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The contribution of income mobility to economic insecurity in the US and Spain during the Great Recession

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Abstract

Recent evidence on the impact of the crisis on developed countries shows that the changes in income inequality and poverty have been relatively small in spite of the macroeconomic heterogeneity of the recession across different economies. However, when evaluating the main changes in individual perceptions linked to the crisis not only increases in inequality or poverty matter, also changes in individually-perceived chances to scale up or lose ground in the income ladder are crucial. Our aim is to analyze to what extent the recession may have had an impact on economic insecurity perceptions by increasing income losses in two developed countries where job losses have been large. The contribution of income losses to insecurity is approximated by the prevalence of downward income mobility. We identify the main socioeconomic characteristics of those most likely to suffer from a large income loss. In general, age, education and the presence of children in the household are key determinants of this event in both countries.

Keywords: mobility, economic insecurity, income volatility, recession, US, Spain.

JEL: D31, D63, I14.

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Introduction

Recent evidence on the impact of the Great Recession on developed countries shows that the changes in income inequality and poverty have been relatively small in spite of the heterogeneity of its macroeconomic effects across different economies (Jenkins *et al.*, 2013). However, the harm of the crisis' shock on social well-being is not fully reflected in inequality or poverty trends. Any changes in individual perceived chances to move either upwards or downwards in the income distribution are also relevant and may guide individual's feelings of *economic insecurity* that could definitely affect social well-being and could be contributing to reduce society's chances to leave the recession behind. Since Stiglitz et al. (2009) reported on measuring economic performance and social progress it has become clear that measuring economic insecurity is a key issue to understand individual well-being. Most recently, Boarini and Osberg (2014) underline that approaching the idea of uncertainty about economic losses and the extent to which this has an impact on well-being is a main aim for research, more so when economic shocks are severe, have a long duration and include relevant losses for a wide range of individuals in society. A large number of works have demonstrated that income instability and perceived insecurity have an impact on well-being (see Hacker et al, 2014) and some recent papers on the improvement of Social Welfare measures have argued in favor of following Prospect Theory and incorporate income-reference dependence and loss aversion in individual utility functions (Jäntti et al., 2013).

Economic insecurity is expected to be particularly large during recessions (even if it will also depend on personal preferences linked to loss aversion) and it will most likely reflect the degree to which individuals are protected against large economic losses and strongly linked to some measure of their changing circumstances. In fact, evidence on European countries suggests that people's sense of economic security is affected by individual-level attributes and by any recent job losses and perceptions of the national economy (Anderson, 2001) while insecurity perceptions are strongly correlated with the current exposure to adverse effects (Espinosa *et al.*, 2014). In this setting, individuals living in countries with similar income inequality levels may be experiencing a different degree of well-being depending on the frequency and size of household equivalent income drops.

There is still little evidence on the impact of the Great Recession (GR) on disposable income mobility. Jenkins *et al.* (2013) have shown that, even if the response of employment to the fall in Gross Domestic Product (GDP) has been generally smaller during the Great Recession than in previous crisis, in some countries such as Ireland, Spain, and the US it has been unusually large relative to the fall in output. This paper investigates how and for whom the first years of the recession have had a significant effect on income instability in two of these countries. Our main contribution to the literature is to extend the empirical evidence within the income volatility approach to measuring economic insecurity arguing that, during a deep recession period, it may not be general volatility but actual income losses that are most likely to shape individual's economic insecurity perceptions.

During the recession, both the US and Spain have experienced very large drops in Gross Domestic Product (GDP) and Spain is the developed OECD country where income inequality has grown the most (OECD, 2014). Job losses in Spain since 2007 have been outstandingly large and have multiplied the unemployment rate by a factor of 3 while in the US they have been larger than in the average OECD country and during the worst period of the crisis (2007-2009) unemployment doubled. In the US, however, even if the drop in GDP was similar to that in Spain and unemployment was growing, income inequality was quite stable given that, differently from the Spanish case, income growth was strongly pro-poor. In a more general framework, both the US and Spain are of particular interest regarding the dynamics of household income. In the US individual economic insecurity linked to the prevalence of income losses has been proved to have grown importantly in the last decades (Hacker et al. 2010; Dynan et al., 2012). Spain has traditionally been identified as a country with particularly volatile disposable household incomes (Canto, 2000; Ayala and Sastre, 2008; Van Kerm and Pi Alperin,2013) and, even if to the best of our knowledge no approximations to the measurement of economic insecurity for Spain have been made, Van Kerm and Pi Alperin (2013) show that before the crisis the proportion of population losing more than 25 percent of income in a year's time in Spain was the highest in Europe (out of a group of 26 countries) while mean of relative income growth was very high too (the highest within the EU-15).

Our methodology focuses on the analysis of income loses and makes use of longitudinal data on incomes and individual and household characteristics from two comparable datasets: the Panel Survey of Income Dynamics (PSID) for the US and the EU-SILC panel for Spain. In a first step, we compare the dimension and nature of income mobility by calculating a variety of income mobility indices and Income Mobility Profiles (Van Kerm, 2009). Subsequently, to measure the dimension of insecurity we classify individuals as economically insecure if their disposable household income has dropped significantly during a two year period. We then characterize those that are more likely to suffer an income loss by estimating the probability of experiencing an income change versus remaining at a relatively similar level of income or suffering from an income loss versus enjoying an income gain.

Using an income instability approach we can incorporate country-specific differences that play as household income stabilizers through tax-benefit policies (e.g. unemployment benefits).

However, as in any empirical comparison, some other relevant differences in the institutional framework are left out of our scope.

The remainder of this paper is organized as follows. Section 2 is devoted to discuss the links between income losses and economic insecurity perceptions and positions our work within the relevant literature. Section 3 describes our methodology and details the data used. Section 4 presents a descriptive discussion of the evolution of inequality and intra-generational income mobility. Section 5 presents our main results and the last section concludes.

2. Income losses and economic insecurity

As Boarini and Osberg (2014) point out "economic insecurity is about the looming economic dangers that affect people's lives in many spheres, from the fear of losing's one's job to the anxiety of not being able to make ends meet" (page S1). In sum, insecurity would reflect the individual uncertainty about future economic losses guided by either observing what is happening to others or by the actual occurrence of an adverse event within one's household (job losses, death of main breadwinner, salary cuts, etc.). There is no unique agreed framework to define or measure economic insecurity and the literature is currently being developed. The dimensions of insecurity are varied: the actual income loss, the prospects to find a similar one (labor market functioning), the value of liquid assets or financial wealth to buffer low income episodes, the dimension and effectiveness of the tax and transfer system, etc. Alternative measures of insecurity focus on either one dimension of the phenomenon or construct multidimensional indices that weight the different dimensions and provide a composite measure of economic insecurity (Osberg and Sharpe, 2005).

A higher positional mobility implies a higher level of income uncertainty even if structural inequality is reduced (Jarvis and Jenkins, 1998; Jenkins, 2000; Jenkins and Rigg, 2001; Rohde et al., 2010 or Jäntti and Jenkins, 2013). This paper investigates the potential contribution of income losses to the changes in perceived economic insecurity in a period of recession and focuses on an individual level insecurity measure based on income dynamics. At the aggregate level we measure economic insecurity by calculating the proportion of population experiencing an adverse shock in household inflation-adjusted equivalent disposable income.[1] Some other studies have taken a *backward looking* approach to identify the economically insecure. For instance, Barnes and Smith (2011) consider different proxies for economic insecurity:

[1] In this sense our approach is similar to the Rockefeller's Foundation's Economic Security Index (see Hacker et al., 2010). However, we do not consider a spike in medical spending as a source of insecurity. Clearly, provided the large medical expenses in the US when some family member becomes ill may be a large source of insecurity. However, for a comparison with Spain (and many other European countries) where medical expenses are extensively covered by Social Security, this issue is difficult to include. Our results for the US should then be interpreted as a lower bound for the dimension of economic insecurity.

individual's unemployment probability using information from the last five years, individual's probability of experiencing an income loss pushing her beneath the poverty threshold (considering a 16-year detrended household annual income) or the number of annual real income drops that have exceeded a 10 percent. Rhodes et al. (2014), instead, use fifteen years of income information and identify as economically insecure those individuals in households whose relative income share over time has had a negative trend.

In contrast with these *backward looking* analyses, Hacker et al. (2014) identify as economically insecure individuals those whose disposable income has dropped more than a 25 percent while their liquid financial wealth cannot compensate this loss in a reasonable time.[2] Moreover, these authors have shown that the largest contribution to the level of insecurity and its upward trend in the US is the increasing chance of experiencing large drops in household income. We argue that in a deep recession when unemployment is growing rapidly a large disposable income decline is the crucial determinant of individual's *economic insecurity* perception. In this vein, we use income instability in a two year period to measure the dimension of economic insecurity and to identify the covariates that make an individual most exposed to it. Obviously, similarly to Rhode et al. (2014), we take a narrow definition of insecurity because we restrict our analysis to income volatility or mobility as a determinant of insecurity and thus ignore other sources of risk and the heterogeneous capacity of individuals to cover this risk through the use of previous wealth.[3] However, we are endogenously taking into account the role of two crucial sources of individual income stabilisation and protection against risk: the dimension and effectiveness of the tax and transfer systems and the household's demographic structure.[4]

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[2] These authors also include large increases of medical expenses as an additional source of economic insecurity.

[3] Unfortunately the Spanish dataset does not provide any information on individual or household wealth so that we cannot consider incorporating information any complementary information on household liquid financial wealth that could proxy the role of liquid financial assets in shaping individual economic insecurity if an income loss occurs. Given this restriction, for instance, our measure cannot account for the drop in asset prices during the first years of the Great Recession. A more relevant issue, however, is that we are not considering the potentially different capacity of American and Spanish households to use liquid financial wealth to cover their income losses. It has been largely documented, both for the US and Spain, that low income households hold a much lower level of financial wealth than middle or high income households (Azpitarte, 2011, 2012). Moreover, during a deep recession credit markets are often unavailable and, in general, household income has been consistently shown to be also positively correlated with the access of individuals to credit markets in order to cover any unexpected income shock (Japelli, 1990; Kempson 1996). In order to measure the potential relevance of not considering financial wealth or the functioning of credit markets on our insecurity measure we will examine the relationship between downward income instability and the level of household income in each country. If insecurity is significantly higher for low income households we will be more ready to assume that considering financial assets or credit options would make little difference in our comparison. If this is not the case we must bear in mind that our analysis should be complemented with some information on the distribution of financial wealth by individual and household characteristics in both countries.

[4] However, as D'Ambrosio and Rhode (2014) report, when comparing economic insecurity in any European country with the US the consideration of the diversity in the protection offered by the Welfare State against life cycle risks is to be acknowledged. Indeed, there are relevant non-monetary transfers that are not included in disposable income, as D'Ambrosio and Rhode (2014) put it: (when comparing the US and Italy) "Americans may need to save more and be richer in order to obtain the same level of security as…[their European counterparts]" given that entitlements to health and education services are private in the US as opposed to most European countries where they are publicly provided at a relatively low cost. In any case, all comparisons between countries will have to take this into account given that even within the European Union; there are large differences in the actual provision of certain health and

3. Methodology and data sources

3.1 A description of our methodology

In this this section we detail the different methodologies we will use in order to undertake all our comparative work. In a first step, given that we will measure economic insecurity as strongly related to income volatility we provide a discussion of the advantages and disadvantages of different measures of income mobility that could best capture the diffuse concept of economic insecurity. In particular, we discuss the interest in calculating some indices that account for mobility as time independence and income movement instead of others.[5] In this setting we claim that there is a need for some measure that accounts for income losses avoiding the consideration of income gains in order to approach economic insecurity. This leads us to propose an *ad-hoc* mobility measure that identifies individuals as insecure if their household income suffers from significant drop. Finally, using this identification strategy we study the differences in the demographic and socioeconomic characteristics of individuals that suffer from income losses in the US and Spain by estimating the probability of belonging to this group given a set of individual and family characteristics and controlling for the crucial "regression to the mean" effect. The econometric technique that allows for an adequate estimation of this probability is a two-level nested logit model and the details are described in the last part of this section. A relevant point is that this estimation procedure avoids assuming that errors are independently distributed by clustering similar individual into nests (movers versus stayers and, within movers, income losers versus income gainers).

3.2.1 Measuring income changes during the recession

If we have a society consisting of N individuals where the vector of incomes at moment t is $X = (x_1, x_2, x_3, \dots, x_N)$ and the vector of incomes some time later at t+1 (two years later in our empirical analysis) is $Y = (y_1, y_2, y_3, \dots, y_N)$. Any measure of income mobility in this society will aim to evaluate the main features of the changes in incomes in these two moments in time.

The literature aiming to analyze household income dynamics is large and has proposed many mobility measures that could be essentially divided into two groups.[6] The first group of measures focuses on the idea that the main determinant of individual's well-being is her relative

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education services so that individuals living in different countries (or even regions) would require higher earnings in order to be as secure as those living in others. In general, the Spanish Welfare State is classified within the Mediterranean/familial Welfare Regimes that are relatively small and significantly less generous than continental European Regimes or those in place in the Nordic countries. In fact, income support in Spain in case of income losses is particularly weak. Unfortunately, the different need for higher incomes in order to cover similar health entitlements or educational services in the US and Spain is much more difficult to assess.

[5] For instance, we will calculate Shorrocks' M index, Bartholomew's mobility index, the beta coefficient, the Hart index and Fields and Ok's main mobility index. We will not consider that indices that conceive mobility as an equalizer of long term incomes in order to would provide further insights to individual economic insecurity. We report standard errors for most of the statistics reported in the paper by using a standard bootstrapping procedure re-estimating each statistic on 1,000 samples.

[6] For a comprehensive and outstandingly complete review of conceptual and methodological issues related to mobility see Jantti and Jenkins (2013).

position in the income distribution[7] and answers the intuitive question on the dependence of the current situation on that of past moments. In general, this approach proposes the use of measures based on transition matrices and the notion of mobility considers the role of individual re-rankings within the distribution (*relative mobility*) as opposed to changes in individual income whatever is happening to the rest of the population (*absolute mobility*). The information provided by transition matrices may be synthesized in various indicators that essentially consider the values in the diagonal. Shorrocks (1978) synthetic mobility index, for instance, is:

$$M_s(A) = \frac{k - trace(A)}{k - 1}$$

where A is a transition matrix with k income classes. If we have a notion of mobility as "independence of the origin", this index's values range between 0 (minimum mobility) and 1 (maximum mobility). Thus mobility is at its maximum when the probability to move to any class is the same therefore the value of the matrix trace is one. In the opposite case, all individuals remain in the same class so that the trace is equal to the number of classes and the index value is zero. A disadvantage of this indicator is that it is insensitive to any moves that take place aside from diagonals. A complementary index that does consider movements out of the diagonal and incorporates some more information was proposed by Bartholomew (1973) and measures the "average jump". Bartholomew's index is equal to the number of income class boundaries crossed by an individual (whether upwards or downwards), averaged over all of them:

$$M_B = \sum_{i}^{k} \sum_{j}^{k} p_{i.}\, p_{ij} |i - j|$$

where p_{ij} is the value of the element in row *i* and column *j* and $p_{i.}$ is the marginal distribution of income class *i* in the first year of observation (if the first distribution is conformed in groups of an identical dimension then $p_{i.} = \frac{1}{k}$). This is multiplied by the distance between the two classes. Thus, it weights transitions by the number of classes the individual traverses in the income movement and then calculates an average. The index is the population average of absolute changes in fractional ranks (i.e. the individual position in the population normalized from 0 to 1). In the complete immobility case it takes the value zero and the higher its value, the higher the level of mobility (even if it does not have an upper limit).

The main criticisms to this approach are that in measuring mobility one does not make full use of the information at the individual level and, in the case of the indices based on transition

[7] This research topic is largely based on the seminal statistical work by Prais (1955) and Bibby (1975).

matrices, the role of income growth is ignored because they only measure re-ranking.[8] To amend some of this drawbacks another group of mobility measures, also stemming from an intuitive idea of the association between origins and destinations, use the correlation coefficient, the Spearman rank or the regression coefficient of log final to log initial income. Measuring mobility in this way has long been linked with the idea of equality of opportunity (and often also to the intergenerational transmission of advantage) and one of the most commonly used indicators is the estimated beta coefficient (β) in a linear regression such as the following: [9]

$$\ln y_i = \alpha + \boldsymbol{\beta} \ln x_i + \varepsilon_i$$

A natural mobility index would then be $(1 - \beta)$. A similar idea is captured by the Hart index (M_{Hart}) which is formulated as the complement of the correlation between different period's income (measured in natural logarithms). In the expression reported by Shorrocks (1993) this index is expressed as:

$$M_{Hart} = 1 - \rho(\ln x, \ln y)$$

where ρ is the correlation coefficient. Jäntti and Jenkins (2013) underline that ρ is a more suitable index than β as an (im)mobility index when undertaking cross-national comparisons given that ρ controls for differences in marginal distributions.[10] Jäntti and Jenkins (2013) note that a similar index to ρ, the Spearman rank correlation coefficient has the advantage of fully controlling for marginal distributions and thus focussing only on positional change.[11]

In any case, for many, economic insecurity is more of an absolute concept than a relative one so using an alternative methodology proposed by Fields and Ok (1996, 1999) makes the most of

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[8] Moreover, if the dimension of categories is relative to each distribution and defined at each moment in time, transition matrices do not allow for the measurement of directional mobility. That is, by definition in a decile transition matrix the same number of individuals move upward and downward.

[9] This modelling was first proposed by Galton in 1889 in order to study the inheritance of genetic characteristics and is obtained from a regression between the initial and final natural logarithms of incomes. If the slope of the previous regression coefficient is less than one we have the Galtonian regression towards the mean (i.e. on average, the better paid increase their income proportionally less quickly than the poorer paid, just as a totally spurious effect). In this setting we rule out the serial correlation in income and we also assume that transitory factors as general fluctuations either specific to individuals or a general fluctuation for everyone and thus not due to fluctuations of income that affect their particular percentile (i.e. no differences in the distribution of growth or contraction by percentiles). Also, population homogeneity of mobility is assumed as well as the independence of income at time *t* on income before time *t-1* (first order Markov assumption). Note that this approach conceives mobility as being related to both income growth and re-ranking so both absolute and relative mobility contribute to changes in incomes; however, it focusses on relative mobility.

[10] Indeed, this is the case because $\rho = \beta \frac{\sigma_1}{\sigma_2}$, where σ_1 the standard deviation of log income in the first period and σ_2 that of the second one.

[11] This is clearly an advantage when analysing intergenerational mobility. Note that D'Agostino and Dardanoni (2009) provide an axiomatic characterization of the Spearman rank correlation coefficient as a measure of exchange mobility.

the information on individuals' incomes in time by measuring mean absolute income growth. The distance of individual incomes in a given time interval reflects individual income instability in a way that can be directly associated with income fluctuation, unpredictability and, could be associated with economic insecurity. The index these authors propose fulfils a set of adequate axiomatic properties[12] and can be written:

$$M_{FO} = \frac{1}{N}\sum_{i=1}^{n}|\ln y_i - \ln x_i|$$

Note that this indicator is the average of the growth rates in individual incomes (weighting all individuals the same regardless of their base-year income [13]) and both upward and downward income changes contribute to increase mobility. The index can be decomposed in the sum of all proportional income gains and all proportional income losses corresponding to the area under the "non-anonymous GIC curves" (Grimm, 2007; Bourguignon, 2011) or Income Mobility Profiles (Van Kerm, 2009). [14]

3.2.2 Identifying directional income changes: income losses versus income gains

We believe that income volatility is likely to be good proxy of individual income insecurity and an absolute concept of mobility appears adequate to measure it. However, in Fields and Ok setting both income gains and losses contribute to the average income growth within each percentile, so that the number of individuals within a particular percentile that have either gained or lost income (in different quantities) is not explicitly considered once the average income change is determined to be either negative or positive. This is a clearly a problem when aiming to use income instability as a proxy of individual insecurity perceptions (as opposed to any aggregate social economic insecurity measure). A way out of this problem is to identify who in the population has effectively experienced an income gain or loss and evaluate their relative dimension in society or within the population with different levels of disposable income. For this purpose, we classify individuals as "mobile" if their income change between in a period of two years is larger than a given threshold (constructed as a percentage of their initial

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[12] One attractive property of this index is that it allows for a consistent additive decomposition into two components which can be interpreted as total social utility due to growth and total social utility due to transfers. The first component is an indicator of individual income growth that for a growing economy (i.e. $\sum y_i > \sum x_i$) is defined as G= $\frac{1}{N}\sum_{i=1}^{n} \ln y_i - \ln x_i$ while in a shrinking economy (i.e. $\sum y_i < \sum x_i$) it would be G= $\frac{1}{N}\sum_{i=1}^{n} \ln x_i - \ln y_i$. The second component is the dimension of mobility in terms on changes of income caused by transfers between individuals and can be defined as twice the amount lost by the losers (and, at the same time, won by the winners; because income lost by a loser is always gained by a winner).

[13] In fact, as Van Kerm and Pi Alperin (2013) underline, these measures consider a change from 100 to 150 as identical to a change from 1000 to 1500.

[14] In their recent work, Demuynck and Van der Gaer (2012) have provided some measures that allow for the consideration of the dimension of the income change building on Fields and Ok (1999) by incorporating the aversion for inequality of growth rates and allowing for different weights depending on the dimension of the change in individual income. This generally implies assuming some aversion to the inequality of growth rates but it is not straightforward that this is a better option than allowing for some weights related to the individual distributional rank in the first period as Jenkins and Van Kerm (2011) suggest (pro-poor growth) in their class of measures. However, still few advances have been made to provide empirical researchers with measures that incorporate income-reference dependence and loss aversion into mobility measures.

period's equivalent income level); otherwise they are labelled as "stayers". Subsequently, those who are "mobile" are fatherly classified into upward or downward mover.

As noted earlier, we are not only interested in measuring the dimension and the distribution of income losses during the recession, we also want to identify the main demographic and socioeconomic characteristics of those individuals experiencing income losses: Has age or the level of education a different role in predicting the probability of suffering an income loss in the US and Spain (e.g. youth or population at childbearing age vs. mature and old-aged individuals)? Do males face different income loss prospects than females in these two countries? Are families with children in a worst position than other households in terms of economic insecurity in both countries? To answer these and other relevant questions we model the probability of experiencing income an income change by estimating a nested logit two-level model following a similar econometric strategy to that in Cantó et al. (2012).[15] The main advantage of using this technique versus estimating a multinomial logit is that it allows the errors of the two alternatives (being a stayer or a mover and moving upwards or downwards) to be correlated.

We consider that any individual who experiences an equivalent income change of 10 or 25 percent between two moments in time is a "mover" (otherwise a "stayer"). In a first level of estimation, individuals can be movers or stayers, that is the possibilities are only two, $m = \{1, 2\}$. In a second level, those who actually move ($m = 1$) can move upwards or downwards and therefore can belong to two further groups: upward movers, downward movers, that is, $j = \{1, 2\}$. The remaining option at this second level ($m = 2$) only considers the possibility of being immobile so that we make no other distinctions. Thus, the probability that some individual in the population will suffer from an income loss (or gain) is p_{1j}:

$$p_{1j} = p_1 \times p_{j|1} = \frac{\exp(\lambda_1 I_1)}{\sum_{m=1}^{2} \exp(\lambda_m I_m)} \times \frac{\exp\left(x^{'}\beta_{1j} / \lambda_1\right)}{\sum_{k=1}^{2} \left(x^{'}\beta_{1k} / \lambda_1\right)}$$

where p_1 is the probability of being a mover and where $p_{j|1}$ is the probability of moving r downwards (or upwards) (*j)* conditioned on being a mover. In this last expression, $I_m = \ln\left\{\sum_{k=1}^{2} \exp\left(x^{'}\beta_{mk} / \lambda_m\right)\right\}$, $x^{'}$ is the vector of individual characteristics, β_{mk} are the parameters associated with typology k y λ_m is the dissimilarity parameter that allows for adjusting for the correlation of the errors of individuals in the same group. In our particular case

[15] See Hensher et al. (2005) for more details on the econometric estimation of these models. Nested logit models relax the assumption of independently distributed errors and the independence of irrelevant alternatives inherent in conditional and multinomial logit models by clustering similar alternatives into nests.

one branch (being a stayer) does not have any other further options so it is degenerate and its dissimilarity parameter is equal to 1. If the other branch's dissimilarity parameter is not significantly different from 1, then the correlation of the errors would be zero and the model could be estimated using a multinomial logit. For the correct identification of the model we must choose a reference alternative (e.g. being a upward mover) and fix its coefficients equal to zero, so we can estimate the probability of experiencing an income loss as opposed to experiencing an income gain. As explanatory variables in our regressions we have included both individual and household covariates: gender, age, level of education achieved, individual job attachment (never worked, in work before income dropped, in work only after income dropped, working at both moments in time), household demographic structure (percentage of children below 3, between 3 and 6 or between 6 and 18 years of age, percentage of household members over 65 years of age), the household attachment to the labour market (number of household members over 25 years of age that are in work) and the position of household equivalent income in the distribution (household disposable income percentile) to control for the relevant "regression to the mean" effects.

3.2 Data sources

Our data for the US come from the Cross National Equivalent File (CNEF). These data are based on the information from the US Panel Study of Income Dynamics (PSID).[16] The CNEF is a multinational longitudinal micro-database distributed by Cornell University that provides nicely harmonized survey information for a variety of world panel datasets. In particular, it contains information on post-tax post-transfer household income for the US that is largely comparable to household disposable income elsewhere.[17] The data for Spain come from the Survey of Income and Living Conditions (EU-SILC Longitudinal Survey), a four-year rotating panel survey that has been running since 2004 for a large number of EU member countries. By using CNEF and EU-SILC we can be most sure that our main variable (equivalent household disposable) is largely comparable. Unfortunately, using CNEF data implies a delay in data delivery that has prevented us from comparing both countries in the period 2008-2010.[18]

Household disposable income is the sum of the components of gross personal income for all household members minus taxes and social security contributions (employee and employer).

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[16] The Panel Study of Income Dynamics (PSID) is a longitudinal panel survey of American families, conducted by the Survey Research Centre at the University of Michigan since 1968. The information of the first respondent and their descendants has been collected continuously, including data covering employment, income, wealth, expenditures, health, marriage, childbearing, child development, philanthropy, education, and numerous other topics.

[17] For more details on this dataset see Burkhauser et al. (2001) or, more recently, Frick et al. (2007).

[18] An option here would be to use the information on disposable income from the Survey of Income and Program Participation (SIPP). However, the SIPP data on household incomes are recorded monthly from individual quarterly interviews while the EU-SILC and the PSID longitudinal surveys rely on annual interview information with an annual record. Moreover, as Hacker et al. (2014) note the SIPP short term panels have a large gap in 2008 and miss the spike of job losses in 2008.

For the US our household disposable income measure is "Household Post-Government Income" which is post-tax, post-transfers and sums all household members' labor and self-employment earnings, flows of income from financial assets and pensions, private and public transfers, the imputed rental value of owner-occupied housing and any other income sources minus taxes and employee social security contributions.[19] For Spain we use a very similar post-tax, post-transfer income measure. Household income in this case includes cash or near-cash employee income, non-cash wage income, profits or losses from self-employment (including intellectual property rights), interests, dividends and capital gains from investments in companies, imputed rent (minus mortgage interest payments and property tax), value of goods produced for own consumption, unemployment benefits, retirement pensions, survivors pensions, disability pensions, regular monetary transfers between households and income from educational grants.

Both the PSID (and thus the CNEF) and the EU-SILC surveys collect information on individual and household incomes during the calendar year prior the interview at which demographic and socioeconomic information are obtained. However, since 1997 PSID data are only available in a biennial pattern, at the time of writing the latest surveys available for the US are: 2005, 2007 and 2009 (i.e. incomes of 2004, 2006 and 2008 calendar years). Therefore, our analysis on the comparison of both countries will focus mainly on the period from 2004 up to 2008.

Since the same level of household income may lead to different levels of living standards depending on household size and composition, the way we choose to correct these differences is standard. We use an equivalent scale (OECD - modified equivalence which assigns a value of 1 to the first household member, of 0.5 to each additional adult (15 or over) and of 0.3 to each child aged 14 or younger) so that individual equivalent disposable income is total household income divided by the household corresponding factor. In addition, as it is usual in dynamic analysis the income distribution tails are trimmed for robustness, 1 percent of the observations at each tail are dropped and data are then a balanced sample of those annual distributions (Cowell and Victoria-Feser, 2006). This implies losing approximately a 5 percent of the Spanish sample and a 10 percent of the US one. Further, all absolute values of incomes for the US are expressed in constant 2011 dollars using the CPI-U of the Bureau of Labor Statistics and for Spain they are expressed in 2011 euros using the Consumer Price Index (*Instituto Nacional de Estadística*, INE) making income of different years directly comparable.

[19] Household income was computed as the sum for all household members earnings (wages, salaries, and self-employment income), income from interests and dividends, rents, royalties, estate, and trust income, retirement pensions, veterans' payments, survivor pensions, disability pensions and annuities, realized capital gains (losses), educational assistance, child Support, alimony, regular contributions from persons not living in the household, money income not elsewhere classified, unemployment compensation, workers' compensation, educational assistance, imputed return to home equity on owner-occupied housing. The taxes deducted include Federal income taxes after refundable credits except EIC, State income taxes after all refundable credits, Payroll taxes (FICA and other mandatory deductions).

Some differences in the structure of the surveys imply that there are some limitations in their comparability. The main differences are centered in the definition of a "household" and the two-year attrition. The definition of "household" in both surveys is not identical and this may affect the value of our main income indicators when estimating individual living standards. The EU-SILC survey defines "household "as the person or group of persons who live together in the same house and consume or share food and other goods under the same budget. In contrast, the definition of "household" in the PSID is similar to that of the Current Population Survey (CPS), it includes persons related by blood, marriage or adoption, thus including those who have parenting relationship, co-singles (the opposite sex) and other related persons (can be the same sex). In turn, it does not consider as "households" individuals who are unmarried partners or foster children. In this setting the dimension of the "household" will be expected to be larger in the Spanish survey in comparison with the US one just as an effect of the survey's definition. The expected consequence of this difference on our main income variable is that we will be assuming larger economies of scale in Spain than in the US for those households where blood non-related individual cohabit.[20]

A further difference between both surveys is the dimension of attrition between the two moments incomes are observed. The Spanish survey is obtained from EU-SILC longitudinal Survey and is a four-year rotating panel so one quarter of the sample is dropped each wave and this is to be added to natural panel attrition.[21] The PSID sample suffers only from natural attrition but no individual or household is dropped due to panel structure. As one would expect attrition is even larger in the Spanish sample if one uses a biennial structure of the panel. In fact, in a biennial panel between 2006 and 2008 one observes 37 percent fewer individuals than if the two moments in time were distant one year only (2007 instead of 2008).[22] However, the Spanish Statistical Office provides us with longitudinal weights in order to take into account the potential bias that a rotating panel and natural attrition may impose, we use these weights in all calculations.[23]

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[20] In order to check the relevance of this difference we have avoided assuming any economies of scale by considering that "per capita household disposable income" is an adequate measure of individual living standards. We have found that results are largely robust to this change. We have also checked the robustness of results to using the square root of the number of household members instead of a modified OECD equivalence scale.

[21] According to the Commission Regulation on sampling and tracing rules (EC No 1982/2003, §7.4): *Weighting factors shall be calculated as required to take into account the units' probability of selection, non-response and, as appropriate, to adjust the sample to external data relating to the distribution of households and persons in the target population, such as by sex, age (five-year age groups), household size and composition and region (NUTS II level), or relating to income data from other national sources where the Member States concerned consider such external data to be sufficiently reliable*. See Eurostat (2010) for more details on EU-SILC longitudinal weights.

[22] See Tables A1 and A2 in the Appendix for details.

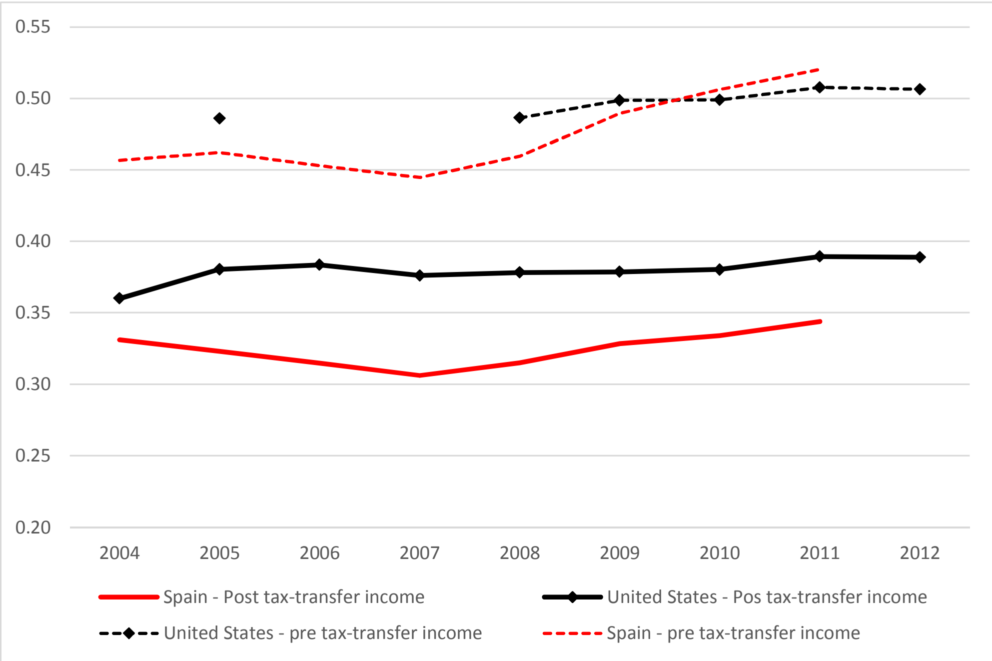
[23] We have checked that our main results for Spain still hold using a one year panel even if we are unable to make any comparisons with a similar time span for the US given the biennial interview structure of the PSID.

4. Income inequality trends and intra-generational mobility in the US and Spain

4.1 Explaining recent inequality trends in two "high inequality" developed countries

The level of inequality of disposable income in the United States has been traditionally high in comparison with that observed in many other developed countries and higher than the OECD average. This appears to be a result of a process that has been taking place since the early 1980s. One of the main characteristics of the US income distribution is the large distance between the bottom and the top driven by the growing share of top-income recipients in total gross income.[24] Spain, has also traditionally been within the group of developed countries with a high level of disposable income inequality but the distance between the bottom and the top of the distribution seems to be driven more by a significant difference between the bottom and the rest.

Figure 1. Inequality trends in the US and Spain (Pre-tax-transfer and Post-tax-transfer Gini index).



Source: OECD, StatsExtracts, information extracted in October 2014.

As depicted in Figure 1, post-tax and transfers inequality in the US is persistently higher than in Spain even if the Great Recession seems to have had little effect on it until 2010.[25] Since 2005, US inequality has been remarkably stable and it only increased in the last two years scaling to the fourth position within highest of the OECD, only below Chile, Mexico and Turkey (OCDE,

[24] In 2012, for instance, the S90/S10 ratio shows that the average income of the richest 10 percent is 16 times that of the poorest 10 percent, while the OECD average is 9.6. Moreover, in the last decades the share of top-income recipients in total gross income in the US has grown significantly, more than anywhere else in the OECD: the share of the richest 1 per cent in all pre-tax income more than doubled since 1980, reaching almost 20 percent of total incomes in 2012.

[25] Household market incomes in the US grew in the 2006-2008 period and then fell a 5% in real terms between 2008 and 2010. This fall is slightly larger than the OECD average (4.2 percent) and also larger than that registered in Spain in the same period when net national disposable income fell a 3% (OECD, StatExtracts).

2014). In contrast with the US, Spain has been the OECD country where gross income inequality has had the greatest increase since the outbreak of the crisis: the Gini coefficient of market income has increased eight points, compared to the five points registered in Ireland and Greece or three points in Estonia. In terms of disposable income Spain has also been the country where inequality has grown more (four percentage points) and, as a consequence, it is now Eurozone country with the highest level of inequality (the Gini index has reached 0.344; significantly over the OECD mean, 0.31 that year). This negative evolution of inequality in Spain has been essentially the result of a large drop in the incomes of the poorest (a large jump upwards in pre-tax and transfer incomes that found little cushion in the taxes and transfers system) that has made the average income of the richest decile be 14 times that of the poorest (Ayala, 2013).[26]

In order to link income inequality trends to income mobility patterns, we have constructed Growth Incidence Curves (GIC)[27] and we have decomposed inequality changes into income growth and re-ranking drawing on the methodology proposed by Jenkins and Van Kerm (2006). Subsequently, we also calculate income mobility measures and check the role of income instability at different points of the income distribution by constructing Income Mobility Profiles, a particularly useful graphical device proposed by Van Kerm (2009).

Our results on biennial household income inequality using longitudinal data sources are consistent in their trend with cross-sectional results on inequality elsewhere.[28]. Indeed, they show that during the first years of the crisis, post-tax and transfer income inequality was increasing in Spain while in the US it was stable or had a slightly falling trend (see Table 1). Growth Incidence Curves (GIC) in Figures 2 and 3 suggest that the increase in income inequality in Spain when mean disposable incomes were falling is related to a relatively larger drop in the incomes of those at the bottom of the distribution making the GIC curve have a clearly positive slope.[29] On the contrary, in the US the small decrease in inequality is related to a relatively larger improvement in the incomes of the poor compared to those of the rest of the population (pro-poor growth) making the US GIC curve have a pronounced negative slope.

However, as Jenkins and Van Kerm (2006) underline: “Greater equality in final year incomes is guaranteed only if the pattern of income growth does not lead to re-ranking of individuals

[26] In fact, from 2007 onwards the income inequality trends in Spain are quite different from those in another bubble bust European country such as Ireland. Even if Irish household disposable income fell 2 percentage points more than in Spain in the three years following the beginning of the crisis; the distributional impact on poorer households and thus on inequality was substantially different in the two countries. The evolution of the S90/S10 ratio shows that the average income of the richest 10 percent grows strongly in Spain and in 2011 is almost 14 times that of the poorer 10% while in Ireland this ratio falls between 2010 and 2011 and reaches a much more modest amount of 7.7.

[27] The GIC curve shows the rate of income growth of the pth quantile of the distribution. The distributional impact of growth is thus represented through the inverse of the cumulative density functions.

[28] The Gini index for Spain (v=2) is slightly lower than those obtained using cross-sectional EU-SILC data.

[29] Growth Incidence Curves (GIC) were proposed by Ravallion and Chen (2003).

between the two years that is sufficiently large to offset the progressive income growth". Decomposing inequality changes into a pro-poorness and a re-ranking component (see Table 1) allows us to explain how mobility contributes to different inequality trends.

Table 1. Income inequality change (Gini coefficient) and its decomposition, Spain and the US (2004-2010)

	Period 2004 -2006		Period 2006-2008		Period 2008 -2010	
Initial Gini	0.313 (0.002)	0.357 (0.003)	0.289 (0.002)	0.382 (0.003)	0.293 (0.002)	-
Final Gini	0.300 (0.002)	0.384 (0.003)	0.294 (0.002)	0.363 (0.003)	0.313 (0.002)	-
Change Gini	-0.013 (0.002)	0.027 (0.003)	0.005 (0.002)	-0.020 (0.002)	0.019 (0.002)	-
Re-ranking component	0.107 (0.003)	0.087 (0.003)	0.097 (0.003)	0.076 (0.002)	0.102 (0.003)	-
Pro-poorness component	0.120	0.060	0.091	0.096	0.083	-

Source: Authors own calculations using US PSID-CNEF and EU-SILC longitudinal data for Spain.
Note: See Jenkins and Van Kerm(2006) for details of the decomposition of the change in S-Gini. Bootstrap standard errors are obtained for a 1,000 replications and are reported below estimates in brackets.

Results in Figure 2 show that, in the case of Spain at the beginning of the crisis (2006-2008), negative income growth (income losses) was more concentrated among the poor.[30] If we check the decomposition of income inequality trends in this country into a re-ranking and a progressivity component (Table 1), we consistently find that what happened is that the re-ranking component was quite constant but the pro-poorness component dropped significantly as the crisis evolved, therefore re-ranking could not offset the regressive nature of income growth and, consequently, inequality increased. In the case of the US in that period, as Figure 3 shows, income growth was positive and strongly pro-poor. The decomposition shows that in the case of the US the equalizing effect of this pro-poor growth grew at the beginning of the crisis and the re-ranking component fell so these two changes made inequality decrease. In the following years (2008-2010) Spanish inequality rose even more because even the re-ranking component was stable, the pro-poorness component decreased significantly.

[30] If income growth between two moments in time is negative, as it is the case in Spain, income losses are pro-poor if they are relatively more concentrated in the highest part of the distribution.

Figure 2. Growth Incidence Curves (Spain 2004-2010).

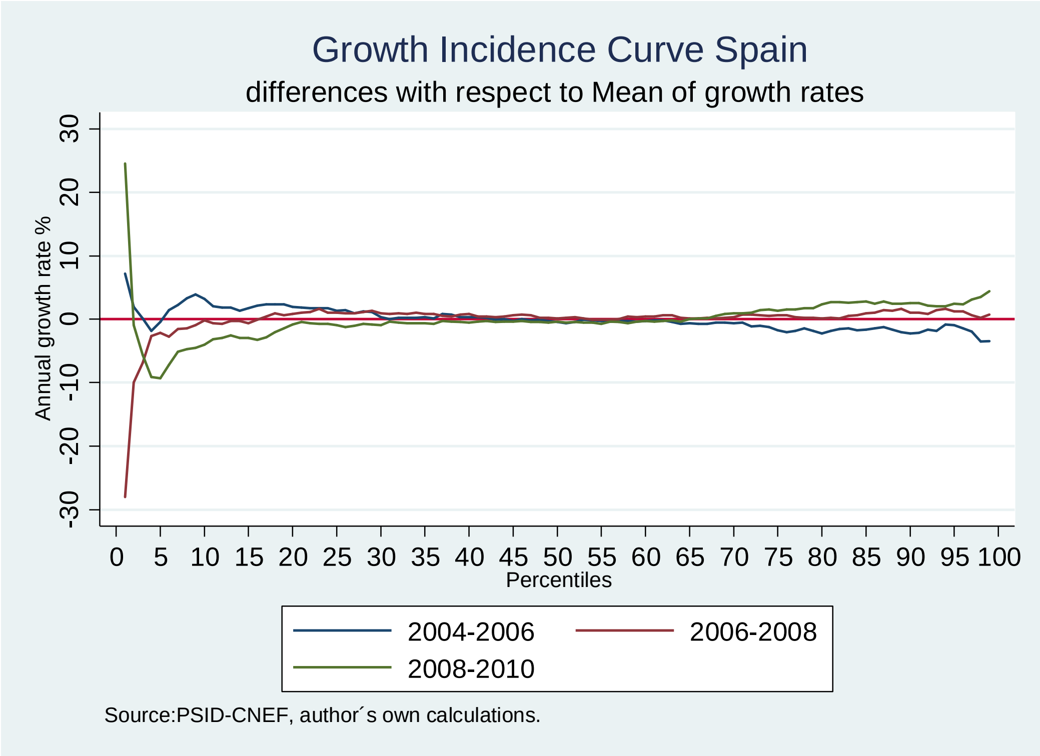
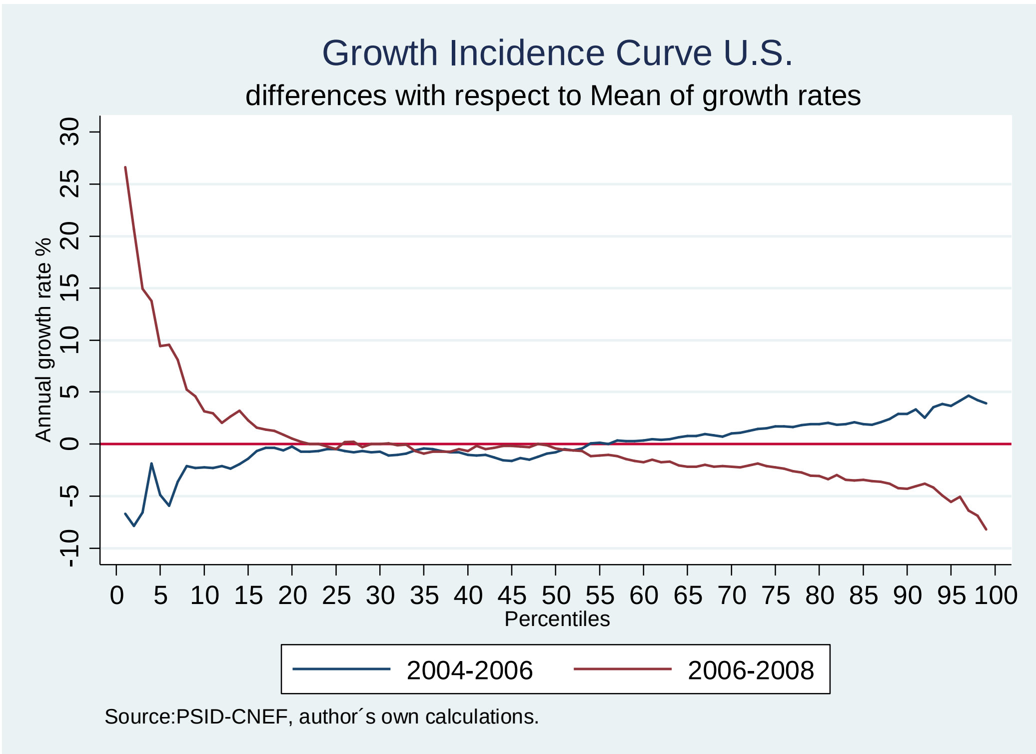


Figure 3. Growth Incidence Curves (US 2004-2008).



4.2 What has been the level of intra-generational income mobility in the US and Spain in past decades? What is happening during the recession?

The evidence on US income mobility in past decades is large even if empirical conclusions are somewhat mixed. A variety of papers with different methodologies, income definitions and time intervals conclude that the level of income mobility in the US for the 1980s and 1990s was generally below that of other developed countries (Burkhauser and Couch, 2009; Jäntti and Jenkins, 2013). This would be a result of an absence of relevant changes in intradistributional income mobility during the 1960s, 1970s and 1980s (Hungerford, 1993; Gittleman and Joyce, 1999) and a reduction of the probability of re-ranking during the 1990s (Hungerford, 2011; or Bradbury, 2011). Thus, for the US most relative mobility indexes are significantly smaller in the 1995–2005 decade than in previous times, suggesting that interpreting mobility as a change in the relative position of individuals in the income scale, disposable incomes in the US are more stable now than they were before. [31] However, if one chooses to use measures that conceive mobility as the absolute distance between individual incomes at two moments in time (clearly more associated with an idea of mobility as economic insecurity, Fields and Ok, 1999), there has been a significant increase in the variance of disposable US household incomes while the probability of re-ranking was diminishing. Thus, from an absolute point of view, disposable incomes in the US are now less stable than they were in previous decades.[32]

In the Spanish case, Cantó (2000) and Ayala and Sastre (2008) have reported that in comparison with other developed countries, income mobility interpreted as a change in the relative position of individuals is relatively high. The occurrence of changes in relative position in the distribution grew during the second part of the 1980s, fell slightly at the beginning of the 1990s during a short recession and increased back again in the last years of that decade. However, in contrast with the US, household income variance or instability in Spain appeared to be continuously falling towards the end of the century. Little is known about the impact of the recession on mobility in Spain.[33]

To provide a sound comparison of income mobility for the US and Spain we have calculated transition matrices and a variety of income mobility indicators theoretically introduced in

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[31] Also, interpreting income as a way of equalizing incomes in time more than as a change in the relative position of individuals in the income scale, recent evidence in Bayaz-Ozturk et al. (2012) shows that mobility in the US was largely stable until the mid-80s, then grew until the end of the last century and fell and subsequently up until 2006.

[32] This implies that the individual perception of the level of economic insecurity has grown. In fact, a large literature on the growth of income volatility in the US has emerged in the last decade showing that this seems to be the case (see for instance Hacker et al., 2010).

[33] Some preliminary evidence on Spain in Bárcena and Moro (2013) appears to suggest that together with the fall in mobility interpreted as a change in the relative position of individuals, income instability has also increased.

section 2.2. Results appear in Tables 2 and 3.[34] Regarding the dimension of income mobility our first results suggest that mobility as positional change is larger in Spain than in the US both before and during the crisis: Shorrocks' M index and Bartholomew's mobility index are consistently larger in Spain than in the US. Comparing our results with previous evidence for these countries it appears that the recession period seems to have either maintained or pushed the level of positional income mobility slightly downwards.[35] Further, if an income change occurs, its dimension is somewhat smaller than before the recession in any of the two countries: the value of Bartholomew's index drops.

Table 2. Income Mobility in the US and Spain (2004-2010)

Period	2004 -2006		2006 -2008		2008 - 2010	
	Spain	US	Spain	US	Spain	US
Shorrocks M index	0.816 (0.005)	0.751 (0.005)	0.791 (0.005)	0.731 (0.005)	0.791 (0.006)	-
Bartholomew's Mobility Index	1.734 (0.021)	1.375 (0.017)	1.633 (0.020)	1.292 (0.015)	1.595 (0.019)	-
Hart (1976) mobility index	0.400 (0.009)	0.308 (0.008)	0.445 (0.012)	0.280 (0.008)	0.482 (0.015)	-
Hart Index with Spearman no weights	0.359 (0.006)	0.245 (0.004)	0.335 (0.006)	0.225 (0.004)	0.308 (0.005)	-
Beta Index (1-β)	0.370 (0.011)	0.370 (0.010)	0.526 (0.015)	0.207 (0.010)	0.493 (0.023)	-

Source: Authors' calculations using US PSID-CNEF and EU-SILC longitudinal data for Spain.
Note: Bootstrap standard errors are obtained for 1,000 replications and are reported below estimates in brackets.

Similarly, if one conceives mobility as the association between origins and destinations we find the correlation of individual income between two moments in time, mobility is also sensibly larger in Spain than it is in the US suggesting that there is more time dependence of incomes in the US (both using the correlation coefficient or a Spearman rank correlation coefficient). Interestingly, the experience of both countries during the recession appears to be different. In Spain income in moment t is less correlated with that of moment t-1 during the recession than it was before, while this is not the case in the US. Therefore, mobility conceived as income instability grows in Spain and falls slightly in the US as the recession evolves, even if rank mobility is falling in both countries.

[34] See also detailed transition matrices in the Appendix, Table A3.

[35] This implies that the probability that individuals change decile drops as the recession evolves.

Table 3. Absolute income mobility, Fields and Ok (1996, 1999), US and Spain (2004-2010)

	2004 -2006		2006 - 2008		2008 - 2010	
	Spain	**US**	**Spain**	**US**	**Spain**	**US**
Total Mobility:	**0.376** (0.004)	**0.398** (0.005)	**0.365** (0.005)	**0.375** (0.005)	**0.401** (0.006)	-
Transfer component:	0.303 (0.006)	0.353 (0.007)	0.336 (0.009)	0.334 (0.007)	0.341 (0.009)	-
Growth component:	0.073 (0.006)	0.045 (0.006)	0.029 (0.007)	0.041 (0.006)	0.060 (0.008)	-

Source: Authors' calculations using US PSID-CNEF and EU-SILC longitudinal data for Spain.
Note: Bootstrap standard errors are obtained for 999 replications and are reported below estimates in brackets.

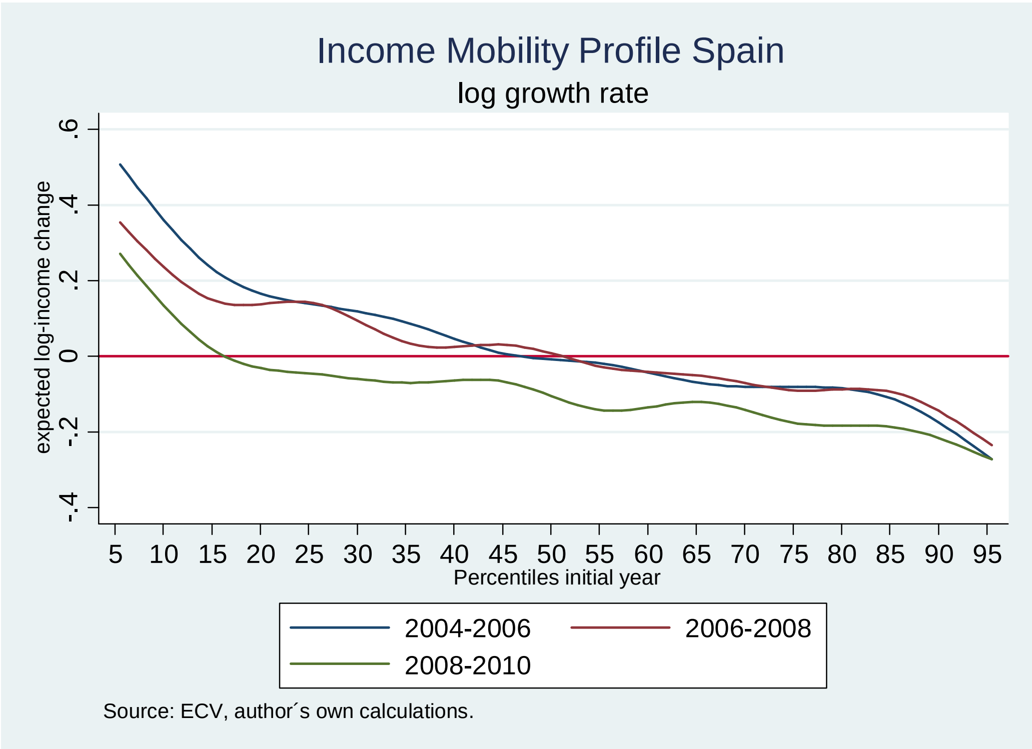
Considering an absolute concept of mobility and focusing on the dimension of individual income changes, the Fields and Ok's mobility index shows that both countries have a similar level of mean absolute growth (or absolute distance of individual incomes between two moments in time) (see Table 3). In fact, mean absolute growth is surprisingly similar in both economies, meaning that, even if positional mobility and time independence is consistently larger in Spain than in the US, total individual income volatility is quite similar. Absolute mobility trends differ in both countries because in the US index falls while the Spanish one has a stable trend at the beginning of the crisis but increases from 2008 onwards. This suggests that from an individual point of view, the absolute dimension of mobility or income instability is growing in Spain and falling in the US. Decomposing this index into a transfers and income growth component suggests that, in both countries, the role of transfers from one person to another is much larger than that of economic growth or contraction (ninety percent of absolute income growth comes from income exchanges between individuals not from income growth or contraction).

In order to consider mobility patterns along the whole income range we complement the previous decomposition results with some Income Mobility profiles that track the fortunes of the same individuals over time and present them in a largely self-explanatory graph.[36] Figures 4 and 5 plot income mobility profiles for the US and Spain and show that they are all negatively-

[36] We have constructed Income Mobility profiles by calculating the mean income growth for individuals in a given percentile. In the x-axis we rank individuals by their position at the first period and on the y-axis we plot mean income growth for their first period percentile. This is intuitively similar to what Van Kerm (2009) proposes as a non-anonymous measure of income mobility. The mobility profile plots the expected individual mobility conditionally on a person's position in the base period distribution. In other words, separate mobility levels are estimated for each position in the initial income distribution, and the resulting mobility profile is plotted to obtain an evocative picture of the repartition of mobility levels across different parts of the distribution. In our case we replace de quartile function, for a inter-quantile mean of log growth function.

sloped[37]: during the crisis individual income changes in both countries have been progressive so that the lower the percentile an individual is found to be in the first year, the larger the expected income growth she will achieve.[38] However, given the impact of "regression to the mean" the most interesting message from these profiles is that, in general, slopes are significantly steeper in the US than in Spain, so income growth is more progressive there. Moreover, income mobility profiles' slopes tend to decrease in Spain as the recession evolves while the opposite seems to be the case in the US, at least up to 2008. Thus, as the crisis persists, and contrary to what we observe in the US, the progressivity effect of individual re-ranking in Spain has been consistently fading away. Note however that this is particularly visible in we compare results for 2006-2008 with those for 2008-2010, unfortunately we have no information for the US to compare them with those for Spain.

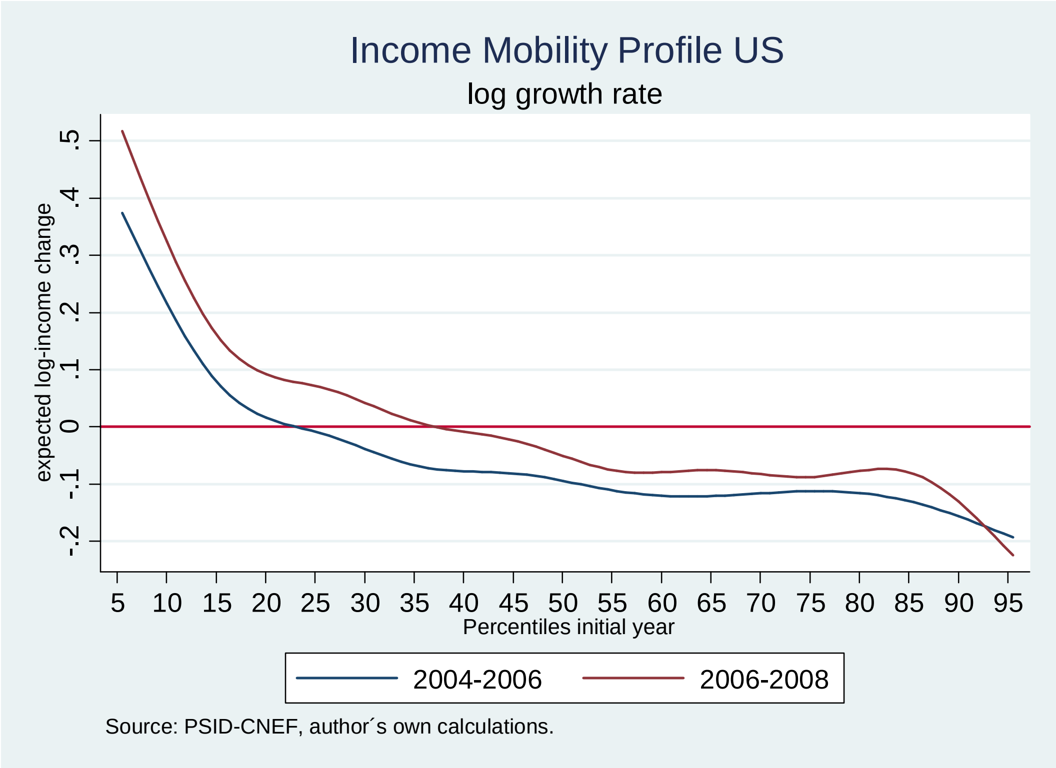
Figure 4. Income mobility profiles (Spain 2004-2010).



[37] Recent evidence on the UK shows that these profiles can also be negatively sloped (Jantti and Jenkins, 2013).

[38] Note here that, as the authors explain, the negative slope of the Income Mobility Profiles could be largely determined by the "regression to the mean" effect so that the main interest of these plots is the discussion of changes in the position or in the curves' slopes.

Figure 5. Income mobility profiles (US 2004-2008).



5. Income gains and losses and the demographic and socioeconomic characteristics of the downward mobile

Our previous results seem to suggest that if we follow an income volatility approach to measuring insecurity, social income insecurity during the recession would have fallen given that relative mobility is smaller. However, relative mobility measures do not consider the actual individual experience of income changes. Indeed, as we have also seen in the last section, the dimension of mean absolute income growth has increased in Spain while relative mobility was falling. As we have previously argued, an income volatility approach is a good approximation to the measurement of economic insecurity as long as it captures the dimension of individual income losses instead of a summary of income instability in a given society. We believe that individual losses or gains are most likely to be shaping individual's economic insecurity perceptions. In this section we focus on absolute mobility and directional changes in incomes (upward or downward) and argue that they provide relevant information on the contribution of mobility to economic insecurity perceptions. Thus, in order to account for this contribution we calculate the prevalence of income losses and then we also characterize individuals more likely to suffer a downward income change in the US and Spain and compare them.

4.1 How much upward and downward mobility is there?

Results on upward and downward mobility are presented in Table 4 and indicate that in both countries slightly over 2/3 of the population experienced some income change over a 10% of their previous income and almost half the population experienced an income change of a 25% in any two year period. In this simple approach the dimension of the impact of downward income mobility on society would be the ratio between the number of individuals who experienced an income loss and the whole population. As we can see, the relevance of income losses as opposed to income gains is approximately half but it fluctuates importantly depending on the period of time. In Spain, the largest incidence of income losses on the population occurred between 2008 and 2010 (41.3 percent of the population suffered a fall of 10% and 27.5 percent suffered an even larger one of 25%) while, interestingly, during the first years of the recession the number of downward moves had been remarkably similar to that of a couple of years earlier. In the US, the largest incidence of income losses occurred just before the crisis (39.1 percent of the population suffered a fall of 10% and 26.5 percent suffered an even larger one of 25%) while in the first years of the recession a larger percentage of individuals in the population had income gains instead of income losses.

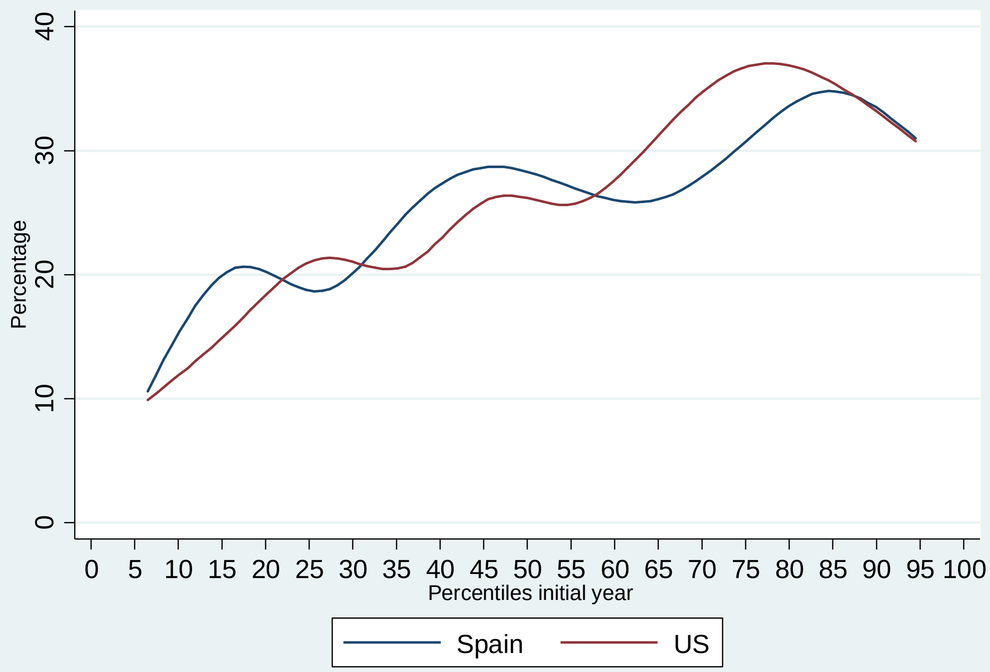
Table 4. Movers upwards and downwards and stayers, US and Spain (2004-2010)

Period	2004 -2006		2006 -2008		2008 - 2010	
	Spain	US	Spain	US	Spain	US
Change of income 10%						
Movers	**76.21**	**74.56**	**73.66**	**73.67**	**73.39**	**-**
Upward movers	43.21	35.45	42.96	38.80	32.04	-
Downward movers	33.00	39.11	30.69	34.88	41.36	-
Stayers	**23.79**	**25.44**	**26.34**	**26.33**	**26.61**	**-**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**-**
Change of income 25%						
Movers	**49.22**	**50.27**	**46.44**	**47.27**	**47.20**	**-**
Upward movers	29.05	23.19	27.25	25.40	19.70	-
Downward movers	20.17	26.54	19.20	21.87	27.50	-
Stayers	**50.78**	**49.73**	**53.56**	**52.73**	**52.80**	**-**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**-**

Source: Authors' calculations using US PSID-CNEF and EU-SILC longitudinal data for Spain.

Accounting for the contribution of income mobility to economic insecurity using an income volatility approach that captures the dimension of individual experiences we can see that downward income changes only increase in Spain while in the US they are constant or even decrease in the first years of the crisis, this is consistent with the results from Fields and Ok mobility index that showed an increase in absolute income changes for Spain in the 2008-2010 period. Thus, using the prevalence of income losses as a proxy for economic insecurity we conclude that during the first years of the recession society's income insecurity levels were quite stable in Spain and even fell slightly in the US. From 2008 onwards, insecurity levels have grown significantly in Spain increasing the number of downward moves in more than a 30% (the number of individuals suffering a 25% downward move changed from 19.2 to 27.5).

Figure 6. Percentage of "stayers" by initial period percentile (2006-2008). 10% income change threshold



Source: EU-SILC and PSID-CNEF, author´s own calculations.

25% income change threshold

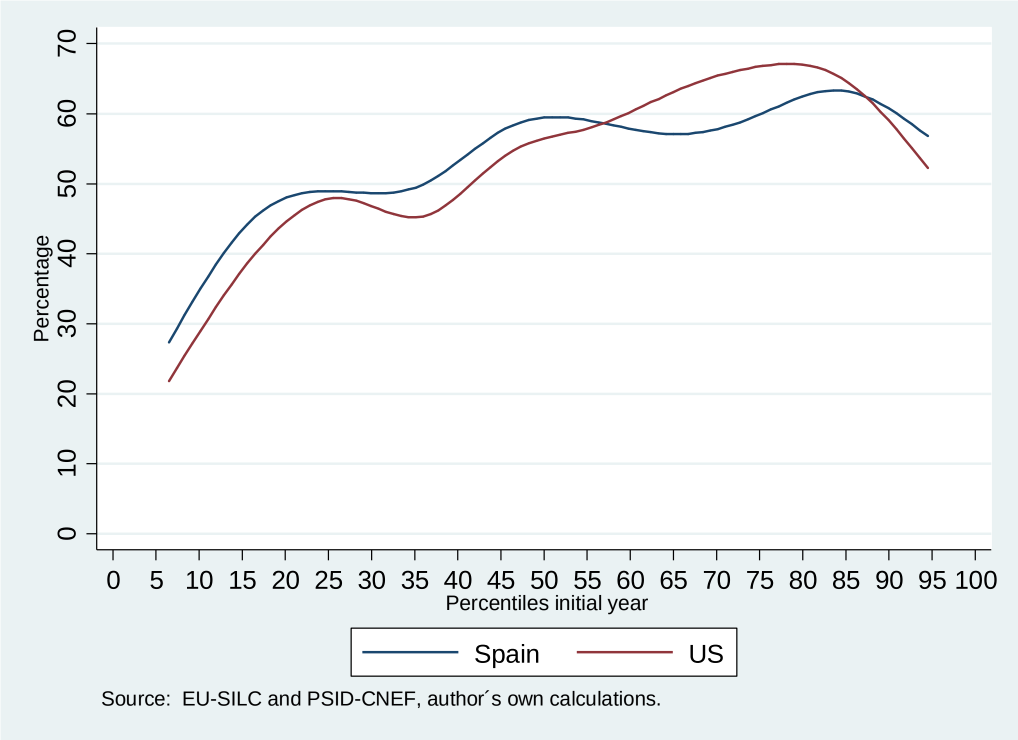
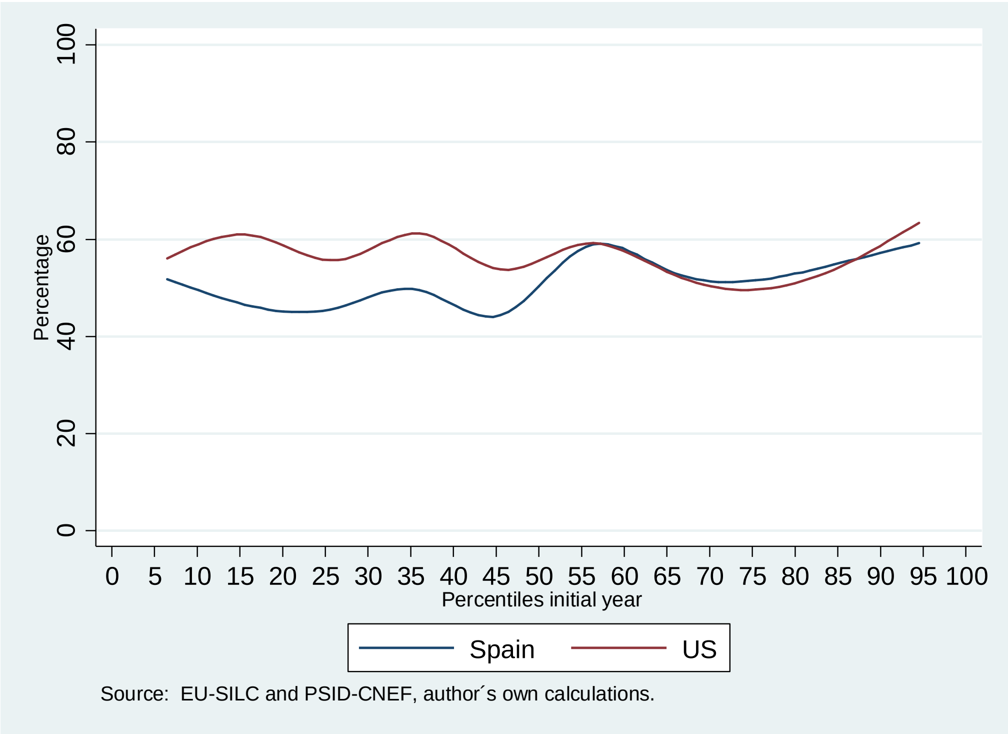
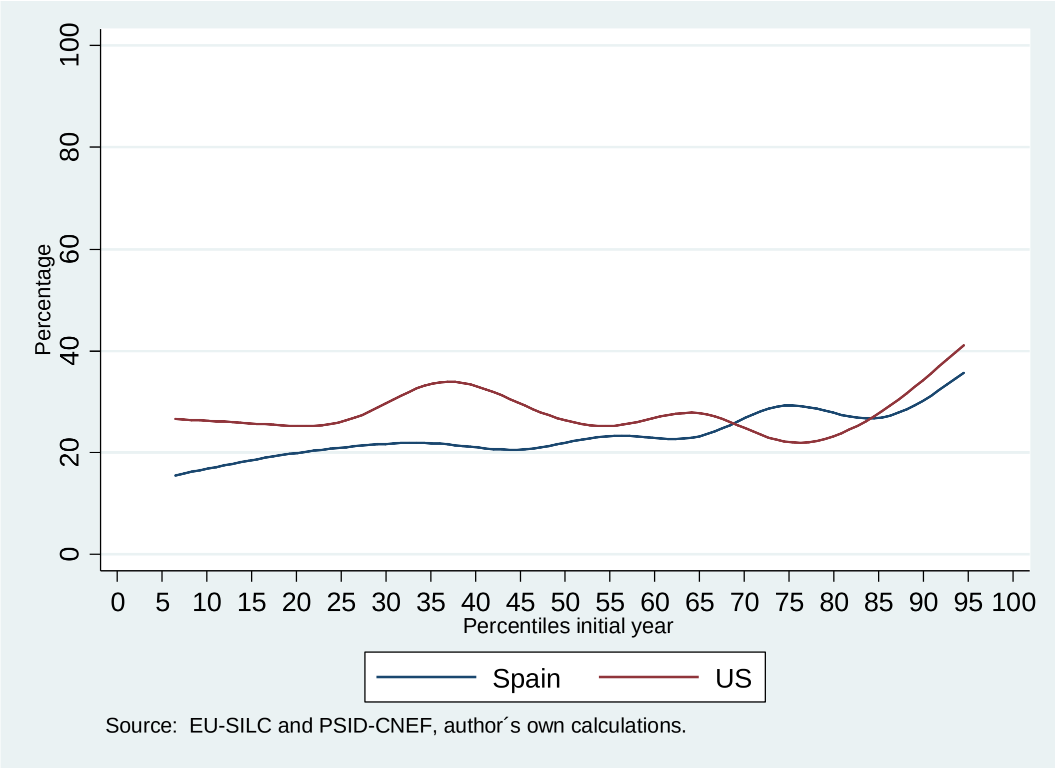


Figure 7. Percentage of Downward Movers by initial period percentile (2006-2008).

10% income change threshold



25% income change threshold



Even if income insecurity is constant or decreasing at the social level during the early years of the crisis, we know that the experience of individuals with different demographic and socioeconomic characteristics is diverse. For a first exploratory analysis on the distribution of income losses and gains in these two societies we have plotted the percentage of stayers (its complement is "movers") and downward movers by initial income percentile in four graphs (see Figures 6 and 7). The first two show the percentage of stayers (or movers) out of the total population (considering an income change threshold of 10 or 25 percent respectively) by household's disposable income percentile (at initial period). Results suggest that in both countries the probability of experiencing a significant income change (being a mover) is larger for individuals below the median than for those over the median. Income changes are slightly more common in Spain than in the US for individuals situated below the median. Nevertheless, from the median upwards, income changes are more common in the US. In fact, the probability of experiencing a very large change in incomes (more than a 25 percent) does not change much in Spain if initial incomes are above the median whereas in the US the probability of an income change continues to increase as income grows up to the last vintile.

The subsequent two graphs separate income losses from income gains by percentile and country. Results suggest that individuals suffering from income losses in Spain at the beginning of the recession did not come from a position below the median but, instead, were most often situated over that threshold. Income changes taking place below the median are significantly more often losses in the case US than in that of Spain. Along the rest of the distribution the relative weight of losses in relation to gains is very similar in both countries.

4.2 Who is more likely to suffer from an income loss and may perceive higher economic insecurity?

As noted earlier, we are particularly interested in identifying the main differences in the characteristics of individuals experiencing income losses in these two countries. This is because, first, it is a key issue to predict the medium term impact of the crisis on each country's future economic outcomes and, secondly, it is essential when aiming to design any effective insecurity-alleviating policies. Previous evidence, in Hacker et al. (2010), shows that in the US the level of economic insecurity has been consistently increasing over the past 25 years.[39] Nevertheless, these authors also point out that the extent of this insecurity varies substantially across the population and those with higher income and education face the least. In the case of Spain we have found no evidence on the evolution of the dimension of insecurity or on the characterization of those more likely to suffer it.

We select a sample of individuals over 25 years of age in order to estimate the probability that individuals suffer from an income loss in the 2006-2008 period. This reduces our US sample to 7,243 individuals (out of 16,562 observations) and our Spanish sample to 9,707 individuals (out of 14,672 observations). In Table 5 we present the mean values of the variables we will use in our regressions for stayers, downward and upward movers. In the US, movers in general appear to be older than stayers while the contrary seems to be the case in Spain. Movers tend to be more often out of work in their first interview than stayers in both countries. However, it is difficult to find large differences in the characteristics of each group looking at the mean value of their characteristics.

Table 5. Characteristics of Stayers and Upward and Downward movers US and Spain (2006-2008)

Period 2006-2008	United States 10% Income change			Spain 10% Income change		
	Upward movers	Stay ers	Downward movers	Upward movers	Stay ers	Downward movers
Individuals' characteristics						
Age groups						
26-35	20.49	20.42	20.90	24.18	24.01	25.50
36-45	21.06	23.67	19.77	23.93	24.02	22.73
46-55	22.33	26.29	21.28	19.56	15.81	19.69
56-65	17.91	18.08	17.15	16.14	12.32	15.05

[39] These authors define an individual as insecure if her income drops at least a 25 percent of her previous year annual income and she does not hold enough liquid financial wealth to compensate for this lost income until typical recovery to pre-drop income occurs or for the following six years (whatever comes first).

>65	18.22	11.54	20.91	16.19	23.84	17.02
Gender						
Male	46.54	48.35	45.24	70.27	69.11	70.82
Female	53.46	51.65	54.76	29.73	30.89	29.18
Level of education						
less than high school	15.20	13.99	17.01	59.13	53.23	54.70
high school	35.34	34.29	36.20	18.56	20.16	18.20
more than high school	49.46	51.72	46.79	22.31	26.61	27.10
Work at t						
working	25.81	19.06	34.68	37.02	40.80	35.35
out of work	74.19	80.94	65.32	62.98	59.20	64.65
Work transitions						
Never at work (t and t+1)	23.16	17.32	29.82	34.50	38.62	32.47
Worked at t only	8.83	2.53	2.99	11.90	7.05	8.76
Works at t +1	2.65	1.74	4.86	2.53	2.18	2.89
Always at work (t and t+1)	65.36	78.42	62.33	51.08	52.15	55.88
Percentile at t	62.17	60.37	42.70	62.01	56.29	43.24
Household' characteristics						
One-person household						
One-person household	18.86	19.13	19.47	9.49	10.65	8.91
% hh. Members below 3 years of age	2.37	2.81	2.36	2.07	2.53	2.29
% hh. Members 3-6 years of age	2.56	2.59	2.18	2.58	2.43	2.35
% hh. Members 6-18 years of age	10.31	10.50	9.70	8.95	7.71	8.02
% hh. Members over 65 years of age	40.06	35.20	41.01	16.30	24.80	17.71
% of working individuals in hh.	42.73	45.18	36.96	48.03	43.46	47.71
% hh. Members with more than high school education	33.31	33.60	32.18	22.21	25.84	26.69
% hh. Members less than high school education	11.99	11.05	13.41	56.74	51.66	51.90
Total	34.4	27.1	38.5	30.49	27.29	42.22

Period 2006-2008	**United States**			**Spain**		
	25% Income change			**25% Income change**		
	Upward movers	**Stay ers**	**Downward movers**	**Upward movers**	**Stay ers**	**Downward movers**
Individuals' characteristics						
Age groups						
26-35	20.07	21.51	19.23	24.66	23.70	26.74
36-45	19.50	24.10	16.81	23.36	24.29	21.81
46-55	21.36	25.05	20.06	19.76	17.74	19.53
56-65	19.41	16.42	18.81	18.01	12.52	16.60
>65	19.66	12.92	25.09	14.21	21.76	15.33
Gender						
Male	46.02	47.82	44.26	70.02	69.51	71.68
Female	53.98	52.18	55.74	29.98	30.49	28.32
Level of education						

less than high school	15.03	14.06	19.22	59.58	55.18	53.85
high school	36.31	34.51	36.45	18.36	19.14	18.59
more than high school	48.66	51.43	44.33	22.07	25.68	27.56
Work						
working	26.51	21.26	41.07	27.39	37.85	36.14
out of work	73.49	78.74	58.93	72.61	62.15	63.86
Work transitions						
Never at work (t and t+1)	23.68	19.20	34.95	34.81	35.70	32.82
Worked at t only	11.35	2.86	3.59	12.78	7.90	9.54
Works at t +1	2.83	2.06	6.12	2.81	2.14	3.32
Always at work (t and t+1)	62.14	75.88	55.34	49.60	54.26	54.32
Percentile at t	63.11	59.29	35.81	62.82	56.42	37.36
Household' characteristics						
One-person household						
One-person household	20.88	17.62	20.98	9.98	9.85	8.69
% hh. Members below 3 years of age	2.20	2.98	1.68	1.94	2.49	2.12
% hh. Members 3-6 years of age	2.35	2.66	1.97	2.67	2.59	1.98
% hh. Members 6-18 years of age	8.96	11.16	8.92	9.17	8.09	7.83
% hh. Members over 65 years of age	41.31	36.21	43.34	14.59	22.22	16.34
% of working individuals in hh.	44.13	43.33	34.09	47.27	46.25	47.01
% hh. Members with more than high school education	33.99	33.17	31.61	21.89	25.29	26.93
% hh. Members less than high school education	11.87	11.13	15.07	56.93	52.96	51.47
Total	21.5	53.3	25.2	18.76	54.5	26.74

To study the differences in demographic and socioeconomic characteristics of individuals that suffered from income losses at the beginning of the recession we have estimated the probability of suffering from an income loss using a nested logit as detailed in section 3. Results appear in Tables 6 and 7. Estimations using a two-stage nested logit are particularly adequate in this context because the log likelihood test IIA shows that errors are correlated between outcomes so that a multinomial logit is inappropriate because random errors are not independent and unobserved shocks have concomitant effects on the probability of being a stayer, an upward mover or a downward mover. Therefore, the dissimilarity parameters that measure the degree of correlation of random shocks within the two types of individuals (movers or stayers) is significantly different from 1 in all our regressions.

We have estimated the model using two different specifications. In the first one the probability of moving downwards is explained only by individual characteristics. In the second one the demographic and socioeconomic characteristics of other household members are also relevant and are included in the regression. A first result is that the “regression to the mean” effect is strong in both countries and in all regressions: the probability of moving downwards is larger the higher your initial percentile is. A somewhat larger regression to the mean effect is found for Spain than for the US, even if coefficients are extremely similar in dimension. The main difference in the variables that determine the probability of experiencing an income loss in Spain and the US are related to individual’s age and the role of family demographic and socioeconomic characteristics. In Spain old individuals have a lower probability of experiencing a downward fall in comparison with younger cohorts. In the case of the US middle aged individuals (particularly those between 45 and 65) are in a better position than the rest to avoid an income loss. The level of education attained is extremely relevant in both countries in order to reduce the chances of suffering from an income loss even if its protective effect is larger in Spain than in the US. As we will see, the role of other family members’ education (i.e. the concentration of a high level of education in the household) is significantly more relevant in Spain than in the US to avoid income losses. Individual transitions out of work are more linked to income losses in the US than they are in Spain where only being continuously at work reduces the probability of an income loss compared to being always out of work. This result could be linked to the more short-term protective action of unemployment benefits in Spain than in the US.

In a second specification of the model we have included a variety of covariates related to the household’s demographic and socioeconomic structure. Given the definition of the independent variable, these covariates are particularly relevant in determining the probability of disposable income losses so that in both countries individual characteristics lose explanatory power. However, this is much more so in Spain than in the US, suggesting that the structure of the household has more relevance there. In fact, middle aged individuals and those with a higher level of education continue to have a lower probability of suffering income losses in the US even when other demographic characteristics of the family are included. Households with children are at a higher risk of suffering from large income losses in both countries even if in the US it is more households with small children and in Spain it is more those households with children over 6 years of age. Having individuals over 65 in the household (who presumably receive a pension) or more individuals in work protects households from income losses in Spain but not in the US. Also, the concentration of individuals with high school education is largely protective of income drops in Spain but not in the US where, in turn, it is the high concentration of adult individuals with less than high school education that promotes income losses. A relevant difference between both countries is that having more members at work in the household is only protective in Spain but not the US, even if, for large income losses (more than a 25 percent income drop) one-person households are in a worst position in both countries.

Table 6. Determinants of the probability of moving downwards in the income distribution (2006-2008), individual characteristics.

Individuals' characteristics	US - Moving downwards (base: stayer)						Spain - Moving downwards (base: stayer)					
	10% Income change			25% Income change			10% Income change			25% Income change		
	Coef.	Robust Standard error		Coef.	Robust Standard error		Coef.	Robust Standard error		Coef.	Robust Standard error	
Female	0.035	(0.091)		0.052	(0.093)		-0.086	(0.081)		0.029	(0.075)	
Age groups (base 26-35)												
36-45	-0.138	(0.142)		-0.148	(0.150)		0.335	(0.244)		0.209	(0.213)	
46-55	-0.358	(0.150)	**	-0.307	(0.146)	**	0.026	(0.248)		-0.033	(0.217)	
56-65	-0.344	(0.162)	**	-0.151	(0.162)		-0.311	(0.281)		-0.170	(0.245)	
>65	0.001	(0.202)		0.065	(0.191)		-0.699	(0.321)	**	-0.680	(0.464)	*
Level of education (base less than high school)												
high school	-0.312	(0.171)	*	-0.365	(0.166)	**	-0.787	(0.205)	***	-0.606	(0.181)	***
more than high school	-0.641	(0.218)	***	-0.807	(0.188)	***	-1.702	(0.329)	***	-1.259	(0.230)	***
Work transitions (base Never at work)												
Worked at t only	1.428	(0.288)	***	1.588	(0.228)	***	0.172	(0.279)		0.029	(0.224)	
Works at t +1	0.002	(0.359)		-0.059	(0.362)		-0.236	(0.439)		-0.226	(0.397)	
Always at work (t and t+1)	-0.724	(0.210)	***	-0.668	(0.179)	***	-0.982	(0.283)	***	-0.909	(0.207)	***
Percentile at initial year	0.027	(0.009)	***	0.035	(0.006)	***	0.051	(0.010)	***	0.046	(0.009)	***
Constant	-1.181	(0.680)	***	-2.825	(0.487)	***	-3.492	(0.995)	***	-3.979	(0.864)	***
Log-likelihood	-7330.137			-6563.5087			-9769.75			-8771.9187		
Log-likelihood test IIA (λ_1=1)	Chi2(2)= 9.53, Prob. > Chi2 =0.0085			Chi2(2)= 32.42, Prob. > Chi2 =0.000			Chi2(2)= 55.14, Prob. > Chi2 =0.000			Chi2(2)= 69.46, Prob. > Chi2 =0.000		
Number of observations	7,243			7,243			9,707			9,707		

Note: parameter significance: * p<0.10, ** p< 0.05, ***p<0.001. The reference individual is an upward mover. Reference individual is a male between 25 and 35 years of age with a level of education less than high school who has never worked. Standard errors have been adjusted for correlation between members of the same household (robustness). Therefore, observations are independent between households but not between individuals given that income mobility is determined at the household level.

Table 7. Determinants of the probability of moving downwards in the income distribution (2006-2008), individual and household characteristics.

Individuals' characteristics	US - Moving downwards (base: stayer)						Spain - Moving downwards (base: stayer)					
	10% Income change			25% Income change			10% Income change			25% Income change		
	Coef.	Robust Standard error		Coef.	Robust Standard error		Coef.	Robust Standard error		Coef.	Robust Standard error	
Female	-0.021	(0.097)		0.003	(0.094)		-0.019	(0.081)		0.099	(0.078)	
Age groups (base 26-35)												
36-45	-0.271	(0.161)	*	-0.184	(0.160)		0.003	(0.242)		-0.068	(0.220)	
46-55	-0.356	(0.160)	**	-0.279	(0.155)	*	-0.101	(0.256)		-0.121	(0.238)	
56-65	-0.257	(0.175)		-0.117	(0.171)		-0.195	(0.288)		-0.037	(0.262)	
>65	-0.026	(0.276)		-0.147	(0.268)		-0.141	(0.325)		-0.207	(0.324)	
Level of education (base less than high school)												
high school	0.076	(0.266)		0.059	(0.252)		-0.015	(0.174)		-0.116	(0.167)	
more than high school	-0.255	(0.300)		-0.581	(0.296)	**	-0.034	(0.202)		-0.032	(0.194)	
Work transitions (base Never at work)												
Worked at t only	1.295	(0.318)	***	1.410	(0.256)	***	0.457	(0.261)		0.512	(0.241)	**
Works at t +1	-0.057	(0.365)		-0.004	(0.351)		-0.182	(0.426)		-0.233	(0.438)	
Always at work (t and t+1)	-0.969	(0.245)	***	-0.844	(0.212)	***	-0.717	(0.233)	***	-0.502	(0.207)	**
One-person household	0.183	(0.187)		0.377	(0.177)	**	0.376	(0.270)		0.661	(0.249)	***
Percentile at initial year	0.031	(0.009)	***	0.035	(0.007)	***	0.059	(0.011)	***	0.057	(0.008)	***
% hh. Members below 3 years of age	0.166	(0.674)		0.222	(0.658)		0.248	(1.086)		0.236	(1.003)	
% hh. Members 3-6 years of age	1.336	(0.708)	*	1.148	(0.664)	*	1.503	(1.048)		1.481	(0.994)	
% hh. Members 6-18 years of age	1.274	(0.469)	**	0.676	(0.419)		2.033	(0.660)	***	2.007	(0.597)	***
% hh. Members over 65 years of age	0.176	(0.343)		0.285	(0.345)		-0.921	(0.391)	**	-0.866	(0.365)	*
% of working individuals in hh.	0.349	(0.332)		0.307	(0.333)		-0.834	(0.429)	*	-1.289	(0.356)	***
% hh. Members with more than high school education	-0.076	(0.329)		0.315	(0.322)		-1.305	(0.422)	***	-1.226	(0.372)	***
% hh. Members less than high school education	0.618	(0.432)	**	0.634	(0.396)		1.223	(0.362)	***	0.833	(0.314)	***
Constant	-2.120	(0.902)	**	-3.466	(0.641)	***	-6.115	(1.284)	***	-5.141	(0.950)	***
Log-likelihood	-7291.2702			-6511.2697			-9578.5269			-8533.0621		
Log-likelihood test IIA (λ1=1)	Chi2(2)=14.37 , Prob. > Chi2 =0.008			Chi2(2)=32.54 , Prob. > Chi2 =0.000			Chi2(2)= 83.24, Prob. > Chi2 =0.000			Chi2(2)= 127.24, Prob. > Chi2 =0.000		
Number of observations	7,243			7,243			9,707			9,707		

Note: parameter significance: * p<0.10, ** p< 0.05, ***p<0.001. The reference individual is an upward mover. Reference individual is a male between 25 and 35 years of age with a level of education less than high school who has never worked and lives in a multi-member household. Standard errors have been adjusted for correlation between members of the same household (robustness). Therefore, observations are independent between households but not between individuals given that income mobility is determined at the household level.

In sum, our results show that the level of education, age and the presence of children in the household are significant determinants of the probability of suffering income losses both in the US and Spain. However, the actual impact of these variables is different. In general, the role of household characteristics is more relevant in Spain than in the US. In terms of education the concentration of individuals with more than high school studies reduces the probability of an income loss in Spain while in the US it is the concentration of low educated individuals that promotes income losses. Middle-aged cohorts in the US are less likely to experience an income loss while in Spain it is only old individuals (over 65) that are in a better position to avoid income losses. Having children in the household increases the probability of suffering from income losses, even if in Spain this increase is observable only for households with children over 6 years of age while it in the US there are not differences in children's ages.

Conclusions

This paper investigates the potential contribution of income losses to the changes in perceived economic insecurity in the initial years of the Great Recession in two developed countries: the US and Spain. We argue that in a deep recession, particularly when unemployment is growing rapidly, a large disposable income decline is the crucial determinant of individual's *economic insecurity* perception. Therefore, we use income instability in a two year period to measure the dimension of economic insecurity and to identify who has experienced an income loss so that we can estimate the demographic and socioeconomic characteristics that make an individual most exposed to insecurity.

Our results show both rank and time-independence income mobility is generally larger in Spain than in the US in this period. Interestingly, the experience of both countries during the recession appears to be different. In Spain income in moment t is less correlated with that of moment t-1 during the recession than it was before, while this is not the case in the US. Therefore, mobility conceived as income instability grows in Spain and falls slightly in the US as the recession evolves, even if rank mobility is falling in both countries.

Our measure of the prevalence of income losses shows that downward income changes only increase in Spain in the period under study while in the US they are constant or even decrease in the first years of the recession. This is consistent with the results on an increase in absolute income changes for Spain. Using the prevalence of income losses as a proxy for economic insecurity we conclude that society's income insecurity levels were quite stable in Spain and even fell slightly in the US at the beginning of the recession. From 2008 onwards, insecurity levels grew significantly in Spain increasing the number of downward moves.

Even if income insecurity is constant or decreasing at the social level during the early years of the crisis, we know that the experience of individuals with different demographic and socioeconomic characteristics is diverse. We find that in both countries the probability of experiencing a significant income change is larger for individuals below the median. Separating income losses from income gains by percentile and country our results also suggest that individuals suffering from income losses in Spain at the beginning of the recession did not come from a position below the median but, instead, were most often situated over that threshold. In contrast, income changes taking place below the median are significantly more often losses in the US than in Spain. Along the rest of the distribution the relative weight of losses in relation to gains is very similar in both countries.

Finally, a more detailed analysis of the characteristics that affect the probability of experiencing income losses shows that the age, level of education and the presence of children in the household are the main determinants of the probability of suffering income losses both in the US and Spain at the beginning of the crisis. The main differences between the US and Spain are that the role of demographic and socioeconomic household characteristics is significantly larger in Spain, young and middle-aged cohorts are in a worse position compared to the elderly and education is even more relevant in preventing income losses than it is the US (both at the individual and the household level).

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APPENDIX

Table A1. Longitudinal samples, Spain.

Spain – Annual longitudinal samples of individuals				
	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010
Total	23,739	24,605	25,190	23,907
Complete interview data	23,666	24,526	25,123	23,836
Data no tails and balanced panel	22,852	23,635	24,101	22,899
% Complete interview data	99.7%	99.7%	99.7%	99.7%
% Final data	96.3%	96.1%	95.7%	95.8%
Spain – Biennial longitudinal samples of individuals				
	2004 -2006	2006 -2008	2008 - 2010	
Total	14,504	15,584	15,629	
Complete interview data	14,511	15,222	15,421	
Data no tails and balanced panel	13,448	14,672	14,765	
% Complete interview data	96.8%	97.7%	98.7%	
% Final data	92.7%	94.1%	94.5%	

Table A2. Longitudinal samples, US.

US – Biennial longitudinal samples of individuals				
	2004 -2006	2006 -2008	2008 - 2010	
Total since 1968	68,322	68,322	-	
Complete interview data	17,548	18,218	-	
Data no tails and balanced panel	16,005	16,562	-	
% Complete interview data	25.7%	26.7%	-	
% Final data	91.2%	90.9%	-	

Table A3. Transition matrices, Spain, 2004-2010

Period 2004 -2006										
	Income Decile 2006									
Decile 2004	1	2	3	4	5	6	7	8	9	10
1	42.42	13.80	9.53	9.27	5.80	5.46	3.45	4.74	2.92	2.61
2	18.87	27.84	15.27	11.92	7.87	5.71	4.07	2.34	3.30	2.82
3	12.12	22.12	20.41	12.90	9.90	8.82	6.22	4.06	1.95	1.49
4	6.40	11.43	19.67	17.56	15.22	11.01	8.10	5.06	3.53	2.04
5	5.84	9.18	14.07	20.61	15.47	13.63	8.76	5.93	4.69	1.83
6	5.22	6.01	7.32	8.31	18.16	20.44	16.00	7.50	7.00	4.04
7	3.34	4.14	6.72	10.41	11.72	15.30	17.66	19.05	8.59	3.07
8	4.22	2.05	4.51	3.36	6.61	9.48	16.54	22.40	21.15	9.67
9	1.27	0.98	1.21	4.67	3.86	5.94	12.33	21.78	28.13	19.83
10	1.30	1.57	1.20	1.68	4.65	4.17	7.40	6.39	18.66	52.98
Period 2006 -2008										
	Income Decile 2008									

Decile 2006	1	2	3	4	5	6	7	8	9	10
1	39.00	22.15	12.42	6.72	6.90	3.53	3.94	1.85	1.68	1.80
2	21.63	32.39	15.80	9.74	4.28	5.87	4.47	3.20	1.34	1.29
3	12.83	14.22	24.37	17.55	9.20	6.68	4.93	5.15	2.97	2.09
4	6.69	10.50	18.78	20.20	12.07	10.78	10.14	4.77	4.37	1.70
5	7.06	6.69	8.45	17.06	23.64	15.91	10.47	5.69	3.96	1.08
6	3.29	5.06	6.33	12.07	20.29	18.68	14.42	10.76	5.70	3.40
7	2.47	3.02	5.56	6.00	9.85	18.30	17.75	17.79	12.52	6.73
8	2.73	1.26	3.85	4.69	8.90	10.76	20.24	23.59	15.79	8.19
9	1.73	1.67	1.61	3.36	1.67	6.81	10.18	20.45	33.86	18.64
10	2.60	2.86	2.86	2.66	3.51	2.36	3.84	6.40	18.40	54.52
Period 2008 -2010										
Income Decile 2010										
Decile 2008	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	41.49	28.28	9.71	5.34	6.07	1.69	2.21	1.77	1.03	2.42
2	17.91	29.79	19.70	14.06	4.78	4.94	3.32	1.62	2.51	1.39
3	13.39	12.55	24.55	19.88	10.68	8.45	5.65	2.97	0.99	0.90
4	7.44	10.24	12.56	22.59	15.14	12.89	9.36	4.24	3.64	1.90
5	4.95	4.34	14.84	12.62	21.76	18.09	10.93	6.57	3.05	2.84
6	4.77	5.03	7.17	10.36	16.74	19.85	15.83	9.31	6.44	4.50
7	3.14	3.05	6.05	7.08	12.33	12.55	19.38	22.43	7.23	6.77
8	2.27	3.33	2.84	5.18	6.48	7.85	15.96	23.96	23.04	9.08
9	2.87	2.45	1.25	2.30	2.97	7.08	11.76	17.18	33.41	18.73
10	1.74	1.11	1.15	0.74	3.00	6.58	5.74	9.73	18.78	51.42

Source: Authors'calculations using US PSID-CNEF and EU-SILC longitudinal data for Spain.

Table 4. Transition matrices US, 2004-2008

Period 2004-2006										
Income Decile 2006										
Decile 2004	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	46.44	24.94	10.20	7.07	3.66	2.53	1.89	1.58	0.74	0.95
2	18.36	30.51	23.44	10.96	8.23	3.90	2.17	1.12	0.65	0.65
3	12.22	16.52	21.94	19.62	15.36	6.61	3.73	2.42	0.81	0.78
4	6.75	12.15	15.86	24.80	18.19	9.61	6.03	3.00	1.77	1.83
5	6.25	5.81	13.29	12.54	20.58	19.01	12.53	6.39	2.41	1.18
6	3.50	3.78	6.64	9.69	15.43	23.91	17.91	11.72	4.43	3.01
7	1.95	1.40	4.02	6.47	10.37	14.94	27.48	19.14	9.67	4.58
8	2.25	1.88	2.78	4.65	4.88	11.00	16.82	30.02	21.37	4.36
9	1.84	1.16	0.92	2.30	2.43	6.04	8.21	18.93	36.88	21.27
10	0.88	1.61	0.96	1.98	0.89	2.18	3.28	5.73	21.25	61.24
Period 2006-2008										
Income Decile 2008										

Decile 2006	1	2	3	4	5	6	7	8	9	10
1	51.26	18.85	11.92	6.34	4.32	3.53	1.36	0.68	1.34	0.41
2	21.78	32.01	16.93	13.86	5.86	3.76	2.76	0.87	1.37	0.81
3	9.37	22.03	28.39	15.55	11.27	6.36	3.20	1.87	1.25	0.72
4	6.54	11.45	18.25	22.13	16.42	9.79	8.13	4.23	2.15	0.90
5	4.01	8.45	10.72	19.00	24.35	16.11	9.15	5.09	1.54	1.58
6	2.35	2.51	6.71	11.14	19.40	24.41	18.43	9.06	4.55	1.44
7	1.88	2.27	4.18	6.05	9.36	18.40	26.77	17.17	9.50	4.43
8	0.93	0.96	1.33	3.77	4.08	10.78	18.46	31.16	22.17	6.36
9	0.52	0.35	1.44	1.58	2.75	4.67	8.22	21.01	38.82	20.64
10	**1.38**	**1.05**	**0.15**	**0.64**	**2.15**	**2.25**	**3.67**	**8.66**	**17.25**	**62.81**

Source: Authors' own calculations using US PSID-CNEF and EU-SILC longitudinal data for Spain.