th row). This confirms the short-term characteristic of upward moves with respect to that of downward moves in the income distribution. Thus, entering low-income could mean *staying* within the low-income group for longer

than exiting low-income would mean *staying* within the higher income group. Stability levels are similar using quarterly income as compared to using yearly income. There is, however, more movement upwards and less movement downwards in the distribution when using quarterly than when using yearly income (Table 3, first and last columns).

Another important issue to look at is the pattern of income mobility at the different levels of the income distribution. Low income is defined as a level of equivalent household income within the first three income deciles, similarly high income is defined as a level of equivalent household income within the last three deciles of the income distribution. Middle income households are those lying in between. Comparing the percentage of households remaining in the same decile group, more stability is found at the top than at the bottom of the income distribution. The highest income instability is registered by households in the middle of the income distribution (see Tables 4 and 5). Movers in the middle part of the income distribution move more often downwards than upwards. There is less mobility in the tails than in the middle of the income distribution. 24 percent of middle income households remain in the same decile the next quarter (1st and 2nd interviews) while 48 percent of high income households and only 42 percent of low income households do so. A larger difference in mobility is found for these last two groups using yearly household income: 53 percent and 44 percent respectively. The same result is found restricting the low income group to the first decile of the income distribution (extreme poverty) and the high income group to the last decile of the distribution (extreme richness): the degree of mobility of the poorest decile is larger than that of the richest one, 28 percent of the poorest households move out from their decile while only 23 percent of the richest households do so.<sup>11</sup>

Yearly income results on mobility are not directly comparable with those obtained by Jarvis and Jenkins (1996) for the U.K. due to the income receipt period these authors use. Their income receipt period is the month prior to interview while for the Spanish sample it is total income of the year before interview. Even if part of the persistence difference between the U.K. and Spain is due to the accounting period definition, if the receipt period is restricted to the quarter before interview for the Spanish sample as in Section 2.2 (best possible approximation to monthly data using the ECPF), some comparisons can be undertaken. The percentage of individuals remaining in the same decile group after a year is very similar in both countries: 37 percent for the U.K. and Spain. A slightly higher level of persistence is nevertheless found in the British sample. Households remaining in the same or neighboring decile are 76 percent of the total sample for the U.K. and 73 percent for Spain. Also, short-range movements in the income distribution are somewhat more common in the U.K. than in Spain.

Both the poorest and the richest decile groups have a larger persistence in their income in Spain compared to the U.K. This difference in persistence is larger for the extremely poor group (i.e. first decile group). For Spain, 50.2 percent of the individuals within the first decile group do not change decile a year after,

<sup>11</sup>See Cantó (1996) or Cantó (1998) for an exploration of the dynamics of poverty among households in Spain.

while in the U.K. it is only 45 percent of the group that remains in the decile. If income mobility is similar or lower in Spain than in the U.K., as appears to be suggested by previous mobility indices, this difference in mobility is due to a lower mobility of households in deciles at the extremes of the distribution. In measuring the degree of mobility of the low income group compared to that of the richest income group, Jarvis and Jenkins (1996) find higher stability at the top than at the bottom of the British income distribution. Results are similar for Spain with the difference of slightly higher stability in both groups for this country with respect to the U.K. However, this result may be strongly affected by the under-estimation of within-quarter mobility for the Spanish data.

It is interesting to discover the evolution of income mobility over time for different deciles within the income distribution. Unfortunately, the  $M$  index is not group decomposable so there is a need to construct some other mobility measure. A very simple one which is highly related to the index  $M$  is the percentage of households who are movers (change at least one decile) within those in low, middle or high income groups. This measure has been sometimes called the *immobility ratio* (see Lillard and Willis, 1978 or Gottshalk, 1982). Its inverse, the *proportion mobile* or *gross mobility*, was also proposed by Bibby (1975) as a first approach measuring mobility.<sup>12</sup> Results appear in Figure 4.

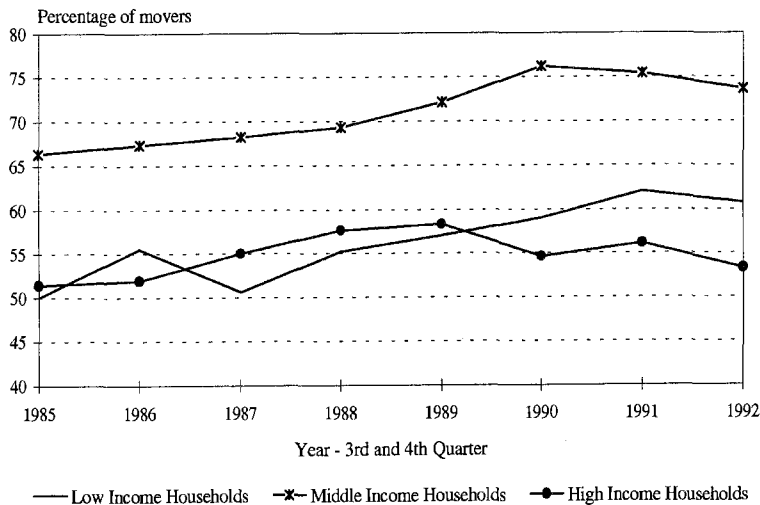


Figure 4. Percentage of Movers by Income Groups, Spain

Source: Own construction using ECPF.

Figure 4 shows that all groups increased (almost all through the increasing-mobility period) their degree of mobility. Thus, even if instability is higher in the middle income group, the increase in mobility through time also takes place within the lowest part of the distribution. Also, if we calculate confidence intervals

<sup>12</sup>See Gustafsson (1994) for a calculation of a similar immobility ratio for Sweden using quintile transition matrices.

for the index by bootstrapping, the high income group evolution is not significantly different from that of the low income group.<sup>13</sup> However high income households mobility appears to show a slightly different pattern towards the end of the period: in 1992 the percentage of mobile households is significantly (95 percent confidence interval) lower.

## 5. CONCLUSIONS

The level of intra-distributional mobility of equivalent household income in Spain between 1985 and 1992 has been calculated using various income mobility measures. The degree of mobility is high: around a 60 percent of households change decile from one year to the next. In terms of the pattern of mobility, the range of the moves is found to be rather short: 14 percent of households in the sample move more than two deciles in the distribution in a year's time. However, if movements are large, their persistence over time is larger if the movement is downwards than if it is upwards in the income distribution. Middle income households (the four middle deciles) have a higher instability of income than households in the tails of the distribution. Surprisingly, a potential determinant of a household's level of income mobility, the stage at which a household is, shows no clear correlation with income mobility.

Income mobility also has been shown to have an increasing trend from 1985 until 1991 and a decreasing one for the period 1991–92. If the income distribution is less concentrated at first interview than at second interview (moments for which the mobility indices are calculated), the width of each income decile decreases in absolute terms and one would expect an increasing degree of mobility between  $t$  and  $t + 1$ . Thus, the income inequality trend in the period could be strongly linked to the income mobility trend. Given that income inequality in Spain was slightly decreasing until the end of 1989 and was stable for the rest of the period, it appears that while income inequality was decreasing, income mobility was increasing and that the stagnation of income inequality goes together with a decrease in mobility. Thus, the expected relationship between income inequality and income mobility is not rejected by empirical results although more research in comparability issues is to be done. However, the reasons for the detected evolution of these trends are not straightforward, not to mention the existence of some causality between them.

In terms of the comparison of these results with those for other countries it should be noted that, until now, little empirical research has been done on mobility issues from the point of view of the households as a unit. This is due to the fact that the dynamics of equivalent household income are difficult to explain due to the large amount of events that affect their value at a given moment. This is why most studies in the literature center their efforts on the study of the dynamics of individual earnings instead of the dynamics of household income. Only recently has some work on equivalent household income dynamics been done for Germany, the U.K. and the U.S. These results are the only ones for which comparisons are undertaken. The level of intra-distributional mobility of equivalent

<sup>13</sup>A thousand repetitions bootstrap method was implemented.

household income in Spain between 1985 and 1992 proves to be similar to that found for the U.K. at the beginning of the 1990s. Also, similarly to that found by Jarvis and Jenkins (1996) for the U.K., more stability is found at the top of the income distribution (three top deciles) than at the bottom (three lowest deciles). The percentage of individuals who remain in the same decile a year later is also similar in Spain and in the U.K. although a somewhat higher level of persistence is found in the U.K. when considering stability in a wider view: staying in the same or neighboring decile. Thus, short-range movements out of all movements are more common in the U.K. than in Spain. Comparisons of mobility indices, however, should be interpreted with caution due to differences in the income concept and income accounting periods used.

#### APPENDIX—ECPF DATASET SAMPLES

TABLE A1  
ORIGINAL ECPF PANEL SAMPLE SIZES

	1st quarter	2nd quarter	3rd quarter	4th quarter
1985	2,991	3,109	3,073	3,094
1986	2,942	2,729	2,783	2,948
1987	3,040	3,109	3,080	3,055
1988	3,110	3,074	2,969	2,992
1989	3,067	2,993	2,947	2,968
1990	3,015	3,054	3,042	3,036
1991	3,100	3,118	3,070	3,092
1992	3,070	3,112	3,119	3,141

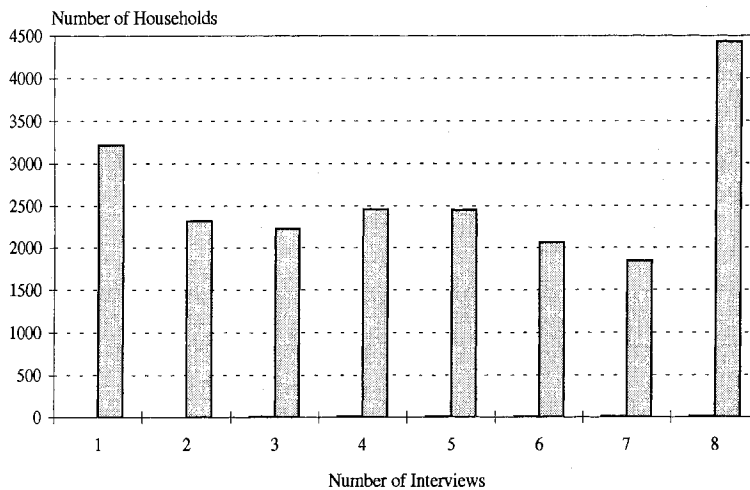


Figure A1. Number of Interviews to the 20,985 Households in the ECPF Between the First Quarter of 1985 and Last Quarter of 1992

*Note:* This figure shows the number of households which completed a certain number of interviews in the ECPF. For example, 4,429 households completed all eight interviews in the panel and conform to the balanced sample used in all calculations.



## REFERENCES

- Aaberge, R., A. Björklund, M. Jäntti, M. Palme, P. J. Pedersen, N. Smith, and T. Wennemo, *Income Inequality and Income Mobility in the Scandinavian Countries Compared to the United States*, University of Stockholm, Discussion Paper No. 98, January 1996.
- Alvarez, C., L. Ayala, I. Iriondo, R. Martínez, J. I. Palacio, and J. Ruiz-Huerta, *La Distribución Funcional y Personal de la Renta en España, un análisis de sus relaciones*, Consejo Económico y Social, Colección Estudios, Madrid, 1996.
- Atkinson, A. B. and F. Cowell (eds.), *Panel Data on Incomes*, ICERD—London School of Economics and Political Science, 1983.
- Atkinson, A. B., F. Bourguignon, and C. Morrison, *Empirical Studies of Earnings Mobility*, Harwood Academic Publishers, 1992.
- Ayala, L., R. Martínez, and J. Ruiz-Huerta, *La Distribución de la Renta en España desde una Perspectiva Internacional: Tendencias y Factores de Cambio*, article presented at the II Simposio sobre Igualdad y Distribución de la Renta y la Riqueza, Madrid, Junio, 1995.
- Benus, J. and J. N. Morgan, *Time period, Unit of Analysis, and Income Concept in the Analysis of Income Distribution*, in J. D. Smith (ed.), *The Personal Distribution of Income and Wealth*, Studies in Income and Wealth, Vol. 39, Conference on Research in Income and Wealth, NBER, Columbia University Press, 1975.
- Berghman, J. and H. J. Nirven, *Insecurity of Subsistence: Permanent or Transitory? Poverty, Insecurity of Subsistence and Relative Deprivation in the Netherlands: Report 1991*, Ch. 6, Department of Social Security Studies, Institute for Social Research, Tillburg, 1991.
- Bibby, J., *Methods of Measuring Mobility*, *Quantity and Quality*, 9, 107–36, 1975.
- Bigard, A., Y. Guillotin and C. Lucifora, *Earnings Mobility: An International Comparison of Italy and France*, *Review of Income and Wealth*, Series 44, Number 4, December 1998.
- Bird, E. J., *Income Variation among West German Households*, in V. Rendtel and G. Wagner (eds.), *Lebenslagen im Wandel: zur Einkommensdynamik in Deutschland seit 1984*, Campus Verlag, Frankfurt/New York, 1991.
- Buhmann, B., L. Rainwater, G. Schmaus, and T. M. Smeeding, *Equivalence Scales, Well-Being, Inequality and Poverty: Sensitivity Estimates across Ten Countries Using the Luxembourg Income Study (LIS) Database*, *Review of Income and Wealth* 33, 115–42, 1988.
- Burkhauser, R. V. and J. Poupoure, *A Cross-National Comparison of Permanent Inequality in the United States and Germany*, *Review of Economics and Statistics*, Vol. LXXIX, No. 1, February, pp. 10–18, February 1996.
- Cantó, O., *Poverty Dynamics in Spain: A Study of Transitions in the 1990s*, Distributional Analysis Research Programme Discussion Paper, No. 15, London School of Economics, February, 1996.
- , *The Dynamics of Poverty in Spain: the Permanent and Transitory Poor*, Ph.D. thesis, European University Institute, Florence, 1998.
- Creedy, J., *Dynamics of Income Distribution*, Basil Blackwell, 1985.
- Creedy, J., P. E. Hart, and N. A. Klevmarcken, *Income Mobility in Great Britain and Sweden*, in N. A. Klevmarcken and J. A. Lybeck (eds.), *The Statics and Dynamics of Income*, Tieto 1981.
- Encuesta Continua de Presupuestos Familiares, ECPF, 1985–92, Instituto Nacional de Estadística, Madrid.
- Gottschalk, P., *Earnings Mobility: Permanent Change or Transitory Fluctuations?* *Review of Economics and Statistics*, 64, 450–56, 1982.
- Gustafsson, B., *The Degree and Pattern of Income Mobility in Sweden*, *Review of Income and Wealth*, Series 40, Number 1, March, 1994.
- Hart, P. E., *The Comparative Statics and Dynamics of Income Distributions*, *Journal of the Royal Statistical Society, A*, 139, Part 1, 108–25, 1976.
- , *The Statics and Dynamics of Income Distributions: a Survey*, in N. A. Klevmarcken and J. A. Lybeck (eds.), *The Statics and Dynamics of Income*, Tieto 1981.
- Hungerford, T. L., *U.S. Income Mobility in the Seventies and Eighties*, *Review of Income and Wealth*, Series 39, Number 4, December 1993.
- Instituto Nacional de Estadística, ECPF, *Metodología y Resultados*, Años 1985–92.
- , ECPF, *Metodología*.
- Jarvis, S. and S. P. Jenkins, *Do the Poor Stay Poor? New Evidence about Income Dynamics from the British Household Panel Survey*, Occasional Paper 95–2, ESRC Research Centre on Micro-Social Change, 1996.
- , *Changing Places: Income Mobility and Poverty Dynamics in Britain*, Working Paper 96–19, ESRC Research Centre on Micro-Social Change, 1996.
- Jenkins, S. P., *Recent Trends in the U.K. Income Distribution: What Happened and Why*, *Oxford Review of Economic Policy*, 12, 29–46, 1996.

- Lillard, L. A. and R. J. Willis, Dynamic Aspects of Earnings Mobility, *Econometrica*, 46, 985–1012, 1978.
- Ruiz-Huerta, J. and R. Martínez, La pobreza en España: Qué nos muestran las EPF? *Documentación Social*, No. 96, Julio–Septiembre 1994.
- Schluter, C., On the Stationarity of German Income Mobility (and Some Observations on Poverty Dynamics), European University Institute Working Paper, ECO No. 96/35, July 1996.
- Shorrocks, A. F., The Measurement of Mobility, *Econometrica*, 46(5), 1013–24, September 1978a.
- , Income Inequality and Income Mobility, *Journal of Economic Theory*, 19, 376–93, 1978b.
- , Income Mobility in the United States, in N. A. Klevmarken and J. A. Lybeck (eds.), *The Statistics and Dynamics of Income*, Tieto 1981.