MOBILITY AND INCOME INEQUALITY IN THE EUROPEAN UNION AND IN PORTUGAL*

*Nuno Alves** | Carlos Martins***

ABSTRACT

This article aims at establishing some facts on mobility and income distribution in the European Union countries, with a special focus on the Portuguese case. The analysis was developed with the latest information from the EU-SILC database, for the period 2005-2009. There is substantial mobility between the various income deciles in the EU and, to a lesser extent, in Portugal. Income mobility decreases the degree of inequality in non-negligible terms, but the fraction of inequality that takes a permanent nature remains quite high in all EU countries and in particular in Portugal. Additionally, there is no relation between the level of inequality and the contribution of income mobility to the reduction in inequality in the EU countries. In the recent past, income growth in the EU countries, including Portugal, was skewed towards lower income individuals. However, the contribution of this "progressive" growth to the reduction of inequality was mitigated, or even canceled, by the re-ranking of individuals in the income distribution.

1. Introduction

Aggregate income growth figures do not reveal the great diversity of individual experiences underlying them. In fact, every year a substantial percentage of individuals moves along the income distribution curve, in both directions. Quantifying this mobility is important to assess the degree of equal opportunities prevailing in society as well as to assess the uncertainty surrounding the individual income trajectories. Understanding this intertemporal mobility can substantially alter our perspective on several economic phenomena. In particular, income mobility has direct implications on the assessment of permanent inequality.

In this context, several questions arise immediately. What is the dispersion of annual gains and losses in household income? What is the degree of transitions of individuals between income deciles? Are there different mobility patterns in the various socio-economic groups? Does income mobility significantly mitigate the level of permanent inequality in the income distribution? What is the contribution of that mobility to the recent evolution of inequality? There are few studies that address these issues within the European Union context, although there are several analyses focusing on individual countries (a presentation of several representative studies can be found in Burkhauser and Couch, 2009). A recent study that deserves notice and inspired the present article is Alperin and Van Kerm (2010).

The main goal of this article is to try to answer the above questions for the various European Union countries, drawing on the longitudinal information from the European Union Survey on Income and Living Conditions (EU-SILC). The mobility concept under analysis is intra-generational and short/medium term (between 1-4 years), for the period 2005-2009. Additionally, we intend to describe how mobility

influences both the level and the change in income inequality, from an intertemporal perspective. The focus of the article lies strictly on the description of stylized facts. The approach is thus intentionally positive and not normative. Throughout the article, special emphasis will be given to the Portuguese case, which is also justified by the absence of studies that examine these issues specifically for Portugal.[1]

The article is structured as follows. In Section 2 the database is briefly described, as well as the main methodological options. In Section 3 a set of composite mobility indicators is presented, including transition matrices by income deciles. In Section 4 the impact of mobility on the level and evolution of inequality is analysed. Finally, Section 5 presents the main conclusions and some research issues for the future.

2. The data

The sample used in this study was based on the EU-SILC longitudinal database. This database resulted from the creation at the European level of a program on European harmonized statistics on income and living conditions of households, which takes place annually since 2004. Each year, the EU-SILC project includes the collection of data at the individual level and for the respective household, resulting in the production of a cross-section database, and also of a longitudinal database, which is less comprehensive in terms of information and sample size and covers the four years ending in the respective year.

This study was based primarily on the longitudinal databases between 2005 and 2009, covering the period between 2003 and 2009. In general, the sample underlying each longitudinal database is based on four subgroups of equal size and each one representing the total population of each year. Each year, the subgroup that completes four years is dropped from the sample and replaced by another equivalent, meaning that each individual or family can only be followed by a period of four years. For example, the 2009 longitudinal database includes individuals who were followed between 2006 and 2009, between 2007 and 2009 and between 2008 and 2009. Applying the same method, the 2008 database also considers the first two groups of the 2009 database referred to above, so there is an overlap between the various longitudinal databases. In our study, we always focused on the information from the most recent longitudinal database. It must be said that the country coverage in the available databases is not uniform. For example, the longitudinal database for Germany is only available in 2006 and the cross--section database for France is not available in 2008.

The unit of analysis consisted essentially in pairs of incomes for a given individual in periods t and t-1 and in periods t and t-3, in order to study the short and medium term transitions, respectively. Based on the aggregation of the several longitudinal databases, two longitudinal samples were defined, with two and four years. Each of these samples includes all individuals with income greater than zero in two or four consecutive years, respectively. In all the exercises, the extreme values of income, which were identified using the cross-section databases, were eliminated.[2] Similarly, the calculation of income deciles for each country / year used in the analysis in section 3 was also based in the cross-section databases. Reflecting the variability of the original databases, either longitudinal or cross-sectional, the coverage by country and period of the two samples considered in this study is also variable.

The individual income in each year refers to equivalent income at 2008 constant prices. The starting point is the total disposable income of the respective household for a period of twelve months. Note that, in most countries, this period corresponds to the previous calendar year, which raises a mismatch between some of the characteristics of each individual used in the analysis and the respective income. Once deflated, the household income is divided by the number of equivalent adults in each household (according to

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[1] In this context, it is also worth highlighting the analysis in Cardoso (2006) on wage mobility in Portugal, focusing on the period before the introduction of the euro.

[2] The income levels below 75 percent of the first percentile or above 125 percent of the last percentile of the income distribution for each country and year were considered outliers. This procedure is identical to that followed by Alperin and Van Kerm (2010).

the modified equivalence scale of the OECD, which takes into account the size and composition of the household)[3] to calculate the individual equivalent income. For individuals who changed their household in a given year, the average of the respective equivalent incomes was considered.

The analysis considers a range of up to twenty nine countries, including most European Union countries.[4] In the following sections, the whole set of countries available in each sample is referred to as European Union.

All results were calculated using the longitudinal weights available. For the 2-year longitudinal sample, 2-year longitudinal weights from the database of the respective year were primarily used and, if these do not exist, the same weights of the database of the following year. For example, for a pair of income between 2007 and 2008, 2-year weights from the 2008 longitudinal database were used. When not available, the same 2-year weights from the 2009 longitudinal database were used. The 4-year longitudinal sample was based only on the longitudinal databases from 2008 and 2009, because these were the only ones who had 4-year longitudinal weights. The records to which was not possible to assign weights were excluded from the analysis. Considering all these criteria, the period covered by the 2-year longitudinal sample was limited to the interval between 2004 and 2009 (between 2005 and 2009 in the case of the 4-year longitudinal sample).

The size of the 2-year longitudinal sample for the EU countries and for the several years available amounts to about one million and a half pairs of income. The sample for Portugal amounts to more than 32 thousands pairs of income. In the case of the 4-year longitudinal sample, the sample size amounts to about 175 thousands pairs of income for the EU countries and about 2200 for Portugal.

3. Income Mobility in the European Union: 2005-2009

This section will present evidence on intra-generational income mobility in several EU countries in 2005-2009. The analysis will illustrate several concepts of mobility, in particular mobility as individual income growth (subsection 3.1) and mobility as a positional change in the income distribution (subsection 3.2). In section 3.3 some mobility profiles for specific segments of the population will be presented. Finally, section 4 will illustrate the concept of mobility as a contributor to the reduction of long-term inequality. For a thorough discussion of these different concepts of mobility, see Jenkins (2011).

The analysis will strictly focus on the short and medium term. The mobility indicators will be calculated based on annual income transitions (corresponding to the aggregation of all available annual transitions in the successive waves of EU-SILC) and also for 4-year transitions (which, as mentioned above, is the maximum period each individual is followed in the database). The results for the Portuguese economy will be compared with the indicators for all EU countries.

3.1 What is the distribution of income gains and losses in the European Union?

A first dimension of mobility that is important to analyze is the individual change in income between two moments in time. Charts 1 and 2 illustrate the distribution of income gains and losses in the EU, based on the rate of change of each individual's real equivalised income, calculated on an annual basis and in

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3 More specifically, this scale assigns a weight of one to the first adult of each household, 0.5 to other adults and 0.3 to each child.

4 Iceland and Norway also participate in the EU-SILC and are included in our analysis. In figures and tables in the following sections, countries are identified as follows: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Finland (FI), France (FR), Greece (GR), Hungary (HU), Ireland (IE), Iceland (IS), Italy (IT), Lithuania (LT), Luxembourg (LU) Latvia (LV), Malta (MT), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovenia (SI), Slovakia (SK) and the United Kingdom (UK).

Chart 1

DISTRIBUTION OF THE INCOME RATE OF VARIATION BETWEEN T-1 AND T | TWO-YEAR LONGITUDINAL SAMPLE
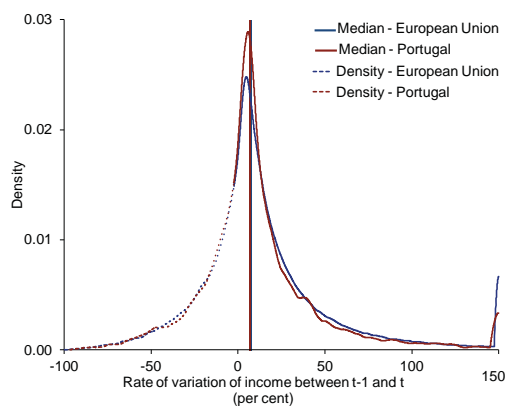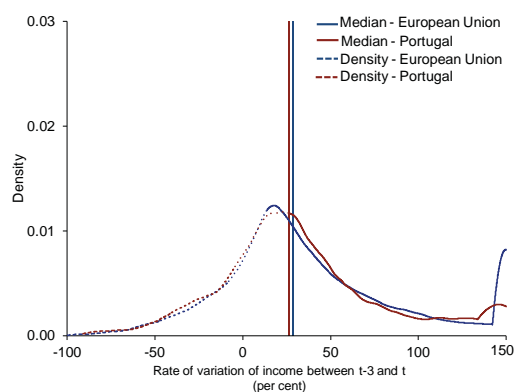

Chart 2

DISTRIBUTION OF THE INCOME RATE OF VARIATION BETWEEN T-3 AND T | FOUR-YEAR LONGITUDINAL SAMPLE

Source: Authors' calculations.

four-year transitions. The figures reveal a picture of high heterogeneity of individual experiences. There is a significant percentage of individuals with substantial falls in income, and others with particularly high rates of income growth. These characteristics of the distribution of income changes are similar between the EU and Portugal. Note that this heterogeneity is expected, given the myriad of events affecting household equivalised income in each moment, including demographic changes (for example, the birth of a child or a divorce), changes in the employment status (for example, a promotion or a transition to employment, unemployment or inactivity) as well as changes in public policies (for example, changes in taxes or in transfers to households). It should however be stressed that these values may also be contaminated by measurement errors, which tend to over-estimate the true degree of income mobility. These errors are inescapable in surveys of this nature (see Jenkins, 2011 and Iacovou et al., 2012).

Charts 3 and 4 summarize the same information for each of the countries under analysis. In each figure, countries are sorted by the average income growth level, respectively in annual and 4-year transitions. Chart 3 shows that each year, a substantial share of the population in each country records real income losses (between around 15 and 40 per cent). In several countries, more than 10 per cent of the population records losses higher than one quarter of the previous year income. In the sample period, the countries where a higher share of the population experienced income losses were Germany, Austria, Spain and the UK. The countries where a higher share of the population recorded real income gains were some of the new accession countries to the European Union. It is also interesting to note that there is not a perfect monotone relationship between average income growth in each country and the percentage of individuals with gains/losses in income. This diversity of situations is necessarily associated with country--specific policies, institutions and shocks. Specifically in the Portuguese case, the figure suggests that in each year, about one third of individuals experience income losses (measured in real terms and per equivalent adult).

These general features remain qualitatively unchanged when considering longer-period transitions (Chart 4). Naturally, in this case, the share of individuals with cumulated income losses is lower compared to the case of annual transitions, due in particular to the intertemporal income smoothing effect.

Chart 3

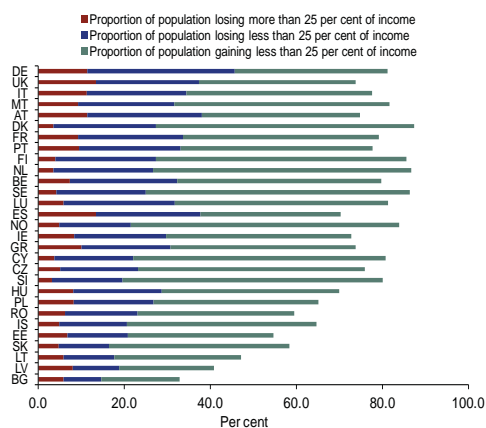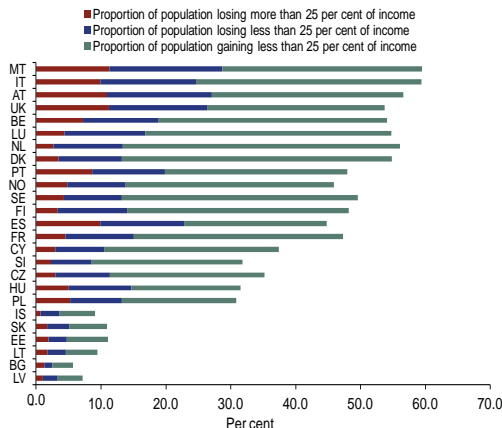**MAGNITUDE OF INCOME GAINS AND LOSSES BY COUNTRY | TWO-YEAR LONGITUDINAL SAMPLE**

Chart 4

MAGNITUDE OF INCOME GAINS AND LOSSES BY COUNTRY | FOUR-YEAR LONGITUDINAL SAMPLE

Source: Authors' calculations.

3.2 Income transition matrices

The most common concept of income mobility corresponds to the positional change of each individual in the income distribution. This concept implies a relative assessment of the evolution of each individual's income vis-à-vis all other members of society. Any upward transition thus implies a downward counterpart. A usual way to synthesize this mobility concept is through the analysis of transition matrices between the various quantiles of the income distribution.

Tables 1 to 4 present the transition matrices between income deciles, for the whole EU and for Portugal.[5] Again, we assess annual and 4-year transitions. In the absence of mobility, the matrices would display a diagonal filled with values equal to unity (100 per cent of the individuals would remain in the same decile). In turn, Table 5 presents some composite indicators of mobility, computed using those transition matrices.

From the tables it can be concluded that there is significant income mobility in the EU economies. Each year, only about 38 per cent of individuals in the EU remain in the same income decile. However, this mobility is short distance. In fact, in the case of annual transitions, about 71 per cent of individuals remain in the same income decile or move to an adjacent decile (Table 5). As expected, when the horizon expands, there is a marked increase in transitions between deciles. In a 4-year horizon only 28 percent of individuals in the EU remain in the same income decile (61 per cent if one adds the transitions to adjacent deciles).

The transition matrices also reveal that the probability of remaining in the same decile is particularly high at the tails of the income distribution. In particular, about 64 per cent of individuals in the EU remain in the highest income decile from one year to the next (51 per cent in the lowest decile). These values decrease significantly in the case of 4-year transitions (to 56 and 37 per cent, respectively). As expected, the highest mobility is observed in the individuals in the middle of the income distribution. These results are in line with other studies in this field (see RWI, 2011, and Jenkins, 2011).

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5 As mentioned above, the values that define the various deciles were based in the cross-section database, which is officially used to analyze the characteristics of the income distribution in the European Union. The matrix for the European Union results from the aggregation of individual transitions calculated initially for each of the countries.

Table 1

INCOME MOBILITY IN THE EUROPEAN UNION	TWO-YEAR LONGITUDINAL SAMPLE									
Decile in t-1	**Decile in t**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	**51.5**	21.0	9.8	6.0	3.9	2.8	1.7	1.4	1.1	0.9
2	17.5	**40.3**	18.4	9.4	5.7	3.5	2.1	1.5	0.9	0.8
3	7.5	18.6	**32.9**	17.5	9.8	5.6	3.6	2.1	1.5	1.0
4	4.9	8.4	18.7	**29.1**	17.0	9.8	5.8	3.5	1.8	1.1
5	3.4	4.9	8.5	18.2	**28.2**	17.4	9.5	5.3	3.0	1.5
6	2.4	3.0	5.0	8.7	18.0	**28.1**	18.1	9.4	4.9	2.4
7	1.6	2.1	3.0	5.0	8.7	18.1	**29.8**	18.8	9.2	3.6
8	1.0	1.5	2.1	3.1	4.8	8.5	19.0	**33.1**	20.3	6.5
9	1.0	1.1	1.3	1.8	2.8	4.6	7.8	18.8	**41.8**	19.0
10	1.0	0.9	1.0	1.2	1.6	2.2	3.2	6.4	18.2	**64.3**

Source: Authors' calculations.
Note: Proportion of individuals in the respective decile in t-1.

Table 2

INCOME MOBILITY IN PORTUGAL	TWO-YEAR LONGITUDINAL SAMPLE									
Decile in t-1	**Decile in t**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	**60.3**	17.8	7.4	6.0	2.1	3.1	1.0	0.7	0.9	0.7
2	15.7	**46.0**	17.6	7.7	5.2	3.2	1.7	0.8	1.1	1.0
3	6.0	16.1	**40.5**	16.4	10.0	4.2	3.0	1.8	0.9	1.0
4	4.0	7.2	17.0	**34.4**	17.8	8.8	5.5	2.6	1.7	1.1
5	2.5	4.9	7.7	19.1	**29.2**	19.8	9.1	5.0	2.1	0.6
6	1.7	3.1	5.0	8.7	15.8	**33.7**	19.8	8.2	3.5	0.6
7	1.4	2.3	3.8	3.0	9.0	20.2	**34.2**	20.4	4.9	0.9
8	0.7	1.8	1.8	3.1	4.3	5.4	18.2	**43.7**	18.5	2.5
9	0.5	1.4	1.4	1.1	1.7	3.3	3.4	15.0	**56.9**	15.3
10	0.9	0.9	0.5	0.7	0.8	0.7	1.2	2.5	12.6	**79.2**

Source: Authors' calculations.
Note: Proportion of individuals in the respective decile in t-1.

The evidence for the Portuguese economy shares the features above described, but reveals a degree of income mobility significantly below the EU average. This conclusion is confirmed in the several synthetic indicators presented in Table 5. In Portugal, about 77 per cent of individuals remain in the same income decile or change to the adjacent decile in each year (67 per cent in the case of 4-year transitions). The average decile movement is also lower in the Portuguese case. The degree of inertia in the tails of the distribution is particularly high. In the case of the highest income decile, about 80 per cent of individuals remain in that decile, both in the annual and in the 4-year transitions. This is one of the highest values in the EU.

3.3 Breakdown by segments of the population

The evidence presented thus far refers to the whole population. A comprehensive assessment of the nature of this mobility requires the inclusion in the analysis of the individuals' characteristics, as well as the various events - demographic, social and economic - which determine the respective income profiles. The greatest difficulty in this assessment is the endogenous nature of all these elements, making it difficult

Table 3

**INCOME MOBILITY IN THE EUROPEAN UNION	FOUR-YEAR LONGITUDINAL SAMPLE**										
Decile in t-3	**Decile in t**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	**37.0**	21.3	12.3	8.4	6.6	5.1	3.2	2.6	2.1	1.4
2	17.8	**30.3**	18.7	10.2	7.7	4.8	4.0	3.1	2.1	1.4
3	9.2	19.3	**23.6**	15.5	10.3	8.6	5.5	3.6	2.6	1.7
4	6.2	11.0	18.0	**20.7**	14.9	11.0	7.5	4.9	4.1	1.7
5	4.6	6.1	10.5	17.4	**20.6**	14.6	10.1	8.3	5.5	2.3
6	2.6	4.2	6.7	10.8	16.9	**21.3**	15.5	11.3	7.0	3.7
7	3.0	3.2	4.2	7.2	9.8	17.3	**21.0**	17.9	11.0	5.4
8	1.6	1.8	2.5	4.9	6.0	11.1	17.9	**23.3**	21.5	9.3
9	1.6	1.0	1.6	3.0	4.2	5.7	9.9	19.1	**30.2**	23.6
10	1.5	0.8	0.9	2.1	2.5	3.3	4.8	8.2	20.2	**55.8**

Source: Authors' calculations.
Note: Proportion of individuals in the respective decile in t-3.

Table 4

**INCOME MOBILITY IN PORTUGAL	FOUR-YEAR LONGITUDINAL SAMPLE**										
Decile in t-3	**Decile in t**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	**40.8**	26.4	10.8	7.9	3.6	2.4	6.8	-	1.2	-
2	9.2	**32.0**	22.6	11.8	10.1	7.2	5.7	1.5	-	-
3	2.2	29.1	**21.0**	19.8	4.1	5.8	8.5	2.1	4.6	3.0
4	2.3	8.0	19.9	**23.6**	16.1	12.7	7.9	4.5	4.0	1.1
5	3.3	3.8	9.8	12.1	**21.6**	15.8	9.5	14.2	9.7	-
6	4.1	10.3	4.0	6.7	12.5	**31.6**	14.5	7.9	8.3	-
7	1.3	1.8	5.0	3.2	10.1	24.9	**22.9**	27.5	2.8	0.4
8	3.9	0.8	2.3	4.7	8.6	5.6	16.7	**17.0**	32.2	8.3
9	-	3.2	1.2	1.0	6.7	5.5	5.7	12.0	**39.6**	25.2
10	-	-	0.6	0.7	1.5	4.9	1.7	-	10.4	**80.2**

Source: Authors' calculations.
Note: Proportion of individuals in the respective decile in t-3.

to identify the respective contribution to the income mobility. This analysis will be left for future research. In this subsection, the goal is merely to present some mobility breakdowns by several characteristics of the population. The analysis is strictly illustrative and not intended to establish any causal relationship. In Charts 5-7 some composite indicators of mobility are presented, for the whole EU and for Portugal, disaggregated by age, by educational level and by employment status. The results refer only to annual income transitions.

In terms of age groups, the evidence suggests that the lower degree of mobility lies, as expected by the life cycle theory, in the highest age brackets. The largest mobility is recorded by individuals between 20 and 40 years, in particular as regards upward movements. This conclusion is visible in both the EU and Portugal.

In terms of educational level, the lowest income transitions are observed in individuals with higher educational levels. These individuals - mostly concentrated in the highest deciles of the income distribution - are also the ones less likely to record downward income transitions. In Portugal, there is an inverse monotonic relationship between educational level and degree of mobility. This relationship is much more mitigated in the case of the EU.

Table 5

INCOME MOBILITY IN THE EUROPEAN UNION AND PORTUGAL				
	Two-year longitudinal sample		Four-year longitudinal sample	
	Between t-1 and t		Between t-3 and t	
	Portugal	**European Union**	**Portugal**	**European Union**
Proportion of individuals:				
remaining in the same income decile	45.5	37.6	31.3	28.0
moving below to other income decile	28.7	31.8	40.2	37.3
moving above to other income decile	25.9	30.6	28.6	34.7
remaining in the same income decile or moving to an adjacent income decile	77.0	71.1	66.7	61.0
moving to an adjacent income decile	31.5	33.5	35.5	33.0
one decile above	16.4	16.8	20.4	16.5
one decile below	15.1	16.7	15.1	16.6
moving two or more income deciles	23.0	28.9	33.3	39.0
two or more deciles above	12.2	15.0	19.8	20.8
two or more deciles below	10.8	13.9	13.5	18.2
Average decile movement	1.0	1.2	1.5	1.6

Source: Authors' calculations.

As regards the employment status, unemployed individuals record the lowest mobility between deciles, followed by inactive individuals. In turn, employees are more likely to record upward and downward decile transitions. It is also important to note that inactive individuals have the highest propensity for downward income transitions. Finally, it should be noted that this evidence struggles with the fact that in the EU-SILC the income reference period does not correspond to the period where the demographic and economic characteristics of individuals/households are collected (see Debels and Vandecasteele, 2008). This question should be particularly relevant in the case of unemployed individuals.

4. Mobility and income inequality in the European Union

4.1 Mobility and the level of inequality

The existence of longitudinal income mobility implies, on the one hand, that an individual's income averaged over successive years is smoother than annual income, which displays greater variability. Moreover, the dispersion of these smoothed individual incomes is lower than the dispersion observed in each individual year. Increased mobility thus implies lower income inequality for a given reference period (as originally shown in Shorrocks, 1978). This result supports the idea that a certain level of inequality should be more tolerable the higher the level of mobility, since it implies a lower level of permanent inequality. For example, it is possible that the ranking of permanent inequality across countries may differ from the ranking of inequality usually evaluated in cross section studies, which are based on non-longitudinal analyses.

This section will seek to quantify the relation between mobility and inequality in the several EU countries for the period 2005-2009. It is important, first of all, to recall some facts about income inequality in the European Union (for a detailed analysis, see Atkinson and Marlier, 2010). To this end, Chart 8 shows the 10, 50 and 90 percentiles of the income distribution in each of the EU countries (measured in euros/year), based on the EU-SILC longitudinal sample for 2009 (*i.e.*, with income levels referring to 2008). The figure also presents some ratios between those percentiles. The figure illustrates several ideas. First, there

Chart 5

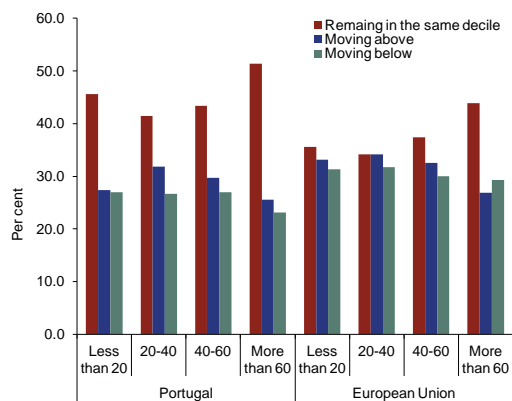**ANNUAL TRANSITIONS BY AGE GROUP | TWO-YEAR LONGITUDINAL SAMPLE**

Legend:
- Remaing in the same decile
- Moving above
- Moving below

Per cent (y-axis: 0.0 to 60.0)

Portugal: Less than 20, 20-40, 40-60, More than 60
European Union: Less than 20, 20-40, 40-60, More than 60

Chart 6

ANNUAL TRANSITIONS BY EDUCATIONAL LEVEL | TWO-YEAR LONGITUDINAL SAMPLE

Legend:
- Remaing in the same decile
- Moving above
- Moving below

Per cent (y-axis: 0.0 to 70.0)

Pre-primary and primary, Secondary (inferior), Secondary and pos-secondary, Terciary, Pre-primary and primary, Secondary (inferior), Secondary and pos-secondary, Terciary
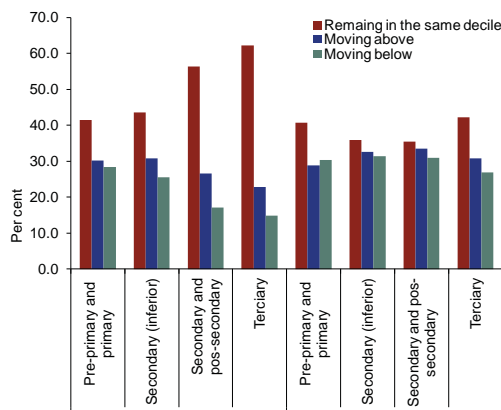
Chart 7

ANNUAL TRANSITIONS BY EMPLOYMENT STATUS | TWO-YEAR LONGITUDINAL SAMPLE

Legend:
- Remaing in the same decile
- Moving above
- Moving below

Per cent (y-axis: 0.0 to 60.0)

Working (full-time or partial), Unemployed, Inactive, Working (full-time or partial), Unemployed, Inactive
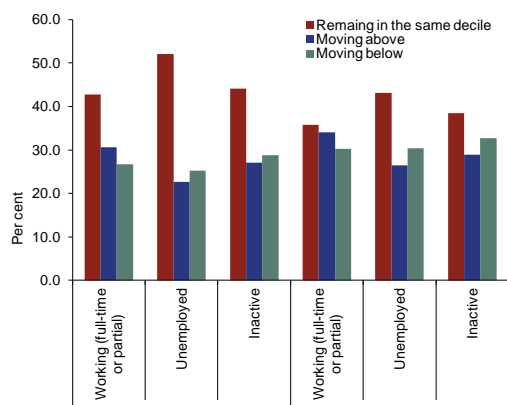
Source: Authors' calculations.

is high income dispersion in the European Union. In fact, the inequality indicators calculated for the EU as a whole outweigh the inequality indicators for the individual countries. Second, there is substantial heterogeneity in terms of income inequality across countries. At one extreme, some countries display high levels of inequality - led by Portugal and other southern-European countries, as well as some new entrants to the European Union – and, at the other, several countries of central and northern Europe present relatively low inequality levels. These differences stem from the income dispersion both at the top and at the bottom of the distribution, although in the Portuguese case the dispersion at the top of the distribution is particularly relevant.

This evidence does not, however, take into account the potential impact of income mobility on the inequality indicators. As mentioned above, the existence of non-proportional changes in income over time implies that inequality will be lower when income is aggregated over several years. In Charts 9 and 10 this result is confirmed based on the Gini coefficient. This coefficient - which is derived directly from

Chart 8

INCOME PERCENTILES AND INEQUALITY | TWO-YEAR LONGITUDINAL SAMPLE - 2009
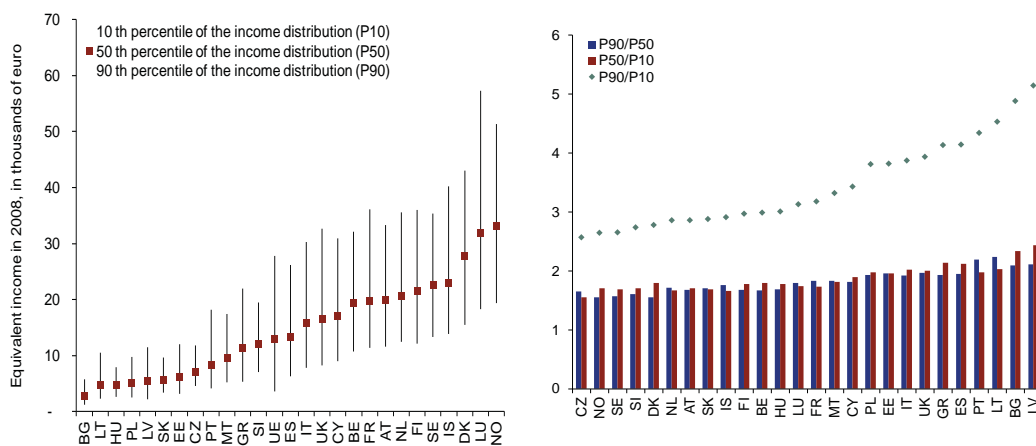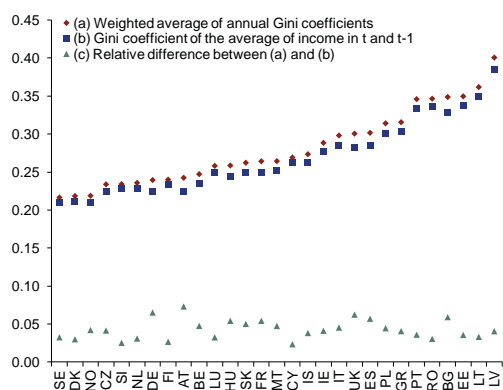

Source: Authors' calculations.

the Lorenz curve - is perhaps the most popular measure of inequality, ranging from 0 (perfect equality) and 1 (perfect inequality).

Chart 9 shows, for each country, two inequality indicators computed using the longitudinal information from the EU-SILC, calculated for the 2009 longitudinal sample: on the one hand, the average of the Gini coefficients calculated in annual terms (weighted by average income in each period); on the other hand, the Gini coefficient aggregating income for the various pairs of consecutive years (t-1 and t). By construction, the second indicator is lower than the first. Chart 10 shows the same exercise with the longitudinal sample of 2009, but with 4-year transitions.[6] Several conclusions are worth highlighting from the figures.

Chart 9

RELATION BETWEEN INCOME MOBILITY AND INEQUALITY | TWO-YEAR LONGITUDINAL SAMPLE

Source: Authors' calculations.
Notes: In (a), average incomes in each year were used as weights. The (c) variable corresponds to (1-R), where R is the index proposed by Shorrocks (1978).

Chart 10

RELATION BETWEEN INCOME MOBILITY AND INEQUALITY | FOUR-YEAR LONGITUDINAL SAMPLE
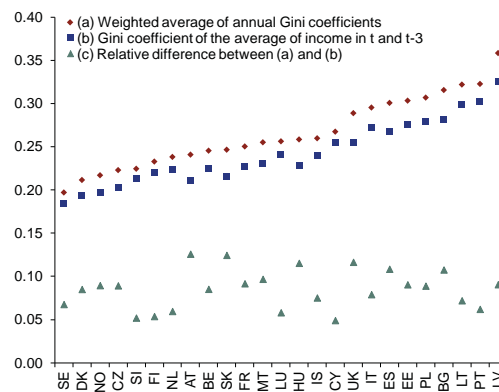
Source: Authors' calculations.
Notes: In (a), average incomes in each year were used as weights. The (c) variable corresponds to (1-R), where R is the index proposed by Shorrocks (1978).

6   It should be noted that the values of the Gini coefficients differ between the two figures given that the respective samples also differ. Moreover, these values for the Gini coefficient do not necessarily coincide with the official figures published by Eurostat, which are based on cross-sectional sample.

First, the reduction of inequality when income is aggregated over several years is not negligible, but does not substantially alter the assessment regarding the level of inequality in each country, as well as the relative inequality ranking in the European context. For example, in the Portuguese case, the reduction in inequality when incomes are aggregated over a 4-year period corresponds to a decrease in the Gini coefficient of about 2 percentage points. This decrease, although sizeable, does not alter the conclusion that Portugal is one of the countries with higher income inequality in Europe.

Second, the ratio between the two indicators is also a measure of mobility (ratio "R") proposed by Shorrocks (1978). This ratio decreases as the sample under analysis increases and converges to an indicative value of permanent income inequality. The short sample period of the EU-SILC longitudinal database does not allow measuring this value accurately. In the literature, it is usually shown that permanent inequality may be about 30 per cent lower than the level of inequality measured annually, in case incomes are aggregated over sufficiently long periods, namely in excess of 10 years (see Jenkins, 2011). In the case of EU-SILC, the intertemporal aggregation of incomes lowers inequality between 5 to 15 percent (in the case of 4-year transitions). This ratio (more precisely, the difference between 1 and the ratio R) is also presented in Charts 9 and 10, for all countries in the sample.

Third, there is no evidence in the EU that countries with greater inequality compensate for this fact with greater income mobility. This conclusion can be read directly from figures, since the ratio "R" is unrelated to the inequality level across countries. The Portuguese case is particularly striking in this context, given that it combines one of the highest levels of inequality with one of the lowest contributions of mobility to the decline in inequality.

4.2 Mobility and the change in inequality

Besides the impact of mobility on the level of inequality, it is important to assess the impact of mobility on the change in inequality. For this purpose, it is important to simultaneously examine (i) the evolution of inequality, (ii) income growth over the income distribution and (iii) income mobility. Jenkins and Van Kerm (2006) showed that the change in income inequality between two moments in time can be additively decomposed into two components: the first represents income mobility, in terms of the re-ranking of individuals in the income distribution; the second summarizes the income progressivity, *i.e.* the extent to which income growth between the two moments in time is skewed towards lower income individuals. Note that even if income changes are progressive, inequality may not decrease, namely if there is a re-ranking of individuals contributing to an increase in inequality.[7]

The decomposition proposed by Jenkins and Van Kerm (2006) requires information on the income distribution of an identical set of individuals at two moments in time. In the EU-SILC database, this longitudinal information is only available for a maximum of four years and, in this latter case, for a relatively small sample. Therefore, and only in order to illustrate some stylized facts about the relationship between mobility and the evolution of income inequality, we implemented the procedure of Jenkins and Van Kerm (2006) for the 2-year longitudinal data referring to 2009.[8] The results are shown in Chart 11.

The figure suggests that in all the sample countries, income growth was clearly biased towards lower income individuals. Income growth was therefore progressive, contributing to a decline in income inequality. However, the re-ranking of individuals mitigated to a large extent that contribution (there are even countries where, despite the progressivity in income, there was an increase in inequality in the sample).

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[7] A simple example allows illustrating this mechanism clearly. Suppose an economy with two individuals, A and B, with initial income of €1000 and €2000, respectively. If, by assumption, individual A increases her income by €1000 and individual B decreases her income by the same amount, income growth is clearly biased towards the individual with lower income. However, the inequality level would not change, given the re-ranking between A and B in the income distribution.

[8] The procedure was implemented in STATA with the program dsginideco.

Chart 11
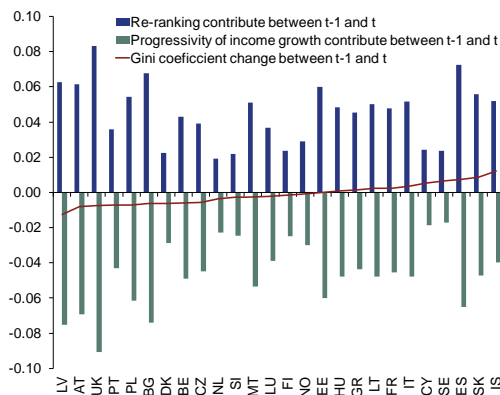
Source: Authors' calculations.

The high contribution of the re-ranking of individuals reflects the substantial diversity of individual experiences and the sizeable mobility documented in Section 3. Portugal broadly shares the qualitative features described above. It should also be noted that a 4-year longitudinal analysis (not shown) does not alter these conclusions.

Finally, we also include in Chart 12 the income profile of Portugal and the EU, in this case including all observations of the 2-year longitudinal sample (for the entire period under review). The Chart confirms that income growth in Portugal was clearly biased towards lower income individuals, the same occurring in the EU as a whole. For Portugal, this result is inter alia associated with a set of public policies, particularly in terms of changes in the minimum wage and in social benefits. Note that, in the EU as a whole, the computation does not correspond to an aggregation of national income profiles but uses all EU individuals directly in the calculation. Thus, the income profile of the EU for the lowest incomes includes mainly the new EU accession countries, while the highest incomes mainly include individuals of higher income countries. This fact contributes to explain the humps on the right tail of the income profile.

Chart 12

INCOME PROFILE | TWO-YEAR LONGITUDINAL SAMPLE
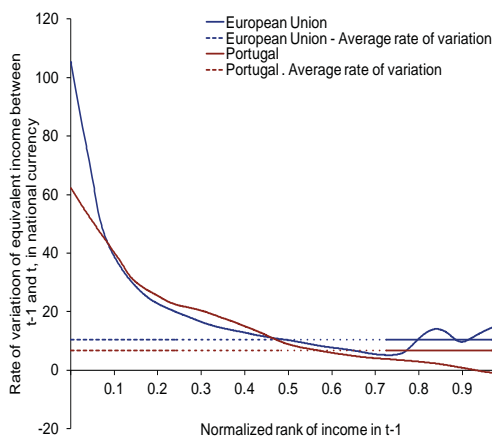
Source: Authors' calculations.

5. Conclusions

This article aimed at establishing some facts on mobility and income distribution in the European Union countries, with a special focus on the Portuguese case. The analysis was developed with the latest information from the EU-SILC database, for the period 2005-2009. Even though this analysis is still in a preliminary stage, some key ideas may already be highlighted.

1. There is significant heterogeneity in individual income changes. In each year, and in all countries without exception, it is possible to observe sizeable income variations, positive and negative. The characteristics of the distribution of income changes in Portugal do not differ markedly from the average of all EU countries, even though the annual average income growth in Portugal during the period under analysis was significantly lower than the EU average.

2. There is substantial mobility between the various income deciles, which increases with the sample period under analysis. This mobility is concentrated on transitions between adjacent deciles. The smallest transitions are observed in the lowest and highest deciles of the income distribution. These conclusions are robust to the several EU countries. Portugal has a lower degree of income mobility vis-à-vis the average of the EU and records a relatively high degree of immobility in the lowest decile and, in particular, in the highest decile of the income distribution.

3. In terms of age groups, the evidence suggests that the greater degree of immobility is located, as expected, in the higher age brackets and that the highest mobility, both upwards and downwards, occurs in individuals between 20 and 40 years. This conclusion is also observed in the Portuguese case. In terms of educational level, the smallest income transitions are observed in individuals with higher educational levels. These individuals are also the ones least likely to record downward income transitions. In Portugal, this evidence is even more marked than in the EU average.

4. Income mobility decreases the degree of inequality (and increasingly when longer samples of individual information are aggregated). This reduction is non-negligible (between 5 and 15 percent taking full advantage of the longitudinal information in the EU-SILC), but does not substantially alter the income inequality ranking of EU countries. Overall, the fraction of permanent inequality is therefore very high in all EU countries. Portugal is one of the countries with less reduction of inequality when income information for several years is aggregated.

5. In EU countries, there is no relation between the level of inequality and the contribution of income mobility to the reduction in inequality. Portugal is an extreme example in this context, given that it combines particularly high levels of inequality with relatively low contributions of mobility to the reduction in inequality.

6. In the recent past, income growth in all EU countries, including Portugal, was skewed towards lower income individuals. The contribution of this progressive growth to the reduction of inequality was, however, mitigated by the re-ranking of individuals in the income distribution, which contributed to an increase in inequality.

This analysis can be extended in several directions. In particular, it will be important to identify the causes of income mobility, as well as the transmission channels between mobility and income inequality. Additionally, it is also important to deepen the analysis between the various concepts of mobility and their impact on social welfare. Finally, it should be noted that the study of intergenerational transmission of income within the EU will be enhanced by the inclusion in EU-SILC 2012 of a specific module dedicated to this issue. The research agenda aimed at understanding the mechanisms underlying the degree of mobility within and between generations should therefore remain particularly active, especially given its relevance to the design of public policies.

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