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Europe *vs.* The United States: Is There a Trade-Off Between Mobility and Inequality?

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Introduction[1]

The comparative analysis of inequality has acquired increasing importance in recent years. The demand for new indicators to compare differences in the economic welfare of different countries, the renovation of analytical methods and, particularly, the increased availability of homogenous databases have given rise to an unprecedented increase in the number of studies dedicated to assessing the differences in the distributive processes of OECD countries. Nevertheless, attention has been paid almost exclusively to static analyses of inequality. Few studies have paid attention to the dynamics of the income distribution, due to the lack of comparable longitudinal databases, together with important limitations upon the theoretical basis of the analysis of income mobility. As Fields and Ok (1999a) state, despite increasing advances in the definition of measurement procedures with a degree of axiomatic content and analytical properties equal to that existing in the case of inequality, the distances which continue to separate the characterisation of the two fields are all too apparent.

On the one hand, there exist various approximations for the study of income mobility: a focus on mobility throughout the whole distribution or low income dynamics, absolute or relative mobility and structural or exchange mobility. No consensus, however, has been reached as to the relative advantages of any of these approaches. On the other hand, the normative content itself of the concept of mobility permits very different value judgements to be made. These include both positive considerations regarding the fluctuation of income over time (levelling of results over time, the transient nature of poverty and equality of opportunities), as well as more negative considerations such as the relationship between fluctuations in individual income and income instability (Jarvis and Jenkins 1998) or the link between labour market segmentation processes and earnings mobility.

Despite these difficulties, comparative static analyses of inequality have raised many questions that can only be answered by means of dynamic studies. The apparent stability in income distribution seen in various European countries may have been

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accompanied by important processes of households rerankings on the income scale that have affected the assessment of their welfare. In addition, efficiency in achieving redistributive objectives or the effectiveness of their design may vary considerably according to the dynamics of household income. Hence, the effectiveness of policies aimed at very low-income households can differ substantially depending on whether they were designed to combat temporary or long-term poverty situations (Jenkins, 1999).

The comparison of alternative social models probably arouses the greatest interest. Countries with a high degree of labour market flexibility, a lower level of social protection and high levels of inequality are contrasted with countries where high degrees of labour market regulation coexist with high levels of unemployment. The latter, however, tend to have a lower degree of dispersion in income distribution. The discussion as to which is the best model leads us to the study of the inequality "softening effect" which income mobility differences among countries may have in the long-term[2]. A dynamic assessment of the various processes appears to be necessary. If inequality tends to increase in one particular country yet mobility remains constant, the possibilities of the latter playing a compensatory role will be reduced, even in countries where greater income dynamics exists. The only way to compensate increases in inequality is to similarly increase mobility[3].

The principal objective of this paper is to assess the scope of income mobility from a comparative perspective and to confirm whether or not there is an observable relationship with inequality. More specifically, the main hypotheses to be tested are the existence of notable differences in mobility between the USA and the European Union which could offset the observed differences in inequality, the possible differences within the European Union and, finally, whether or not the factors which determine mobility differ greatly. To this end, a broad range of mobility indicators has been used, their structure in each country has been studied and the principal determinants have

[2] The first comparative analyses have appeared only in the last few years. These shed some light on this question. Gottschalk and Smeeding (2000) concluded that while the United States is the leading country in the growth of economic inequality, it has intermediate values concerning income mobility. This conclusion arises when its basic longitudinal indicators are compared with those of Nordic countries (Aaberge et *al*., 1996 and Fritzell, 1990), Central European countries (Burkhauser et *al*., 1998, Fabig, 1998, Schluter, 1998, and Schluter and Trede, 1999) or both groups of countries (McMurrer and Sawhill, 1998).

been analysed by means of different decomposition exercises. The sources used include the first five waves of the *European Community Household Panel* (ECHP) for the European countries and the *Panel Study of Income Dynamics* (PSID) for the USA.

The paper has been structured in the following way. The data selected are presented in the first section, together with the principal methodological decisions we have taken. A broad range of results regarding inequality and income mobility in the countries selected is offered in the second section, where special attention is paid to alternative approaches to the measurement of mobility. An analysis of the structure of mobility in the countries under study is performed in the third section and the components of exchange, structural and growth are differentiated. The determining factors of differences in mobility in the countries under study are analysed in the last section. An assessment is made as to how far these factors can be analysed by means of decomposition exercises similar to those normally used in inequality analyses. The paper ends with a brief list of our principal conclusions.

1. Data and methodological decisions

The results presented in this study for the countries of the European Union are based on microdata from the first five waves of the *European Community Household Panel* (ECHP), while those for the USA have been taken from the *Panel Study of Income Dynamics* (PSID). The first of these sources has been developed by EUROSTAT since 1994. This database contains longitudinal information regarding monetary income and a set of socioeconomic and demographic characteristics of households and individuals, making it an obligatory reference point for the study of questions related to the cross-country comparison of income distribution and income mobility[4]. Of the set of countries which form part of the ECHP we shall concentrate on five: the United Kingdom, Germany, France, Italy and Spain, for which there exist sufficient elements for comparison, supplied by national studies, and which constitute different models both with regard to levels of inequality and mobility, and also to the different institutional characteristics of the labour markets or the unequal scope and

[3] See Gottschalk and Danziger (1997), as well as Creedy (1997).
[4] Other studies have analize different questions related to income dynamics with the ECHP. See Maître and Nolan (1999) and Whelan *et al.* (2000).

design of redistributive policies. The *Panel Study of Income Dynamics* (PSID) has provided information regarding the incomes of a representative sample of households since the end of the 1960s. These data were collected annually until 1997, when the survey became biannual. The study is performed by the Survey Research Center of the University of Michigan and currently contains information for the last 34 years and over 60,000 individuals.

The *concept of income* we shall use is that of disposable household income, which includes income after transfers and the deduction of income tax and social security contributions. In the case of the ECHP, with the important exception of France, the majority of income sources are received net of taxes and deductions, while income from capital may be stated as net or gross quantities, depending on the interviewee. The fact of not being able to compare mobility with gross and net data and, more concretely, to work with data which have already been corrected by public sector intervention, may mean the introduction of a certain bias in the evaluations which are made regarding mobility. A high level of instability in gross earnings may be compensated by income tax and social security contributions.

The *reference period* for income is the year prior to the interview. The interviews corresponding to the first five waves of the ECHP were performed in the years 1994, 1995, 1996, 1997 and 1998, meaning that the corresponding incomes refer to, respectively, the years 1993, 1994, 1995, 1996 y 1997[5]. The PSID was not performed in 1998, given that, as stated earlier, the survey ceased to be annual in 1997 and became biannual in 1999. In order to reconstruct series with the same longitude as that of the ECHP we shall employ the information for the five years between 1992 and 1996. In both cases, the utilization of annual rather than monthly or quarterly data may affect the possible results[6]. Although the majority of studies use annual income distribution, owing basically to the method of collecting information and the availability of data, there exist significant fluctuations in the income perceived throughout the year.

[5] Starting from the fourth wave, the original interview of the ECHP ceased to be performed in Germany and the United Kingdom. In these countries there exist high-quality national panels which have been used to supply data comparable with those of the ECHP for all the waves. As a result, for the years 1994, 1995 and 1996 there are two databases available for both countries. In our analysis we follow the recommendation of EUROSTAT and use, for longitudinal analyses, standardized files from national sources.

Nevertheless, it is generally recognized that households or individuals may compensate transitory losses of income by the consumption of savings or recourse to borrowing, making it advisable to utilize periods longer than monthly[7].

Although the time period employed –five years– makes it more appropriate to talk of medium-term rather than long-term mobility, an interesting question is the presence, even in a relatively brief period, of important changes in the rates of economic growth which, without a doubt, favour the possibility of observing different patterns of mobility in each of the countries studied. This may explain, as shall be seen, the existence of certain notable wave-on-wave changes in the mobility indicators estimated. In order to avoid possible biases in our conclusions regarding short-term mobility, the results which refer to the inter-annual movements of income are presented as the average of the results corresponding to the four transitions between waves.

Incomes have been made comparable by using purchasing power parities corresponding to each country and year, supplied by the OECD. Income is expressed in 1996 prices by the use of the harmonized consumer price indices published by EUROSTAT. For the USA we have employed the average consumer price index for a given calendar year, published by the Bureau of Labor Statistics. The indicators refer, therefore, to the *real mobility* of incomes, without the different inflationary context of each country conditioning the results obtained.

Since the standard of living of households depends on both its income and its size and composition, we shall take these factors into account by adjusting income using *equivalence scales*. The scale employed is that known as the "modified OECD scale", which assigns the value of 1 to the first adult in the household, 0.5 to other adults and 0.3 to each child under 16. In order to compare the sensitivity of the results, given the different weight in each country of families of varying size and composition, other scales, such as the traditional OECD one, are also used. The equivalent income of each household is assigned to each member, employing the implicit hypothesis that all individuals belonging to the same household enjoy the same level of welfare.

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[6] Cantó, Del Río and Gradín (2002) found, using the Continuous Family Budget Survey, that income mobility in Spain is appreciably higher when quarters instead of years are taken.

Following the usual practice in longitudinal studies, the *unit of analysis* is the individual, given the natural restrictions on studying units which may change over time. Choosing the household as the unit of analysis would require the definition of what a longitudinal household really is, a concept which gives rise to numerous problems. Thus, changes in the income assigned to an individual may be due to variations in the income of the household to which he or she belongs or to changes in its composition. In order to construct a *balanced panel*, a prerequisite for the elaboration of the indices proposed, we shall work with the subsample of individuals (adults and children) present in each of the five waves of the ECHP and the PSID.

With the aim of taking into account the effect of *attrition* or gradual fall in the sample of observations present in the initial year, estimations have been weighted using the ECHP and PSID last wave longitudinal individual weights as recommended by EUROSTAT.

One final methodological consideration is that of the need to perform some type of *trimming* of the distributions tails, in order to increase the coherence of the comparison in different countries. The treatment of outliers is even more relevant than in the comparative analysis of inequality, in which it has become a standard element. Cowell and Schluter (1998) demonstrate that the majority of mobility indicators are very sensitive to the presence of data contamination. In order to minimise this problem, we have truncated the samples symmetrically, through the elimination for each wave of those households whose equivalent income (using the modified OECD scale) was situated below the first percentile or above percentile 99[8]. The number of observations eliminated is relatively low, meaning that the gains in robustness justify the loss of information.

TABLE 1 INSERT HERE

[7] As Gottschalk and Danziger (1997) argue, the length of the accounting period chosen for incomes may change according to the sociodemographic group under analysis.

[8] A similar procedure is that employed by Schluter and Trede (1999). Schluter (1998) establishes *left-censoring sampling* procedures, to eliminate the most obvious cases of underestimation of declared income.

The characteristics of the data are summarised in Table 1. There are some important differences in the sample size and in the attrition incidence in each country. With regard to the first of these issues, the relatively large sample in Spain is immediately apparent, given its lower level of population. It is also, together with the USA, the country suffering the greatest attrition, losing 40% of the sample between the first and the last wave. The opposite experience is that of Germany and the United Kingdom, with losses limited to a fifth of the initial sample.

2. Inequality and mobility: principal results

The starting point for the analysis of mobility is the existence of information regarding the distribution of income for the same individuals in two different periods[9]. Let R_+^n be the set of possible distributions for a population composed of N individuals, with $N \equiv \{1,2,...,n\}$, $\mathbf{x}=(x_1,x_2,...,x_n) \in R_+^n$ the initial distribution of income in ascending order and $\mathbf{y}=(y_1,y_2,...,y_n) \in R_+^n$ that corresponding to a second period. Given that the transformation $\mathbf{x} \rightarrow \mathbf{y}$ produces an intertemporal variation in individual incomes, it is possible to assign to any individual $i \in N$ a vector of incomes (x_i, y_i) for the whole period.

It is not easy, however, to differentiate the sources of change in individual incomes over time, nor to interpret when such movements imply greater mobility. These problems acquire a new dimension when we compare not only distributions corresponding to different moments in time, but also those affected by different spatial realities. In each country such observed changes may be due as much to differences in the inequality of each cross-section distribution as to rerankings of individuals on the income scale or, moreover, to economic growth. Similarly, mobility levels in each country can be measured employing different criteria, which may give rise to different orderings. Such criteria include dimensions of the dynamic process as varied as the reduction of inequality as the accounting period is extended, the origin independence of last period income or the (non-)existence of transitions among different classes within the income distribution. Changes in inequality, in turn, are interpreted as the sharing of

incomes among the individuals who comprise a population at different moments in time. This sharing may be measured by highly diverse indicators, which represent different properties and incorporate different normative connotations [10].

Differences in the distributive processes in the countries selected may give rise to very different combinations of inequality and mobility. There exists a generalized belief that very high levels of inequality in income distribution generally coincide with similarly high mobility indicators. From this viewpoint, it is accepted that greater flexibility in the labour market produces a dual effect: on the one hand, it causes differences in earnings and inequality in income distribution to be accentuated; on the other, it favours a larger number of transitions between situations of employment and unemployment, as well as a greater possibility of rotation within the labour market. In practice, however, there exist various types of economic and institutional factors which mean that this dual effect is neither automatic nor constant; experience shows that this hypothetical trade-off may display many permutations, and we cannot therefore confirm the existence of a linear relationship between inequality and mobility. In this section we estimate various indicators to try to determine the existence of different profiles among the countries chosen. We revise the differences in inequality levels, estimate a wide range of mobility indicators and compare the results of both processes.

2.1. *Differences in inequality*

The estimation of inequality indicators helps to clarify the differences existing among the countries studied (Figure 1).

FIGURE 1 INSERT HERE

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[9] This formulation restricts the analysis to two periods, following the norms established by the majority of previous studies. See Markandya (1982 and 1984), King (1983), Cowell (1985) and Fields and Ok (1996 and 1999a,b).

[10] We consider the most well-known inequality measures. Gini index is defined as $G= [1/(2n^2\mu)] \Sigma_i^n \Sigma_j^n |x_i-x_j|$, where x_i represents the total income received by household i=1...n, x_j represents income of the next household, and m mean income. The generalised entropy measures are defined as $GE(c)=(1/c(1-c))\{[(1/n)\Sigma_i^n(x_i/\mu)^c]-1\}$ if $c\neq0$ and $c\neq1$; $GE(1)=(1/n) \Sigma_i^n(x_i/\mu)\log(x_i/\mu)$ if c=1 and $GE(0)=(1/n) \Sigma\log(\mu/x_i)$ if c=0. The Atkinson index is defined as $A(e)=1-[(1/n) \Sigma_i^n(x_i/\mu)^{1-e}]^{1/(1-e)}$ if $e\geq0$ and $e\neq1$, and $A(1)=1-\exp[(1/n) \Sigma_i^n\mathrm{Ln}(x_i/\mu)^e]$ if e=1, where the parameter e represents inequality aversion.

It is appropriate to talk of different types of experiences; the extremes include, notably, the low inequality levels of Germany and, to a lesser extent, of France, together with higher values for Spain and, especially, the USA, with values far higher than those of the European countries. Such results are maintained, as a general rule, when adopting other indicators (Table 2) and alternative methodological decisions[11]. This ordering is somewhat different from those obtained in other studies which use the first waves of the ECHP (Nolan and Maître, 1999), and also from those elaborated using other databases, such as that of the *Luxembourg Income Study* (Gottschalk and Smeeding, 2000). According to such research, the United Kingdom shows levels of inequality considerably higher than those obtained from our estimations. They are, in any case, different samples, in that the results we present in this study come from a balanced panel of individuals considered for five years, in contrast to the studies cited above, which considered the set of observations for each year.

TABLE 2 INSERT HERE

Although the period is excessively brief for the inequality indicators to show great changes, in the time period considered there took place an important change in the business cycle, with a generalized slowing down of economic activity in the first third of the 1990s and a relatively intense recovery, starting from the middle of that decade and especially in the USA. However, no major changes were evident, although there were variations in the countries studied. Specifically, inequality increased in the UK and USA, while it decreased in the remaining European countries, especially in Germany and Italy.

2.2. *Differences in income mobility*

The diversity of criteria which may serve as a reference for the analysis of mobility has given rise to different methodological approaches, employing a wide range of indicators which attempt to encapsulate different dimensions of this process. It is possible to group them into five distinct interpretations: mobility measured as the extent to which income distribution is equalised as the accounting period is extended, as origin

[11] Results for alternative equivalence scales are available from the authors upon request.

independence or longitudinal income association, as equality of opportunity, as movement and as a determining factor of changes in individual welfare levels. In this section we concentrate on the first three approaches, and in the following sections analyse the two remaining ones, as their properties permit the performance of exercises which allow the analysis of both the structure of mobility and its determinants.

Inequality-based measures of income mobility

The first method of measuring mobility corresponds to the idea of observing the possible relationships between inequality at a specific moment in time (cross-section mobility) and in the whole period observed (longitudinal inequality). If mobility is high, the latter inquality will be lower than the former. The importance which the increase in income differences may have at a given point in time would be limited by the compensatory effect of income changes in the long term. The relationship between these two types of inequality was formulated by Shorrocks (1978a), using a mobility index which compares inequality in distinct sub-periods (t_{k-1} ,t_k) within a specific time interval (t_0,t_n) with inequality resulting from the consideration of the aggregated income of each individual in the whole period:

$$R = \frac{I[x(t_0, t_n)]}{\sum_{i=1}^{n} w_k I[x(t_{k-1}, t_k)]} \qquad (1)$$

where I is an indicator of inequality, X a distribution of income and w_k a weighting factor of the aggregate income received in each subperiod ($w_k = m(\mathbf{x}_{tk-1,tk})/m(\mathbf{x}_{t0,tn})$). R may be interpreted as a measure of income rigidity: when mobility is nil, R=*1*, and when income is completely mobile, *R=0*. The sensitivity of the possible results to the indicator chosen as reference requires a wide range of inequality indices to be considered. The same indicators as in the previous section have been chosen.

FIGURE 2 INSERT HERE

The estimation of the various indicators allows us to offer some initial answers to the questions raised in the introduction (Figure 2). The conclusion repeated with all

the inequality indicators used for the construction of the Shorrocks index is the characterisation of Italy as the country with greatest mobility, with France occupying the opposite extreme. From the remaining countries, and although there exist reorderings according to the inequality index chosen, we can immediately see the intermediate position of the USA which, even in the case of certain indicators, such as the Gini or Atkinson (ε=1), would show the greatest income rigidity following France.

Mobility as longitudinal income association

A second approach for the analysis of mobility is that which takes as its starting point the presence (or absence) of an independency relationship between the individual incomes from the final distribution ($\mathbf{y}$) with regard to the initial distribution ($\mathbf{x}$). The most appropriate indicators to capture this dimension of mobility are those statistical measures which allow the estimation of the correlation between the incomes of each observation in both the initial and final distribution. Thus, the most basic measure would be the correlation coefficient for the incomes of the two distributions ($r(\mathbf{x},\mathbf{y})$). This idea is also expressed in the *Hart index*, defined as the complement of the correlation between the incomes (in logarithms) in each period. In the formulation proposed by Shorrocks (1993), it is expressed as:

$$M_{\text{HART}}(\mathbf{x},\mathbf{y}) = 1 - r(\log \mathbf{x}, \log \mathbf{y}) \qquad (2)$$

where r is the correlation coefficient, y the final distribution and x the initial distribution. A similar indicator is that expressed by the slope coefficient in a regression of the logarithm of individual income in the final distribution on individual income in the initial distribution ($b\log\mathbf{x}_t$).

TABLE 3 INSERT HERE

The majority of these measures coincide in presenting the same ordering of countries that is provided by the Shorrocks indicator (Table 3). If wave-on-wave income mobility is considered, both the correlation coefficient and the regression coefficient, and similarly the Hart index, whose results should be interpreted inversely to those of

the other two indicators, allow the characterisation of France as the country with the lowest mobility of the countries selected, and of Italy as the country with greatest mobility. The USA would once more occupy an intermediate position. If the relationship between the initial and the final distribution is estimated for a longer period –five years–, the results change slightly . Germany and the UK join Italy as countries of high mobility, while the USA moves from its previous intermediate situation to one of low mobility in the comparative context.

c) *Mobility as transitions among income classes*

A third perspective for the analysis of mobility is that which conceives it as transitions between states within income distribution. The important question in this case is not so much the movement of individual incomes between two points in time, but rather whether this change causes modifications in the relative position of each individual in the income distribution. The most common way of measuring this dimension of mobility is by the construction of matrices of transitions among the various percentiles of the income distribution. These transitions may consist of movements towards higher positions on the income scale or downward movements in the relative position.

It is possible to construct, from these matrices, different indicators of the set of transitions. Since the pioneering approximation of Prais (1955) to the analysis of the probabilities of change in the diagonal of the transition matrix and in the respective rows, various indices which summarise the possible movements have been constructed. The best known is that proposed by Shorrocks (1978b) [12]:

$$M(P) = \frac{n - tr(P)}{n - 1} \qquad (3)$$

[12] Shorrocks (1978b) shows that if we require a mobility index whose value increases as the values of the principal diagonal decrease, and which assigns the maximum mobility to matrices with identical rows, then the analysis must be restricted to the subset of matrices with quasi-maximum diagonals (i.e. those in which the probability of remaining in the same percentile is equal to or greater than that of leaving it). See Ramos (1999a).

where *tr* is the trace of the transition matrix and *n* the number of percentiles and, therefore, of rows and columns of the matrix. The greater is the probability of permanence in the same income strata, the greater would be the value of the trace and the lesser the value of the index. Another index, complementary to the previous one, is that proposed by Bartholomew (1973). This index averages the movements outside the diagonal:

$$BI = \sum_{l=1}^{n} \sum_{j=1}^{n} p_{lj} |l - j| \qquad (4)$$

where p_{lj} represents the transitions towards percentiles different from the initial one. The greater the value of the index, the greater is mobility. In contrast to the Shorrocks index, there is no predetermined upper limit[13].

TABLE 4 INSERT HERE

The results corresponding to these indices coincide in an ordering of the countries which once again coincide in characterising France as the country having the least mobility and the United Kingdom, Spain and Italy –the latter in the short term– as those with greatest mobility (Table 4). The USA again occupies an intermediate position[14]. Such results are repeated, in general, both with the construction of relative matrices and when fixed thresholds in the definition of income strata are determined (absolute matrices).

The construction of transition matrices may also clarify to what extent we may talk of homogeneity in the transitions between states. As stated earlier, the movements among income classes may affect most unequally the distribution tails. Are the transitions between high income groups greater in all countries? What degree of mobility is there in the lower tail of the distribution in each case? Can we talk of

[13] All the indices revised so far interpret mobility from a relative perspective, ignoring the absolute dimension of possible transitions. Absolute mobility matrices can be defined using cut-offs as a proportion of initial mean or median income. We use 0.5, 0.75, 1, 1.25 and 1.5 times wave 1 income as fixed cut-offs.

[14] The estimation of confidence intervals by *bootstrapping* shows that in many cases differences are not significant. Only France maintains systematically its position.

homogeneous processes? These are questions which refer to the comparison of percentile movements in different parts of the distribution in each country.

TABLE 5 INSERT HERE

Table 5 reflects the diversity of the internal structure of mobility in the five countries studied. One initial important feature is the repetition in all countries of a pattern of characteristic movements, shown in the majority of national studies, in which the movements to other deciles are lower for higher-income individuals and households than the flows of individuals with low and, above all, mean incomes. What differentiates the experience of each country, within this common pattern, is the magnitude of the difference existing between the transitions which are produced in the high and low parts of the distribution. Spain, for example, appears to be unusual in the context of the countries studies, as it shows greater mobility for average and low income individuals, while rigidity is extremely apparent for individuals located in the other extreme of the initial distribution. This process is also repeated, in the medium term, in the USA.

These results are somewhat different when absolute transition matrices are computed. The extreme cases are the USA and Italy that show greater mobility for high income groups.

3.3. *Inequality and mobility: an overall view*

The set of results obtained regarding the differences in mobility match relatively well with those of other comparative studies. Maître and Nolan (1999), who estimate mobility between the first two waves of the ECHP, using as a basis the construction of relative transition matrices, obtain a similar picture, with Italy, together with the United Kingdom, as the countries with highest mobility and France as the country with the lowest mobility. The pattern of mobility by income groups is very similar to that obtained in this study. Furthermore, and despite the fact that the results are not directly comparable, Antolín *et al.* (1999), in a study which analyses the dynamics of poverty in four OECD countries –Germany, the United Kingdom, the USA and Canada– show Germany to be the country with the highest exit rates from poverty, together with low

probabilities of re-entry, while the opposite occurs in the United Kingdom. Schluter (1998) also shows that, contrary to widespread belief, Germany is a more mobile society than the USA, and that this result is determined by the high mobility of the low-income group. Furthermore, the work of Cantó (2000) with the Continuous Family Budget Survey also finds a greater stability in Spain in upper-income groups, compared to lower-income deciles. Comparing her results with those obtained by Jarvis and Jenkins (1998), using data from the BHPS (British Panel Household Survey), and despite the caution with which we must interpret the results, owing to the methodological differences which exist between the two analyses, a similar mobility in both countries can be observed. Our results regarding *short-term* mobility are slightly different, although they also indicate a greater mobility in Spain, according to the transition matrices.

The estimations performed in the previous sections offer, therefore, a wide and coherent range of indicators which attempt to answer the questions formulated at the beginning of this study. In concrete, and in the light of the revised data we can once more pose the questions regarding the relationship between the two processes analysed, namely: Are the countries with greater levels of inequality those which show higher indicators of mobility? Can we talk of an inverse relationship between inequality and mobility? What type of combinations predominate among the countries selected? The results obtained do not permit us to talk of a clear relationship between inequality and mobility, without any type of dominant pattern among the countries studied. In order to confirm this absence of clear links we have estimated normalised indicators which take as reference the USA results.

TABLE 6 INSERT HERE

The analysis of the indicators regarding inequality and mobility reveal, essentially, the existence of highly diverse combinations of both types of processes (Table 6). In the case, for example, of the countries with inequality greater than the average, according to the majority of the indices considered –Italy, Spain and, above all, the USA–, we can talk of a very different dynamic for individual incomes. Thus, Italy is characterised by presenting, in the majority of the estimated measurements, above average levels of mobility. The longitudinal distribution of income seems to be more

stable in the Spanish case, except for indicators derived from transition matrices. The USA, while systematically registering higher indicators of inequality, is characterised by presenting levels of mobility which are only intermediate in the context of the countries under comparison.

Similar differences can be observed among the countries where individual income inequalities are more moderate. The German experience, where there coincides a lower relative inequality and higher than average levels of mobility, may be considered as having the greatest relative welfare. This conclusion is very different to that reached in the case of France, where relatively low levels of inequality are accompanied by mobility indicators which are systematically lower than the rest. Lastly, the United Kingdom presents close to average values in both areas, although in general income mobility is slightly lower than that of Italy, Germany and, in some cases, Spain.

It is appropriate, therefore, to conclude this section by confirming the absence of linear relationships or a sole process which is repeated uniformly in all the countries studied. However, the existence of certain variations in the results, according to the indicator selected, prevents us from forming definitive conclusions. While the top and bottom positions (France and Italy, respectively), are clear, there exist reorderings in the remaining countries.

3. The structure of mobility

Sociological literature, when referring to intergenerational mobility, has traditionally emphasised the difference existing between the processes of mobility caused by an increase in the positions in the upper part of the social scale and those which have their origin in the exchange of positions within that scale. Extrapolating this distinction to the case of income mobility, it would seem necessary to differentiate between the effect of the rerankings of individuals on the income scale and the changes which may be attributed to modifications in the income structure, accompanied by improvement –without a worsening of the relative situation of the rest– for some individuals. Research into mobility has traditionally characterised these two processes as *exchange* mobility and *structural* mobility, respectively. Recent studies have

incorporated a third dimension, that which results from the effect of the *growth* of income.

The precise identification of both components will permit the evaluation not only of some of the general causes of mobility but also the implications for welfare which the longitudinal variation of income has.. For this task we shall adopt the proposals for the decomposition of axiomatic measurements made by Fields and Ok (1996) and that of Ruiz-Castillo (2000), using the indicator devised by Chakravarty, Dutta and Weymark (1985).

3.1. *Mobility due to transfer of income and economic growth*

Fields and Ok (1996) systematize the axioms which should form part of a consistent indicator of mobility. Such properties are linear homogeneity, translation invariance, normalization, strong decomposability, weak decomposability, population consistency, growth sensitivity and individualistic contribution. The only indicator which satisfies such requirements is that of aggregate income movement:

$$d_n = \sum_{i=1}^{n} \left| \log x_i - \log y_i \right| \tag{5}$$

In order to correctly establish comparisons over time or in space, these movements may be normalized, taking as reference the size of the distribution:

$$m_n(x, y) = \frac{\sum_{i=1}^{n} \left| \log x_i - \log y_i \right|}{n} \tag{6}$$

In terms of the differentiation of the various components of mobility, the most important feature of this indicator is that it is additively decomposable into two sources: mobility resulting from the transfer of income among individuals with total income held constant, assimilated to exchange mobility, and mobility arising from a change in the total amount of income, similar to the concept of structural mobility. Consideration of the dual component permits the Fields and Ok index to be broken down as:

$$m_n(x,y) = K(x,y) + T(x,y) = \frac{1}{n}\sum_{i=1}(\log y_i - \log x_i) + \frac{2}{n}\sum_{i\in L}(\log x_i - \log y_i) \qquad (7)$$

If it is assumed that total income does not change and that there exist L individuals whose income decreased during the study period ($L \equiv \{i: x_i > y_i\}$), then the social utility lost by this group and transferred to the rest ($\Sigma_{i \in L}(\log x_i - \log y_i)$) means that the total movement of income attributable to the transfers from those who gain to those who lose may be defined as $T(x,y)$[15]. Economic growth produces changes in incomes ($\Sigma y_i \geq \Sigma x_i$) which are summarised by the term $K(x,y)$.

Using the data from the ECHP and the PSID, it is possible to estimate both the Fields and Ok index and the dual component of income transfer and economic growth (Table 7). The estimated Fields and Ok index, while confirming the extreme position of France as the country with the lowest mobility, situates the USA as the country with the greatest longitudinal variation in income. Germany presents lower values than with previous indicators and the opposite occurs in the case of Spain.

TABLE 7 INSERT HERE

The explanation for these differences may be found in the different role played in each case by income growth and the effect, also differential, of income transfers between individuals. In every country aggregate income growth is less important, although in some cases this component is crucial for the determination of mobility levels. Such is the case of France, where growth accounts for more than one third of total income fluctuation throughout the study period as a whole. The opposite occurs in the USA, where the growth component makes a negative contribution to income movement. In Spain and Italy transfer mobility accounts for more than 95% of the total[16].

[15] It is multiplied by two because any loss of income by one individual is, conversely, a gain for another.

[16] For the period considered in this work (1993/1997 for the EU countries and 1992/1996 for the USA), the rate of growth of "ajusted equivalente income" for the balanced panel sample varies greatly among countries. The growth was especially high in the United Kingdom and France (11.1% and 8.3% respectively), and presented negative values in the USA (-4.7%).

3.2. *Mobility and welfare*

A second proposal for the decomposition of total mobility emphasises the possibility of establishing normative valuations for the changes in social welfare caused by mobility. According to Chakravarty, Dutta and Weymark (CDW) (1985), mobility can be defined as the result of comparing the welfare derived from an observed income structure with another structure, hypothetically immobile, in which the positions occupied by individuals in the initial distribution are held constant. If information is available for two distributions of income for the same units at different points in time, then comparison is a question of relating the welfare associated to the distribution resulting from the aggregation of the incomes for the two periods to that which would exist if there had been no mobility.

To explore further the notion of two distributions, **x** and **y**, initial and final respectively, it is possible to define three additional distributions: a distribution of aggregate income for the whole population $\mathbf{z}=\{(x_1+y_1),\ldots (x_n+y_n)\}$, a hypothetical distribution $\mathbf{y_b}$, which would result if the final income distribution (**y**) took such a form that each household were to receive the same proportion of income as in the initial distribution (**x**), and a hypothetical aggregate distribution $\mathbf{z_b}=\mathbf{x}+\mathbf{y_b}$[17]. In other words, that aggregate distribution which would have resulted in the absence of mobility with respect to the initial distribution **x**. CDW (1985) suggest mobility indices which incorporate social welfare functions (SWF) of the following type:

$$M_{CDW}(x,y)=\left\{\frac{w(z)-w(z_b)}{w(z_b)}\right\}*100 \qquad (8)$$

where $\omega(\cdot)$ is the welfare associated to each income structure. An appropriate SWF for empirical analysis, is that which permits the aggregate welfare of a distribution to be expressed as a function of the mean, $\mu(\mathbf{x})$, and a continuous, S-convex and scale invariant relative inequality index, $I(\mathbf{x})$:

[17] With $y_b = x\frac{m(y)}{m(x)}$.

$$w(x) = m(x)[1 - I(x)] \tag{9}$$

As, by definition, the mean of the aggregate distribution is equal to that of the hypothetical aggregate distribution ($\mu(\mathbf{z}) = \mu(\mathbf{z}_b)$), and the inequality of such a distribution is equal to that of the initial distribution $I(\mathbf{x}) = I(\mathbf{z}_b)$, the mobility indicator may be expressed as:

$$M_{CDW}(x, y) = \left\{ \frac{I(x) - I(z)}{1 - I(x)} \right\} * 100 \tag{10}$$

Taking as a basis the CDW indices, Ruiz-Castillo (2000) formulates a decomposition of mobility which permits it to be broken down into three components: structural, exchange and growth mobility. In a first decomposition, $M_{CDW}(\mathbf{x},\mathbf{y})$ may be the sum of the two above-mentioned terms of structural mobility (SM) and exchange mobility (EM):

$$M_{CDW}(x, y) = SM(x, y) + EM(x, y) \tag{11}$$

Structural mobility would capture the impact upon welfare of the differences between the inequality of the initial income distribution and the inequality of the final distribution, once all the reorderings between such distributions have been eliminated. Exchange mobility, by contrast, would reflect the effect of the rerankings which are produced in the transition between the initial and final situation. Let us think, considering this latter case, of a hypothetical distribution $\mathbf{y}^*$, which would result from the case in which $\mathbf{y}$ was ordered as the initial distribution ($\mathbf{x}$). Let $\mathbf{z}_c$ be the aggregate distribution of income for the two periods ($z_c = \{(x_1 + y^*_1), ..., (x_1 + y^*_n)\}$). Structural mobility would then be defined in this case as:

$$SM(x, y) = \left\{ \frac{W(z_c) - W(z_b)}{W(z_b)} \right\} * 100 = \left\{ \frac{I(x) - I(z_c)}{1 - I(x)} \right\} * 100 \tag{12}$$

while exchange mobility would reflect the differences in welfare between that associated to the aggregate income distribution $\mathbf{z}$ and that resulting from $\mathbf{z}_c$:

$$EM(x,y) = \left\{ \frac{W(z) - W(z_c)}{W(z_b)} \right\} * 100 = \left\{ \frac{I(z_c) - I(z)}{1 - I(x)} \right\} * 100 \qquad (13)$$

Using this initial distinction, and following Ruiz-Castillo (2000), it is possible to conceive a second decomposition of M_{CDW} which permits the effect of growth to be identified. For any transformation $\mathbf{x} \rightarrow \mathbf{y}$, with $\mu(\mathbf{x}) \neq \mu(\mathbf{y})$, we can associate another transformation $\mathbf{x} \rightarrow \mathbf{u}$, in which $\mathbf{u} = \frac{m(x)}{m(y)}\mathbf{y}$, so that the mean of the distribution $\mathbf{u}$ is the same as that of the initial distribution ($\mu(\mathbf{x}) = \mu(\mathbf{u})$) and its inequality is similar to that of the final distribution ($I(\mathbf{u}) = I(\mathbf{y})$). We shall use $\mathbf{v_a}$ to denominate the aggregate income distribution associated with the transformation $\mathbf{x} \rightarrow \mathbf{u}$, so that $\mathbf{v_a} = \mathbf{x} + \mathbf{u}$. Let $\mathbf{v_b} = 2\mathbf{x}$, so that $\mu(\mathbf{v_b}) = \mu(\mathbf{v_a}) = 2\mu(\mathbf{x})$ and $I(\mathbf{v_b}) = I(\mathbf{x})$. The mobility associated with the transformation $\mathbf{x} \rightarrow \mathbf{u}$ is defined by the following equation:

$$M(x,u) = \left\{ \frac{W(v_a) - W(v_b)}{W(v_b)} \right\} * 100 = \left\{ \frac{I(x) - I(v_a)}{1 - I(x)} \right\} * 100 \qquad (14)$$

and shows the mobility due to the transformation $\mathbf{x} \rightarrow \mathbf{y}$ with total income held constant i.e. if mean income were maintained at the initial level. This mobility can be broken down into the two well-known terms of structural mobility and exchange mobility. Let us suppose that rerankings occur between the distributions $\mathbf{x}$ and $\mathbf{u}$. We shall use the term $\mathbf{u}^*$ to denominate the income distribution $\mathbf{u}$ ordered as the initial distribution ($\mathbf{x}$) and define, as in the first decomposition, a new distribution $\mathbf{v_c}$, which results from the aggregation of the incomes of the initial distribution and of this hypothetical distribution ($\mathbf{v_c} = \mathbf{x} + \mathbf{u}^*$)[18].

The mobility resulting from the process $\mathbf{x} \rightarrow \mathbf{u}$, which can be interpreted as the sum of the two components mentioned, differs from the mobility associated with the transformation $\mathbf{x} \rightarrow \mathbf{y}$. The origin of these differences is to be found in the variation of

[18] In this scenario, $SM(x,u) = \left\{ \frac{I(x) - I(v_c)}{1 - I(x)} \right\} * 100$ and $EM(x,u) = \left\{ \frac{I(v_c) - I(v_a)}{1 - I(x)} \right\} * 100$.

the incomes, since the means of the initial ($\mu(\mathbf{x})=\mu(\mathbf{u})$) and final distribution ($\mu(\mathbf{y})$) are not equal. It is possible, therefore, to define a third component, which reflects the effect of income growth upon mobility:

$$GRM(\mathbf{x},\mathbf{y},\mathbf{u})=M(\mathbf{x},\mathbf{y}) - M(\mathbf{x},\mathbf{u}) \quad (15)$$

Thus, the mobility associated with the transformation $\mathbf{x}\rightarrow\mathbf{y}$ can be broken down into three distinct terms:

$$M_{CDW}(x,y) = SM(x,u) + EM(x,u) + GRM(x,y,u) \quad (16)$$

The term $SM(\mathbf{x},\mathbf{u})$ captures the structural mobility caused by the differences in the inequality of the initial and final distribution, once the rerankings between those distributions have been eliminated, and maintaining mean income constant at the initial level $\mu(\mathbf{x})$. The expression $EM(\mathbf{x},\mathbf{u})$ reflects the exchange mobility arising from the rerankings produced between the distributions $\mathbf{x}$ y $\mathbf{u}$, on the assumption that the transformation $\mathbf{x}\rightarrow\mathbf{y}$ does not originate variations in mean income. Finally, the term $GRM(\mathbf{x},\mathbf{y},\mathbf{u})$ represents the mobility due to income growth.

The performance of this decomposition exercise with data from the ECHP and the PSID is conditioned by the possibility of using various aggregation criteria. We have chosen, as a general option, to compare the aggregate incomes of the first two waves with the sum of the third and fourth waves[19]. The results add certain nuances to previous results (Table 8). The introduction of normative elements and, more specifically, the effect upon mobility of changes in inequality, while confirming Italy as the country with the highest mobility, produce some reorderings in the lower extreme of the ranking. The descent in the positions of Spain and the USA is clear, particularly in the latter case, where the use of certain inequality indicators –the Gini index- situates it as the country with the lowest CDW.

TABLE 8 INSERT HERE

[19] The results do not change substantially when other criteria are applied, such as the comparison of the aggregation of the first two waves with the sum of the three following ones or the consideration of the aggregated incomes of the first three waves and the sum of the last two.

The results of the decomposition illustrate once more the differences in the determinants of the structure of mobility in each country. As occurred in the breakdown of the Fields and Ok index, income growth has a very limited effect upon aggregate mobility in the various countries considered. In almost all cases the most important determinant is that of the rerankings of individuals in the respective distributions, as opposed to the lesser influence of changes in inequality. However, differences exist in the weight of each component, which allows us to talk of three types of experiences. The United Kingdom and the USA coincide in presenting a negative contribution of the structural component, due to the increase in inequality, while the weight of the reorderings is considerable. In Italy and Germany, the contribution of structural mobility accounts for approximately 25% of the total, while in France and Spain virtually all the change can be attributed to the rerankings.

4. The determinants of mobility

The differences observed in the income mobility indicators in the countries considered may be due to highly diverse factors. One important element is, without a doubt, the institutional diversity of the labour markets. Although the labour environment in European Union countries is often thought to be homogeneous, with regulatory mechanisms far more intense than those in the USA, there exists sufficient evidence to affirm that the differences between the member states themselves are greater than those between the two continents (Nickell, 1997). Various studies have shown the effects of these dissimilarities upon the different international results, in terms of earnings inequality or inequality of disposable household income[20]. Similarly, it is possible to adopt this hypothesis when analyzing income mobility. Thus, there exist highly diverse mechanisms of entry to or exit from the labour market, which may have very different effects upon income fluctuations. Other factors which may condition mobility are those which restrict possible decreases in earnings –minimum wages or salaries negotiated by trade unions- or, especially, those which favour transitions from unemployment to employment, such as the unequal development of active policies or the differences in the relative generosity of unemployment benefit systems.

[20] A recent review can be found in Ayala, Martínez and Ruiz-Huerta (2002).

The employment sphere is not, however, the only one which has the potential to produce long-term variations in household income. Various studies have shown notable differences in the degree of mobility among different demographic groups (Jarvis and Jenkins, 1998, Gardiner and Hills, 1999 or Zaidi *et al.*, 2001). International differences in the weight of those groups having greater potential mobility, such as the young, may explain part of the differences to be found in mobility indicators. There may exist, furthermore, interactions between demographic processes and the responses of public policy to the needs of each collective which, in turn, may also influence mobility. Such is the case of the incomes of older individuals, which *a priori* fluctuate less and are greatly affected by the specific effect in each country of old age protection systems.

All these factors invite us to perform mobility decomposition exercises which take into account some type of division of the population. It would also seem important to disaggregate mobility indicators by income source, due to the unequal mobility of earnings incomes (*a priori* more mobile), and those originating from public social transfers (by definition less mobile). We shall use for the first case the decomposability properties of the indices which interpret mobility as an aggregate income movement, while for the decomposition by income source we shall adopt a second approach, which considers the contribution of each source to the variability of total income, using as a basis the proposal developed by Jenkins (1999).

4.1. *The decomposition of mobility by population sub-groups*

The lack of an analytical tradition as deep-seated as that of inequality means that proposals for the decomposition of mobility indicators do not yet enjoy a similar level of axiomatic content and operational capacity. To date, very few studies have made the quantum leap from the estimation of basic indicators to explanations of the differences in mobility observed in the various population groups[21]. One of the greatest difficulties has been the lack of consensus regarding the properties which should be possessed by

[21] A notable exception is the work of Ramos (1999b), in which is proposed for the first time the decomposition of the Shorrocks rigidity index into additively within and between-groups components in order to analyse earnings mobility in the UK. His results appear to assign a greater explanatory capacity to intergroup mobility than to the differences among the various population divisions.

the possible indices and the difficulties involved in making such properties adaptable to the diverse aspects of mobility analysis.

Fields and Ok (1999b) propose a decomposition technique which overcomes many of the stated shortcomings. Using the concept of mobility as a process of income movements which may be evaluated by the previous indicator of aggregate variation in individual incomes, it is possible to conceive of this total sum of income fluctuations as a weighted average of the specific movements of different social groups. A necessary condition is the existence of a mobility indicator which combines four basic properties: scale invariance, symmetry, multiplicative path separability and subgroup decomposability.

The most important property with regard to the objective of disaggregation of overall mobility by population groups is that of subgroup decomposability. If the population is divided into $J \in \{1,...,n\}$ subgroups, $\forall j = 1,...,J$ y $\boldsymbol{x}^j, \boldsymbol{y}^j$:

$$m_n\left[(x^1,...,x^j),(y^1,.....,y^j)\right] = \sum_{j=1}^{J}\left(\frac{n_j}{n}\right) m_{nj}(x^j, y^j) \qquad (14)$$

Any mobility indicator which combines the above properties should be able to be disaggregated, therefore, as a weighted average of the mobility of the various population groups, the weightings being the relative demographic importance of each group. The only indicator which combines all the required properties is that of aggregate income movement per capita, as described in the previous section. The decomposition could be derived as:

$$m_n(x,y) = \sum_{j=1}^{J}\left(\frac{n_j}{n}\right)\left[\frac{1}{n^j}\sum_{i=1}^{n}\left|\log y_i^j - \log x_i^j\right|\right] \qquad (15)$$

The variables we have chosen to define the different groups are household type, household size and the age of individuals. However, the age of individuals, as well as other relevant variables defined at individual level, such as educational level, present problems for the performance of the decomposition exercise. While individuals are

assigned the adjusted income of the household to which they belong, the groups are defined, nevertheless, according to the individual level variables.

The data regarding the contribution of each household type to mobility show the existence of some national divergences, although within a more or less similar pattern (Table 9). The basic features of this pattern are the greater mobility, in general, of single parent households, the greater stability over time of the income of older persons[22] and the average or low levels which correspond to couples with children, who constitute the most important demographic group. Some countries diverge moderately from this pattern, as a result of the specificity of some of their results. In the USA, especially, and Germany, in contrast to the rest of the countries, it is older people who live alone who show greater income mobility. The same does not occur, however, with older people who live in households with another adult. In France it is people who live alone who experience greater variation in income over time, although it would not be correct to talk of a behaviour different to that of single parent households. The Latin model –Italy and Spain– is interesting in that mobility is much more visible for couples with children.

TABLE 9 INSERT HERE

When we observe the results according to household size, the differences between categories are not so marked, except in the USA. There is however a difference in the profile of the relationship between the size of the household to which individuals belong and the degree of income fluctuation, with different typologies: a negative relationship in Germany (a larger household means lower mobility), a positive one in Spain, the United Kingdom and France –more irregular in the latter two cases–, an U form in the USA, and an inverse-U form in Italy.

The joint observation of household type and individuals age let us to appreciate that the relationship between life cycle and mobility is not uniform. Young people are, in general, those who present the greatest variation in income over time, while the

[22] This result does not coincide, for the case of the United Kingdom, with that obtained by Zaidi *et al.* (2001), who conclude, in opposition to generalized intuition, that the oldest age group in this country displays a notable mobility.

opposite occurs with older people[23]. Both results are compatible with the basic premises of economic theory. A large part of the income of collectives aged over 65 comes from public social transfers which, as they are updated for inflation, experience almost no variations in real terms. The instability of income from employment for young people and the large number of employment transitions of various types during the early stages of participation in the labour market mean that this is one of the most volatile groups. In countries with more flexible labour markets, such as Britain, young people experience greater instability in remuneration. However, as in previous cases, exceptions exist. In Italy there are scarcely any differences between age strata. There and in Spain, additionally, although the relatively greater mobility of young people who live alone is also apparent, the contribution to total mobility is extremely limited, due to the scanty demographic weight of this collective[24]. The opposite situation occurs in Germany, as already stated, and in the USA, where there is a positive relationship between life cycle and income variation.

4.2. *The decomposition of mobility by income source*[25]

As occurs in the analysis of inequality, the decomposition of mobility by income source is faced with by theoretical and empirical restrictions greater than those for decomposition exercises using population segments. To date, there exist no methodological approaches comparable to those developed for the analysis of inequality. The sole exception is the proposal by Jenkins (1999) to measure the contribution of each income source to the variability of the total income of the reference unit. This is an adaptation to mobility analysis of the indicators proposed by Shorrocks (1982) in the field of inequality by income source and of the derivation which Jenkins (1995) himself makes of that proposal.

[23] These results are corroborated by Trede (1998), who, using a conditional kernel density estimation, finds that young people form the most mobile group. However, the estimations show that mobility does not decrease throughout the life cycle, but rather falls until the age of 35, when it becomes stable from then onwards.

[24] In those countries, the proportion of multigenerational homes is greater than in the rest of the experiences considered, while the proportion of young people who live alone is very small (Roussel, 1992).

[25] At the time of completion of this study it had not been possible to find a classification of sources in the PSID comparable to that of the ECHP, and thus the data for the USA are not included.

According to Jenkins (1999), in order to explain the contribution of each source to the variability over time of individual incomes, the analysis of mobility can adapt the rule of decomposition of the family of generalized entropy indices, which is in turn an extension of the decomposition of variance developed by Shorrocks. Income mobility may be interpreted, according to this rule, as a combination of the contribution of each source to individual income, of the variability over time of each income component and of the correlation with other income sources. Specifically, for each individual the contribution of source f (β^f_i) would be:

$$\beta_i^f = r_i^f \frac{\sigma_i(x_i^f)}{\sigma_i(x_i)} \tag{16}$$

where $\Sigma_f \beta^f=1$, r^f_i is the correlation between each income source and the total income of each individual during the reference period, $\sigma_i(x^f_i)$ is the standard deviation of each income source for the whole period and $\sigma_i(x_i)$ is the longitudinal standard deviation of the total income of the individual in the period considered. As in the decomposition of inequality, the contribution of each source to the longitudinal variation of individual incomes may be obtained as:

$$\beta_i^f = r_i^f \frac{\mu(x_i^f)}{\mu(x_i)} \sqrt{(I_2(x_i^f)/I_2(x_i)} \tag{17}$$

where $\mu(x^f_i)$ and $\mu(x_i)$ are the individual means of each source and of the total income for the whole period, respectively, and $I_2(x^f_i)$ e $I_2(x_i)$ are the generalized entropy indices (c=2) for that same source and for total income, respectively. In order to obtain the contribution of each source to the income mobility of the population, we compute the average of the results obtained for the individuals of the balanced panel.

The application of this decomposition technique to the ECHP data permits the discovery of important divergences in the determinants of income mobility in the countries selected (Table 10). Despite earnings being the income source which in each country makes the largest contribution to total mobility, their effect is not completely

uniform[26]. Divergences may arise for two reasons: on the one hand, the contribution of earnings to total income may differ and, on the other, there may be differences in earnings mobility among the countries considered.

TABLE 10 INSERT HERE

With regard to the first of these aspects, the greater weight of earnings in Germany is evident, being almost ten points greater than in the rest of the countries. This does not mean, however, that the contribution to mobility of this source is lesser in the latter. In fact, the Spanish experience stands out from those countries considered as that with the greatest earnings mobility. Proof of this is a contribution to total mobility by earnings which is twenty points greater than its weight in total income. Income from self-employment is not exceptional in any country with regard to its specific effects upon mobility. The opposite occurs with property income[27], which in all countries, and especially in France, is the least stable source of income. Its notable sensitivity to the economic cycle introduces, without a doubt, a more volatile component in its evolution.

One final important factor is the compensatory effect on income instability of social transfers[28]. In all the countries studied the development of such benefits has a stabilizing function in income distribution. The systematic nature of cash benefits provided by the public sector and the absence of drastic changes in the determination of benefits –commonly updated in line with changes in consumer prices– limit the possibilities for drastic changes in the incomes of households which depend upon this source of income. There exist, however, some differences among the five countries considered, the United Kingdom being the country where this compensatory effect is smallest, while Spain is the country in which social transfers have the greatest difference between the contribution to mobility and the weight in total income[29].

[26] Some of these differences had already been presented in other studies. See OECD (1996).
[27] Property Income includes capital income, property rental income and private transfers received.

[28] Social Transfers includes unemployment related benefits, old-age/survivors benefits, family related allowances, sickness/invalidity benefits, educated related allowances, social assistance, housing allowance and any other personal benefits.
[29] A related study is the comparison established by Fabig (1998), between mobility with gross and net income in Germany and the United Kingdom, with results highly sensitive to the type of income considered. Gross income is less mobile in the UK than in West Germany, while the opposite occurs with net income. Such a difference may be attributed to the importance softening role of income instability which is played by the tax and social benefits system in Germany.

5. Conclusions

The analysis of income dynamics has become an essential reference point for the understanding of distributive processes. Its relevance is particularly notable when comparing income distribution in different countries. The aim of this paper has been to assess the possible relationships between individual income mobility and inequality in both the United States and selected European Union member states. To this end, the principal approaches available to assess differences in mobility among countries have been reviewed and a wide range of indicators has been calculated.

The work undertaken out has allowed us to reach various conclusions both methodological and empirical. Concerning the former, the plurality of approaches is notable. This causes results to be highly sensitive, depending on the theoretical premises employed in the definition of various indicators. The approaches considered are not completely interchangeable due to the different properties each indicator possesses and the different interpretation arising from each result. As in the case of inequality analyses, the use of a specific approach is implicitly associated with value judgements. Thus, indicators which incorporate normative assessments of changes in welfare produced by different kinds of mobility become more important (particularly in comparative analyses).

With regard to empirical aspects, the elaboration of different indicators has allowed us to answer one of the questions that has dominated the debate regarding social models and equity. There are important differences among the countries selected. Most of the indicators present Italy and France as the countries with the highest and lowest mobility, respectively. Contrary to general belief, the USA is shown to have intermediate levels of mobility within an international context. Whatever the case, the most significant result is the absence of any clear relationship between inequality and mobility. Examples of greater than average inequality and mobility have been seen, as have examples of low inequality and high mobility.

The performance of various decomposition exercises both by population groups and by sources of income, has allowed us to relate differences in observed mobility

levels to possible determining factors which are specific for each country. Although some common results exist concerning the delimitation of groups experiencing the greatest income fluctuations, such as individuals belonging to single-parent households or young household heads, the intensity of these results varies greatly from one country to another. Something similar occurs in the case of different sources of income. An important determinant of mobility appears to be changes in earnings in all the countries under study, although some differences exist. The singularity of the Spanish labour market leads to greater volatility in the earnings structure, while in other countries the greatest variations in longitudinal income are mainly due to cash property income.

The possibilities produced by the comparative analysis of income mobility when homogenous databases are used are therefore very promising. Our study opens new lines of research, but is far from definitive. More detailed research appears necessary in such as public policy regarding income dynamics. At the same time, further advances in the understanding of the phenomena described here can be expected as longer time series for individual income changes become available.

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Table 1
ECHP and PSID Number of Unweighted Observations[1]

	Number of unweighted observations (individuals)											
						Balanced Panel[2]						
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Waves 1-2	Waves 1-2-3	Waves 1-2-3-4	Waves 1-5	Attrition[3] (%)	Trimming[4]	%Dropped observations[5]
Germany	16,151	16,542	16,148	15,715	15,024	15,072	14,178	13,312	12,374	23.4	11.906	3.8
France	18,190	17,311	16,861	15,662	14,801	16,196	15,036	13,421	12,232	32.8	11.286	7.7
UK	12,623	12,333	12,454	12,324	12,284	11,465	10,893	10,440	9,978	21.0	9,281	6.6
Italy	21,421	21,426	21,227	19,834	19,077	19,978	18,826	16,954	15,419	28.0	14,331	7.1
Spain	22,834	20,390	19,218	17,865	16,549	19,598	17,448	15,391	13,660	40.2	12,759	6.6
USA	13,646	13,591	13,341	12,933	11,142	12,890	12,434	11,978	8,117	40.5	7,627	6.0

[1] Panel Study of Income Dynamics (PSID) and European Community Household Panel (ECHP). Households with positive income, at least one adult and positive survey weights.
[2] Individuals present in each of the waves considered.
[3] %Attrition with respect to the first wave.
[4] Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.
[5] With respect to individuals present in each of the five waves.

Table 2
Inequality Indices[1,2]

GE(0)					
	1993	1994	1995	1996	1997
UK	0.137	0.143*	0.138*	0.143*	0.141
Germany	0.119*	0.106**	0.097	0.090	0.093
France	0.115*	0.110**	0.105	0.106	0.111
Italy	0.164	0.146*	0.144*	0.138*	0.132
Spain	0.177	0.180	0.188	0.181	0.169
USA[3]	0.227	0.311	0.287	0.288	0.296
GE(1)					
	1993	1994	1995	1996	1997
UK	0.126	0.132*	0.129*	0.132	0.131
Germany	0.108*	0.101**	0.094**	0.089	0.091
France	0.112*	0.106**	0.103**	0.103	0.108
Italy	0.144	0.131*	0.129*	0.124	0.120
Spain	0.165	0.169	0.173	0.169	0.155
USA[3]	0.204	0.268	0.243	0.248	0.250
GE(2)					
	1993	1994	1995	1996	1997
UK	0.132	0.138*	0.136*	0.139	0.138
Germany	0.114*	0.109**	0.102**	0.097	0.098
France	0.122*	0.112**	0.111**	0.110	0.115
Italy	0.151	0.137*	0.133*	0.128	0.124
Spain	0.181	0.186	0.192	0.185	0.168
USA[3]	0.227	0.317	0.274	0.282	0.284
Gini					
	1993	1994	1995	1996	1997
UK	0.281	0.287*	0.283*	0.287*	0.287
Germany	0.254*	0.247**	0.239	0.232	0.235
France	0.264*	0.259**	0.256	0.256	0.261
Italy	0.297	0.283*	0.282*	0.279*	0.274
Spain	0.319	0.324	0.326	0.323	0.309
USA[3]	0.352	0.398	0.382	0.386	0.388
Atk(1)					
	1993	1994	1995	1996	1997
UK	0.128	0.133*	0.129*	0.133*	0.131
Germany	0.112*	0.101**	0.092	0.086	0.089
France	0.109*	0.104**	0.099	0.101	0.105
Italy	0.151	0.136*	0.134*	0.128*	0.123
Spain	0.163	0.165	0.171	0.166	0.156
USA[3]	0.203	0.267	0.250	0.250	0.256

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

[2]Following Mills y Zandvakili (1997), we have computed 95% bootstrap confidence intervals for each inequality index. When for a given year and inequality index two countries are marked by the same symbol, inequality differences between them are not significant. [3] 1992 / 1996

Table 3
Income Mobility as Longitudinal Income Association[1]

	Correlation Coefficient		β (log x_t)[2]		Hart Index	
	Short Term[3]	93/97	Short Term[3]	93/97	Short Term[3]	93/97
UK	0.797	0.608	0.758	0.559	0.233	0.436
Germany	0.790	0.575	0.732	0.481	0.246	0.463
France	0.843	0.724	0.812	0.681	0.155	0.263
Italy	0.737	0.625	0.647	0.460	0.316	0.413
Spain	0.791	0.663	0.711	0.572	0.268	0.403
USA[4]	0.759	0.642	0.788	0.723	0.249	0.396

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.
[2] Slope coefficient in log (income) regression.
[3] Computed as the average of the four inter-annual transitions.
[4] 1992/1996

Table 4
Mobility Measures based on Transition Matrices[1]

	Bartholomew Index				Shorrocks Mobility Index			
	Relative Matrices[2]		Absolute Matrices[3]		Relative Matrices[2]		Absolute Matrices[3]	
	Short term[4]	93/97	Short term[4]	93/97	Short term[4]	93/97	Short term[4]	93/97
UK	1.186	1.852	0.689	1.080	0.693	0.857	1.098	1.127
Germany	1.133	1.760	0.557	0.910	0.657	0.803	1.084	1.118
France	0.906	1.347	0.505	0.747	0.609	0.776	1.080	1.106
Italy	1.293	1.729	0.720	0.975	0.696	0.831	1.097	1.124
Spain	1.255	1.775	0.691	0.998	0.706	0.845	1.096	1.120
USA[5]	1.158	1.667	0.685	0.988	0.668	0.818	1.088	1.115

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.
[2] Decile groups.
[3] Absolute income groups defined using cut-offs equal to 0.5, 0.75, 1, 1.25 and 1.5 times mean wave 1 income.
[4] Computed as the average of the four inter-annual transitions.
[5] 1992/1996

Table 5

Percentage of Persons Remaining in the same Income Group[1]

	UK	Germany	France	Italy	Spain	USA
Relative Matrices[2]						
Short Term						
Low Income	40.8	44.4	48.3	39.5	35.8	42.9
Middle Income	28.5	30.4	35.8	30.4	27.9	31.7
High Income	46.8	51.1	54.7	44.4	48.5	47.7
TOTAL	37.7	40.8	45.2	37.3	36.5	39.9
Medium Term						
Low Income	26.6	32.1	31.6	29.7	26.5	27.4
Middle Income	15.4	19.3	23.5	17.3	16.1	18.0
High Income	29.2	34.5	37.5	31.3	32.0	36.6
TOTAL	22.9	27.7	30.1	25.2	24.0	26.4
Absolute Matrices[3]						
Short Term						
Low Income	53.2	55.7	64.4	56.6	55.8	64.8
Middle Income	42.4	57.8	53.8	44.1	40.2	41.5
High Income	58.8	62.1	63.7	53.8	60.4	56.2
TOTAL	50.8	58.2	60.1	51.4	51.9	56.2
Medium Term						
Low Income	37.6	38.3	48.7	45.3	46.4	52.3
Middle Income	27.8	42.2	38.7	29.9	29.3	25.4
High Income	47.3	43.5	57.0	38.5	43.5	46.2
TOTAL	36.6	41.2	46.9	38.1	40.0	42.6

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

[2] Low income: Individuals with equivalent income within the first three deciles of wave 1 income distribution. Middle Income: Individuals with equivalent income belonging to deciles 4,5 and 6 of wave 1 income distribution. High Income: Individuals with equivalent income within the last three deciles of wave 1 income distribution.

[3] Low income: Individuals with equivalent income below 0.75 times mean wave 1 income. Middle Income: Individuals with equivalent income between 0.75 and 1.25 times mean wave 1 income. High Income: Individuals with equivalent income greater than 1.5 times mean wave 1.

Table 6
Income mobility and inequality measures[1] (USA=100)

	UK	Germany	France	Italy	Spain
INEQUALITY (Average 93/97)					
GE(0)	49.9	35.8	38.8	51.3	63.6
GE(1)	53.6	39.8	43.9	53.4	68.6
GE(2)	49.5	37.6	41.2	48.8	66.0
Gini	74.8	63.4	68.0	74.3	84.0
Atkinson(1)	53.4	39.1	42.3	54.9	66.9
MOBILITY (Short term)					
Correlation Coefficient	105.1	104.1	111.1	97.1	104.3
Coef.Log	96.3	92.9	103.1	82.2	90.3
Hart Index	93.6	98.7	62.0	126.5	107.5
Shorrocks GE(0)	101.8	101.3	106.9	96.7	100.0
Shorrocks GE(1)	100.5	100.2	103.9	97.2	100.1
Shorrocks GE(2)	102.4	102.0	105.0	99.0	102.0
Shorrocks Gini	99.9	99.9	101.5	98.5	99.8
Shorrocks Atk(1)	100.7	100.0	105.3	95.9	99.3
Bartholomew (Relative Matrices)	102.4	97.8	78.2	111.6	108.3
Bartholomew (Absolute Matrices)	100.6	81.3	73.7	105.2	100.9
Prais-Shorrocks (Relative Matrices)	103.7	98.4	91.1	104.2	105.6
Prais-Shorrocks (Absolute Matrices)	101.0	99.6	99.3	100.9	100.8
MOBILITY (Medium term)					
Correlation Coefficient	94.6	89.6	112.7	97.3	123.2
Coef.Log	77.3	66.5	94.2	63.6	98.4
Hart Index	110.1	116.8	66.5	104.2	67.7
Shorrocks GE(0)	100.3	100.0	113.4	94.8	100.5
Shorrocks GE(1)	98.5	98.1	107.7	94.8	100.1
Shorrocks GE(2)	101.5	100.8	109.1	97.1	102.5
Shorrocks Gini	98.8	98.7	103.3	97.3	99.9
Shorrocks Atk(1)	98.5	97.8	110.4	93.5	99.1
Bartholomew (Relative Matrices)	111.1	105.6	80.8	103.7	106.5
Bartholomew (Absolute Matrices)	109.3	92.1	75.6	98.7	101.0
Prais-Shorrocks (Relative Matrices)	104.8	98.3	95.0	101.6	103.3
Prais-Shorrocks (Absolute Matrices)	101.1	100.2	99.2	100.8	100.5

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

Table 7
Fields and Ok Mobility Index[1]

	Short Term			Medium Term (1993/1997)		
	Mobility	K (%)	T (%)	Mobility	K (%)	T (%)
UK	0.250	10.2	89.8	0.373	27.4	72.6
Germany	0.192	7.7	92.3	0.309	19.1	80.9
France	0.166	12.6	87.4	0.250	33.5	66.5
Italy	0.278	1.5	98.5	0.360	4.6	95.4
Spain	0.295	0.5	99.5	0.390	1.4	98.6
USA	0.369	-7.9	107.9	0.487	-23.9	123.9

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

Table 8
Decomposition of Chakravarty-Dutta-Weymark Mobility Index[1]
(Wave 1+2- Wave 3+4)

	Mobility M(x,y)	Structural Mob. SM(x,u) (%)	Exchange Mob. EM(x,u) (%)	Growth Mob. GRM (%)
GE(0)				
UK	1.307	-13.4	113.8	-0.4
Germany	1.581	31.8	67.9	0.4
France	0.881	7.4	92.4	0.2
Italy	1.898	26.1	74.3	-0.4
Spain	1.364	-6.2	106.2	0.4
USA	1.026	-167.9	263.4	4.5
GE(1)				
UK	1.029	-14.5	115.0	-0.5
Germany	1.220	27.0	72.8	0.3
France	0.790	5.4	94.3	0.1
Italy	1.604	28.8	71.7	-0.5
Spain	0.766	-4.0	104.0	0.8
USA	0.969	-121.8	218.6	3.2
GE(2)				
UK	1.044	-15.0	115.5	-0.5
Germany	1.208	24.1	75.6	0.2
France	0.879	6.0	93.9	0.1
Italy	1.785	32.6	68.0	-0.6
Spain	0.557	-3.2	103.4	1.8
USA	1.361	-97.7	195.2	2.5
GINI				
UK	1.423	-13.8	114.2	-0.4
Germany	1.878	25.3	74.4	0.3
France	1.125	2.0	97.8	0.2
Italy	2.193	25.9	74.5	-0.5
Spain	0.969	-1.5	101.5	0.6
USA	0.963	-129.1	225.8	3.3
ATK (1)				
UK	1.154	-13.3	113.8	-0.4
Germany	1.445	31.6	68.0	0.4
France	0.795	7.4	92.3	0.3
Italy	1.678	25.9	74.5	-0.4
Spain	1.163	-6.1	106.1	0.3
USA	0.802	-166.2	261.6	4.6

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

Table 9
Decomposition of Fields and Ok Mobility Index, 1993/97[1]

	UK				Germany				France			
	Pi[1]	Mi	Ci	Ci/Pi	Pi[1]	Mi	Ci	Ci/Pi	Pi[1]	Mi	Ci	Ci/Pi
Household Type at Wave 1												
1 person aged 65	5.85	0.32	5.08	0.87	5.03	0.46	7.47	1.48	4.01	0.32	5.08	0.87
1 person <65	5.11	0.42	5.82	1.14	8.48	0.34	9.27	1.09	5.51	0.42	5.82	1.14
Single Parent	9.13	0.39	9.60	1.05	3.99	0.47	6.00	1.51	4.75	0.39	9.60	1.05
Couple, no kids, at least 1 aged 65+	8.56	0.31	7.07	0.83	7.66	0.24	5.97	0.78	7.22	0.31	7.07	0.83
Couple, no kids, both <65	14.85	0.35	14.11	0.95	16.73	0.33	17.57	1.05	13.55	0.35	14.11	0.95
Couple, 1 kid < 16 years	7.32	0.34	6.68	0.91	9.43	0.29	8.94	0.95	9.47	0.34	6.68	0.91
Couple, 2+ kids < 16 years	22.15	0.37	21.98	0.99	13.02	0.27	11.49	0.88	19.24	0.37	21.98	0.99
Couple with 1+ kids aged 16+	20.42	0.39	21.46	1.05	24.87	0.32	25.34	1.02	32.54	0.39	21.46	1.05
Other households	6.62	0.46	8.20	1.24	10.78	0.23	7.94	0.74	3.71	0.46	8.20	1.24
Household Size at Wave 1												
1	10.96	0.37	10.89	0.99	13.51	0.38	16.74	1.24	9.52	0.37	10.89	0.99
2	28.52	0.35	26.85	0.94	27.45	0.32	28.17	1.03	23.62	0.35	26.85	0.94
3	19.81	0.38	20.32	1.03	21.42	0.32	22.20	1.04	18.71	0.38	20.32	1.03
4	24.65	0.36	24.00	0.97	23.63	0.30	23.05	0.98	23.92	0.36	24.00	0.97
5	11.78	0.42	13.17	1.12	5.21	0.25	4.12	0.79	8.31	0.42	13.17	1.12
6	2.95	0.39	3.11	1.06	1.98	0.21	1.35	0.68	5.33	0.39	3.11	1.06
7 or more	1.34	0.46	1.65	1.23	6.80	0.20	4.36	0.64	10.59	0.46	1.65	1.23
Age group at Wave 1												
<25 years	32.88	0.41	35.97	1.09	28.39	0.30	27.51	0.97	35.05	0.41	35.97	1.09
26 to 45 years	29.38	0.35	27.66	0.94	31.16	0.28	28.19	0.90	32.49	0.35	27.66	0.94
46 to 59 years	17.65	0.38	18.08	1.02	21.41	0.32	22.21	1.04	15.32	0.38	18.08	1.02
60 to 64 years	5.13	0.41	5.64	1.10	5.76	0.43	8.02	1.39	4.99	0.41	5.64	1.10
Aged 64+ years	14.95	0.32	12.65	0.85	13.28	0.33	14.06	1.06	12.15	0.32	12.65	0.85

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.
[2] Classification according to situation in wave 1. P_j= % of sample in group j, M_j=group j mobility, C_j= group j relative contribution to mobility.

Table 9 (cont.)

	Italy				Spain				USA			
	Pi[1]	Mi	Ci	Ci/Pi	Pi[1]	Mi	Ci	Ci/Pi	Pi[1]	Mi	Ci	Ci/Pi
Household Type at Wave 1												
1 person aged 65+	3.25	0.28	2.54	0.78	1.94	0.19	0.93	0.48	2.44	1.05	5.26	2.15
1 person <65	2.57	0.42	2.97	1.16	1.04	0.31	0.84	0.81	9.39	0.50	9.72	1.04
Single Parent	6.23	0.38	6.64	1.06	5.83	0.46	6.82	1.17	11.69	0.54	12.91	1.10
Couple, no kids, at least 1 aged 65+	6.88	0.33	6.21	0.90	5.68	0.21	3.08	0.54	6.42	0.84	11.11	1.73
Couple, no kids, both <65	8.34	0.34	7.80	0.94	5.08	0.40	5.26	1.03	13.12	0.46	12.31	0.94
Couple, 1 kid < 16 years	9.29	0.35	8.91	0.96	9.26	0.34	8.10	0.88	7.99	0.44	7.22	0.90
Couple, 2+ kids < 16 years	15.08	0.34	14.42	0.96	15.64	0.34	13.82	0.88	25.37	0.35	18.05	0.71
Couple with 1+ kids aged 16+	35.34	0.38	37.63	1.06	34.05	0.41	35.89	1.05	19.12	0.45	17.69	0.92
Other households	13.02	0.36	12.88	0.99	21.47	0.46	25.25	1.18	4.46	0.63	5.75	1.29
Household Size at Wave 1												
1	5.82	0.34	5.51	0.95	2.98	0.23	1.77	0.59	11.83	0.62	14.98	1.27
2	18.36	0.34	17.48	0.95	13.65	0.31	10.86	0.80	25.58	0.57	30.21	1.18
3	22.81	0.36	22.84	1.00	20.08	0.35	18.18	0.91	18.47	0.47	17.75	0.96
4	30.47	0.37	31.04	1.02	28.86	0.36	26.36	0.91	25.31	0.38	19.73	0.78
5	8.34	0.39	9.05	1.09	10.10	0.40	10.32	1.02	13.30	0.43	11.87	0.89
6	5.70	0.37	5.82	1.02	6.75	0.49	8.45	1.25	3.70	0.45	3.41	0.92
7 or more	8.50	0.35	8.25	0.97	17.57	0.53	24.06	1.37	1.80	0.56	2.05	1.14
Age group at Wave 1												
>25 years	32.66	0.36	32.85	1.01	36.76	0.43	40.80	1.11	36.62	0.44	33.44	0.91
26 to 45 years	29.26	0.37	29.81	1.02	29.21	0.38	28.43	0.97	36.00	0.41	30.37	0.84
46 to 59 years	18.10	0.37	18.74	1.04	15.30	0.41	16.26	1.06	14.02	0.44	12.74	0.91
60 to 64 years	6.77	0.35	6.60	0.97	5.93	0.39	5.85	0.99	4.47	0.70	6.45	1.44
Age 64+ years	13.21	0.33	12.01	0.91	12.79	0.26	8.66	0.68	8.90	0.93	17.00	1.91

[1] ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

[2] Classification according to situation in wave 1. P_j= % of sample in group j, M_j=group j mobility, C_j= group j relative contribution to mobility.

Table 10

Income Sources Contributions to Longitudinal Income Variability[1,2]

		Wages	Self-employement	Property Income[3]	Social Transfers[4]	TOTAL
UK	%Contribution	53.1	10.8	9.6	26.5	100.0
	Income Share	46.3	9.6	6.1	38.0	100.0
	Ratio[5]	1.1	1.1	1.6	0.7	1.0
Germany	%Contribution	64.9	7.3	8.3	19.5	100.0
	Income Share	55.3	6.0	5.6	33.1	100.0
	Ratio[5]	1.2	1.2	1.5	0.6	1.0
France	%Contribution	57.6	7.8	9.0	25.6	100.0
	Income Share	48.3	6.5	4.6	40.6	100.0
	Ratio[5]	1.2	1.2	2.0	0.6	1.0
Italy	%Contribution	56.1	15.9	6.6	21.4	100.0
	Income Share	46.2	15.2	3.9	34.7	100.0
	Ratio[5]	1.2	1.0	1.7	0.6	1.0
Spain	%Contribution	63.6	14.2	7.1	15.1	100.0
	Income Share	43.6	13.3	4.8	38.2	100.0
	Ratio[5]	1.5	1.1	1.5	0.4	1.0

[1]ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

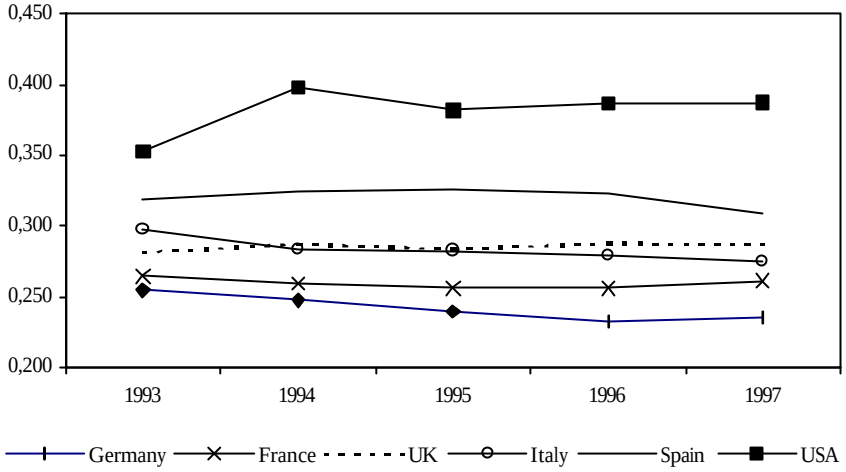
[2]At the time of completion of this study it had not been possible to find a classification of sources in the PSID comparable to that of the ECHP, and thus the data for the USA are not included.

[3] Property Income includes capital income, property rental income and private transfers received.

[4] Social Transfers includes unemployment related benefits, old-age/survivors benefits, family related allowances, sickness/invalidity benefits, educated related allowances, social assistance, housing allowance and any other personal benefits.

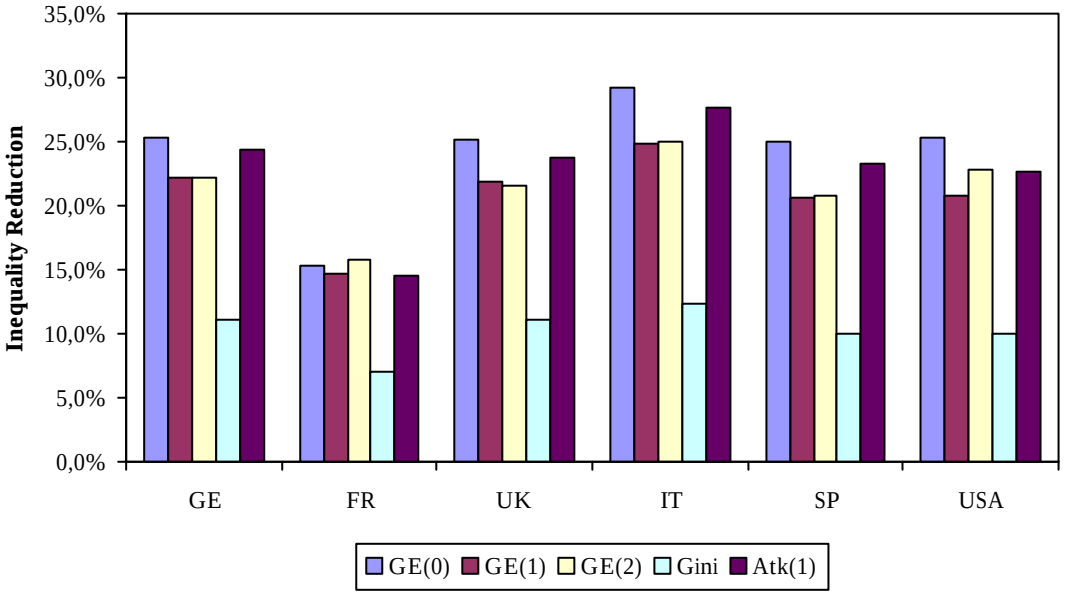
[5]Ratio: %Contribution/Income Share.

Figure 1
Gini Coefficient



Note: ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.

Figure 2
Percentage of inequality reduction based on Shorrocks Rigidity Index, 1993/97



Note: ECHP and PSID five waves balanced panel. Trimming, for each wave, lower and upper 1% using the "modified OCDE" equivalence scale.