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### **Abstract**

It is well known that income and health are positively associated. Much less is known about the strength of this association in times of growth and recession. We develop a novel decomposition method that focuses on isolating the roles played by government transfers – like pensions – versus market transfers – such as wages – on changes in income-related health inequality (IRHI) in Europe. Using *Survey of Income and Living Conditions* (SILC) panel data for 7 EU countries from 2004 to 2013, we decompose the changes in IRHI, while paying close attention to possible effects of the 2008 financial crisis. Perhaps surprisingly, we find that such inequalities rise in good economic times and fall in bad economic circumstances. The observed pro-cyclical pattern of IRHI can largely be explained by the relative stickiness of old age pension benefits compared to the market incomes of younger groups. We also examine to what extent pension policies and austerity measures had any impact on the evolution of IRHI. Less surprisingly, our findings suggest that austerity measures have weakened the IRHI reducing effect of government transfers. It turns out that the most important IRHI reducing role is played by pension policies that protect the relative incomes of the very elderly, already retired groups.

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## Introduction

It is well known that those with higher incomes enjoy longer and healthier lives than those with lower incomes. These inequalities, which are widespread and persistent, have presented a challenge to policy makers and researchers. Both the Centre for Disease Control in the US and the European Commission have highlighted the need to reduce disparities in health, and have devoted resources to doing so (CDC, 2013; European Commission, 2009).

However, despite these concerns, relatively little is known about (i) how Income Related Health Inequality (IRHI) in Europe has changed since the global recession began in 2007, (ii) how IRHI is exacerbated or dampened by market incomes and government transfers, such as old-age and unemployment benefits, and (iii) how pension policies as well as austerity measures may lead to changes in IRHI. It is obvious that market and transfer incomes may have distinct effects on IRHI; they are almost inversely associated with health status, and they will differ both in their trends in times of expansion and contraction of the economy, as well as in their distribution by age. Indeed, recent work has hinted that recent IRHI trends in Spain were largely determined by differential income trends by age (Coveney et al, 2016). The potential for large consequences for IRHI due to government policies, especially those that differentiate by age like pensions, deserves further consideration. Given the large fluctuations in market incomes, as well as the introduction of austerity measures governing unemployment and pension benefits during the period spanning the Great Recession, this is an informative setting in which to study IRHI that has not yet been exploited.

This paper seeks to fill these gaps in the literature. Our contributions are fourfold. First, we document trends in IRHI in 7 European countries between 2004 and 2013 – both before and after the 2008 financial crisis.<sup>2</sup> Second, motivated by previous findings, we develop a novel decomposition method that identifies the separate roles of government transfers and market earnings on the evolution of IRHI. Third, via the decomposition, we unravel the most important drivers of distinctive patterns we observe for IRHI pre- and post-crisis. Lastly, we provide descriptive evidence on the role that specific pension policies, and the austerity measures enacted in Greece, have had on IRHI.

This paper is related to the larger literature studying inequalities in health by income. Van Doorslaer et al (1997) used rank-dependent, concentration index-type measures to compare health inequalities by income across countries. Further analyses have introduced a series of decomposition methods and other refinements that give insight into the levels and trends of these measures across countries (Wagstaff et al, 2003; Van Doorslaer and Koolman, 2004; Van Ourti et al, 2009; Allanson et al, 2010).

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<sup>2</sup> Austria, Belgium, France, Greece, Italy, Portugal and Spain.

These results also point to substantial pro-rich inequalities in health in Europe and elsewhere, and they highlight the role of changes in the income ranks, in addition to health, for inequality trends.

Coveney et al (2016) used the decomposition of concentration indices method to study IRHI changes in Spain between 2004 and 2012. Though IRHI was initially growing between 2004 and 2008 as the Spanish economy grew, large reductions in inequality occurred after 2008.<sup>3</sup> A decomposition analysis of these trends reveals that IRHI was primarily driven by the income position of the relatively unhealthy elderly groups. In “good” economic times, the income position of the young tended to rise faster than that of the elderly, increasing the income gap between the healthy and the unhealthy and subsequently leading to increases in IRHI. During bad economic conditions, incomes of the young fell while incomes among the elderly tended to be far more stable, leading to decreases in IRHI. While these findings hint at the distinct roles played by government transfers versus income from labor the decomposition methods used thus far did not allow for this distinction. Further, studying a range of European countries, with differing levels of exposure to the crisis as well as a range of different pension and other policies, provides further insights into the determinants of trends in IRHI.

We do not aim to add to the literature that started with Ruhm (2000), linking health and economic conditions, or to identify a causal effect of the crisis or income on health. Rather, our decomposition illustrates how changes in transfer and market incomes are related to changes in the association between income and health, and thus IRHI. By following cohorts of individuals over time in relation to the underlying income and health distributions, our approach also differs from the cross-country comparisons of Mackenbach and co-authors (1997; 2008, among others), which document levels and trends in socio-economic inequalities in health (mostly education- and occupation-related) for a large number of European countries.

Our study yields four sets of results. First, we find that IRHI is linked to macro-economic conditions. In general, IRHI are pro-cyclical: inequalities tend to increase in good economic times and fall in bad times. Second, we find that market incomes became more unequally distributed and were associated with increasing health inequalities, while the role of social transfers tended to reduce IRHI though this effect varies depending on which age groups are afforded these transfers. Third, we find that IRHI evolution is largely driven by differential income mobility, i.e. some groups moving up and others down the income ladder. The economic crisis led to differential income changes by age-group, and thus by health status. Pension payments are concentrated amongst elderly, relatively less healthy groups, while income from work is concentrated amongst younger, healthier groups. Thus, if income

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<sup>3</sup> This is in line with Regidor et al (2016) who – using a different methodology – conclude that all-cause mortality declined more rapidly during the economic crisis among groups with low socioeconomic status.

from work grows more (less) than pensions during good (bad) economic times, IRHI grows (falls), in particular when the relative income position of the (unhealthy) very elderly was affected. Lastly, we find evidence that policies governing pensions across countries – including the pension reforms Greece enacted as part of the austerity measures in 2010 and 2011 – as well as household structure, have a measurable impact on IRHI. Given the importance of the income position of the very elderly in determining IRHI trends, policies governing pensions can therefore play a role.

## Decomposition of changes in income-related health inequality

Our decomposition method is based on an adaptation of that used in Baeten et al (2013). This section describes the decomposition approach for a balanced cohort of  $n$  individuals that we observe at the start (period 1) and end (period 2) of a time interval.

### *Health inequality measurement*

To measure health inequalities we use the corrected concentration index (CCI) (Erreygers, 2009) which satisfies the mirror condition and is insensitive to equal health additions (cf. absolute inequality) (Erreygers & Van Ourti, 2011). When health is bounded between 0 and 1, the index can be written as:

$$CCI(h_t|y_t) = \frac{8}{n^2} \sum_{i=1}^n z_{it} h_{it} \quad (1)$$

where  $h_t$  and  $y_t$  are the health and income distribution in period  $t = 1$  or  $2$ ,  $h_{it}$  describes the health level of individual  $i$  and  $z_{it}$  is a weight that depends linearly on the income rank of individual  $i$  with individuals ranked from poor ( $i = 1$ ) to rich ( $i = n$ ), i.e.  $z_i = (2i - n - 1)/n$ . This income weight takes the value 0 for the individual with median income, and increases linearly with income rank.

### *Health model*

We use a simple descriptive model that links health linearly and additively to its associated factors:

$$h_{it} = \alpha + \theta(y_{it}) + x'_{it}\beta \quad (2)$$

where  $\alpha$  is an intercept parameter;  $\theta(y_{it})$  is a non-linear function of income;  $x_{it}$  represents a vector of  $K$  non-income variables (in our analysis, these are a set of age-sex and region dummies), and  $\beta$  is its associated parameter vector reflecting partial associations. The exact functional form for  $\theta(\ )$  pre-determines the sign and magnitude of some parts of our decomposition. Therefore we use a flexible functional form in the empirical application.

### *Decomposition of IRHI change*

Our interest lies in decomposing changes in IRHI. Taking the change in the CCI between two periods and combining equation (2) and (1) leads to

$$CCI(h_2|y_2) - CCI(h_1|y_1) = \frac{8}{n^2} [\sum_{i=1}^n z_{i2} h_{i2} - \sum_{i=1}^n z_{i1} h_{i1}] \quad (3a)$$

$$= \frac{8}{n^2} \sum_{i=1}^n \{ [z_{i2} \theta(y_{i2}) - z_{i1} \theta(y_{i1})] + \beta [z_{i2} x'_{i2} - z_{i1} x'_{i1}] \} \quad (3b)$$

Equation (3a-b) shows that we can disentangle the change in IRHI into a part due to changes in the association between the income rank and the non-linear income function ( $z_{i2} \theta(y_{i2}) - z_{i1} \theta(y_{i1})$ ) and a part due to changes in the association between the income rank and the non-income factors ( $z_{i2} x'_{i2} - z_{i1} x'_{i1}$ ).<sup>4</sup>

Because the aim is to separate the role of different income sources for the change in IRHI, we differentiate between total income ( $y_{it}$ ) market incomes ( $y_{it}^M$ ) and government transfers ( $y_{it}^T$ ), i.e.  $y_{it} = y_{it}^M + y_{it}^T$ . Income weights can then be defined separately for each source. Weights associated with total income ( $z_{it}$ ) and market income ( $z_{it}^M$ ) are defined in the standard way described above. The income weights associated with transfers are defined as the difference between an individual's total income rank and their market income rank:

$$z_{it}^T = z_{it} - z_{it}^M \quad (4)$$

An individual's transfer income rank thus not necessarily coincides with the rank of  $y_{it}^T$ , but measures the number of steps on the income ladder that separate total income from market income. In our descriptive setting this coincides with interpreting market income as the income that would prevail in the absence of government transfers, or in other words with the redistributive effect of government transfers.

Combining our model for health (equation 2), our definition of transfer income weights (equation 4), and after manipulating the terms in equation 3b, the change in IRHI between periods 1 and 2 can be expressed as the sum of 5 terms:

$$\begin{aligned} & CCI(h_2|y_2) - CCI(h_1|y_1) \\ &= \frac{8}{n^2} \sum_{i=1}^n \left\{ \underbrace{(z_{i2}^M - z_{i1}^M) \sum_{j=1}^k x_{ji2} \beta_j}_{\text{market-related income mobility}} + \underbrace{(z_{i2}^T - z_{i1}^T) \sum_{j=1}^k x_{ji2} \beta_j}_{\text{transfer-related income mobility}} \right. \\ &+ \underbrace{z_{i2}^M \theta(y_{i2}^M) - z_{i1}^M \theta(y_{i1}^M)}_{\text{market-related inequality } \Delta} + \underbrace{[z_{i2} \theta(y_{i2}) - z_{i2}^M \theta(y_{i2}^M)] - [z_{i1} \theta(y_{i1}) - z_{i1}^M \theta(y_{i1}^M)]}_{\text{transfer-related inequality } \Delta} \\ &\left. + \underbrace{z_{i1} \sum_{j=1}^k \beta_j (x_{ji2} - x_{ji1})}_{\text{ageing and migration}} \right\} \quad (5) \end{aligned}$$

<sup>4</sup> An additional assumption is that there is no structural change in the health equation across periods.

### *Explanation of decomposition terms*

We term the first two expressions in equation 5 *market-related income mobility* and *transfer-related income mobility* respectively. *Market-related income mobility* measures the association between changes in the market income weights/ranks and non-income related health in the second period. The expression between brackets captures the change in an individual's market income weights/ranks between period 1 and 2, and will be positive (negative) if an individual has moved up (down) in the market income ranks. The second part of the term captures the non-income related health of the individual in the second period. The *transfer-related income mobility* term is identical, except for the use of transfer income weights. Both income mobility terms are more positive (negative) when upwardly (transfer/market) income mobile individuals have better (worse) non-income health in period 2, or vice versa.

Note that if the non-income variables consist of multiple variables that enter the health equation additively, then the mobility terms consist of a summation of different sub-terms. This holds, for example, if one uses a set of age-sex and region dummies as we do. This allows one to separate the aggregate mobility effect into the contribution per age-group and region category. Summing the total *transfer* and *market* mobility terms gives the income mobility of *total* income.

The third expression in equation 5 is termed *market-related inequality change*. It measures the consequences for IRHI of the change in the distribution of market incomes.  $\theta(y_{i2})$  denotes the health level in the second period that corresponds to  $y_{i2}$  conditional on the non-income factors. The first product therefore measures market related inequality in the conditional health levels. This is simply the CCI for market income related health in the second period. The second product in the expression is identical, except that it refers to the first period. The difference between these two corrected concentration indices therefore captures how changes in the distribution of market incomes between the two periods was associated to changes in IRHI, both by its association with health through the  $\theta()$  function, and via the re-ranking of individuals on the market income scale. For a monotonically increasing  $\theta()$  function, *market-related inequality change* will indicate rising (falling) IRHI when the rich (poor) predominantly experience income improvements (deteriorations).

The fourth expression in equation 5 is the *transfer-related inequality change*. Term  $[z_{i2}\theta(y_{i2}) - z_{i2}^M\theta(y_{i2}^M)]$  captures the degree to which transfer incomes change the association between income weight/rank and income-related health in the second period; the second term measures this effect in the first period. Both terms thus measure whether transfer incomes result in a more or less equal

distribution of income-related health, or the extent of the redistributive effect of transfer incomes in the separate periods. Their difference is a measure of how this effect has changed over time, and its consequence for the evolution of IRHI. Summing *market-related inequality change* and *transfer-related inequality change* gives the change in the CCI for total income-related health between periods 1 and 2.

Finally, any remaining change in IRHI is captured by the *ageing and migration* term. It indicates how changes in non-income related health, due to their association with initial income weights/ranks, have led to changes in IRHI. As our non-income variables are age-sex and region dummies, it therefore measures the impact of ageing and within-country migration on IRHI. As these phenomena have consequences for health, the degree to which they are associated with income ranks may affect IRHI. This term mainly acts as a control allowing us to study changes in IRHI net of ageing and migration effects.

## Empirical analysis

### *Data*

We use the European Union *Survey on Income and Living conditions* (EU-SILC), a European-wide survey designed primarily to collect labour and income related data. It is well suited to our analysis for several reasons. First, it provides a detailed breakdown on the sources of disposable household income, which is crucial to measuring the separate effects of government transfers and market income on IRHI trends. Secondly, individuals are asked to rate their self-assessed health (SAH), which is used as our health measure.

The selection of countries we study was based on the data availability and quality in the EU-SILC. We require that the countries have adequate income and health data for the whole 2004-2013 period. This leaves us with the following 7 countries: Austria, Belgium, France, Portugal, Italy, Greece and Spain.<sup>5</sup> Crucially, the latter 4 (PIGS) countries are of particular interest because they were more affected by the 2008 financial crisis.

The EU-SILC is a rotating panel. A new random sample (referred to as a rotation group) is drawn every year, followed for 4 years and then dropped. Therefore, at any point, each country has 4 concurrent panel samples. There are 7 rotation groups in our study period, i.e. 2004-2007, ..., 2010-2013.<sup>6</sup> We use balanced data from all 7 rotation groups to estimate our model for health (equation 2).<sup>7,8</sup> Table 1 gives the number of observations per rotation group and country. Due to changes in data collection methods, the income data for France from 2009 onwards is not comparable to earlier waves. We therefore ignore the 2007-2010 period for France<sup>9</sup>, and focus on the two remaining periods.

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<sup>5</sup> Although many of the Nordic countries – Finland, Iceland and Sweden – are present in all waves, their use of register-based data collection methods leads to many missing values of the SAH variable raising concerns of attrition bias. Sample sizes in some of these countries are too low for reliable analysis. For instance, there are only 13 women above the age of 75 in the 2004 sample in Iceland. Table A1 in the appendix gives further information on the available information per-country and the selection criteria used.

<sup>6</sup> The French SILC uses longer rotation groups, but for comparability with other countries we shorten them to 4 years.

<sup>7</sup> We symmetrically drop the top and bottom 1% of total income to remove potential outliers.

<sup>8</sup> Our restriction to balanced panels excludes – most likely unrealistically – the possibility of attrition bias.

<sup>9</sup> The data collection method for certain components of income in France, namely “*interest, dividends and profit from capital investments in unincorporated business*”, went from being survey-based to register-based in 2009. The average value of this component increased by almost €3,000, and led to a dramatic rise in average incomes. It is not possible to distinguish between “real” increase in the component and inflation due to more accurate collection methods.

### *Income and health measurement*

The EU-SILC provides, per person and household, a detailed breakdown of the components of annual household income. We separate total income into what we term *market* income and *transfer* income. An individual's market income is defined as the equivalized<sup>10</sup> value of their disposable household income before all social transfers, and their transfer income as the equivalized value of the sum of all household social transfers. The income reference period is the previous calendar year. Table 2 lists the different components that make up household market and transfer income.

What is the relative importance of each of these components? Public pensions form the largest share of transfer income, and employee income (income from work) for market incomes.<sup>11</sup> When using the term "pensions" we are referring to what EU-SILC terms "old age" benefits. These include the collection of all social payments to the elderly that are designed to provide a replacement income when a person has reached a prescribed age.<sup>12</sup>

The other key variable in our analysis is the self-assessed health variable. Individuals are asked the following question: "How is your health in general? Is it: (1) very good, (2) good, (3) fair, (4) bad, (5) very bad?"

### *Implementation of decomposition*

The first step in the decomposition procedure is to calculate, per country, rotation group and year, IRHI using the CCI. The CCI requires a ratio-scaled health measure (Erreygers & Van Ourti, 2011). In order to transform the ordinal SAH measure in SILC to a ratio-scaled measure, we use an interval regression with the threshold values imposed from external data (Van Doorslaer & Jones, 2003).<sup>13</sup> The

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<sup>10</sup> Our equivalization procedure involves dividing household income by the square root of the number of individuals living in the household in the current period.

<sup>11</sup> Table A2 in the appendix shows the percentages of transfer and market incomes that are made up of pensions and wages respectively, per rotation group and country.

<sup>12</sup> This includes public pension payments, care allowances, disability cash benefits, lump sum payments at the time of retirement and other cash benefits. It does not include any payments from *private* pension plans, which enter the market income definition. See the EU-SILC guidelines documentation for further details. Our data shows private pensions are not an important part of transfers for these countries. On average across all rotation groups and countries, payment from private plans are less than 1% of old age benefits. Per country, the average fraction of private payments to pension payments is never higher than 3%.

<sup>13</sup> Our imposed thresholds are from the empirical distribution function of the health utility index in the *Canadian National Population Health Survey 1994-1995*.

variables included in these regressions are age/sex dummies<sup>14</sup>, region dummies<sup>15</sup> and a second degree income polynomial, in line with the widely observed concave shape of the health-income gradient. This predictive set of variables is parsimonious, yet is strongly associated with health. The interval regression is run separately for each country<sup>16</sup> and serves a dual purpose: (i) they produce a ratio-scaled predicted health score between 0 and 1, and (ii) they provide the non-income and income coefficients ( $\beta_j$  and  $\theta(\cdot)$ ) used in the decomposition (equation 5). The regression results for each country are shown in the appendix, in table A3.

For each country, we then take 3 rotation groups (2004-2007, 2007-2010, 2010-2013), and calculate and decompose the change in the CCI from the first year (the base year) to the last year of the rotation group because decompositions are consistent within rotation groups.<sup>17</sup> In order to allow for statistical inference on IRHI levels, IRHI changes and the decomposition terms, we bootstrap the entire procedure.

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<sup>14</sup> The age/sex dummies divide age into the following categories, separately for men and women: 16 to 25 years, 26 to 35 years, 36 to 45 years, 46 to 55 years, 56 to 65 years, 66 to 75 years, and more than 75 years of age.

<sup>15</sup> Regions in EU-SILC are recorded at the NUTS II level. For Portugal and Belgium however this information is missing and we use urbanization dummies (dense, medium and thinly populated areas) instead.

<sup>16</sup> While we only explicitly decompose the 2004-2007, 2007-2010 and 2010-2013 rotation groups, to maximize sample size the observations for all 7 rotation groups spanning 2004 to 2013 are included in the health regressions.

<sup>17</sup> An exception to his consistency is Greece in the 2010-2013 decomposition, which we explore in more detail below. The full decomposition results per comparison and per rotation group are available upon request.

## Results and discussion

This section first examines the general trends in IRHI in the 7 countries under study between 2004 and 2013. We then separately study the role of the *mobility* and *health inequality* terms in IRHI changes before and after the financial crisis in 2008. Next we set cross country differences in the *transfer mobility* terms and pension policies side by side. Finally, the role of the austerity measures enacted in Greece on IRHI is explored.

### *IRHI trends across 7 European countries*

Figure 1 shows how IRHI, as measured by the CCI and calculated using predicted health, has evolved between 2004 and 2013 for the 7 countries under study. The separate lines represent the three rotation groups used to span the period. The black bars show 95% confidence intervals. While the confidence intervals in figure 1 are informative about the uncertainty of the yearly point estimates of IRHI, our interest lies in examining the *changes* of IRHI between different periods. It is therefore useful to know if the changes in IRHI with respect to the base year are statistically significant, which is signified by the bold bars.<sup>18</sup>

We note both geographical and time patterns in the IRHI trends. Before 2008, IRHI was either increasing or showed no significant movements, whereas between 2010 and 2013 some countries experience dramatic decreases. This is linked to the geographical dimension; IRHI in southern EU countries was initially rising before beginning to fall after approximately 2008. Continental countries see much smaller changes in IRHI, and both Belgium and France experienced significant increases in IRHI in the 2010-2013 period.

The above suggests distinctive trends in IRHI before and after the “Great Recession”. Figures 2-4 respectively show, for our sample of analysis, the trends in average total and market equivalized household incomes, unemployment and retirement rates, and the generalized Gini coefficient, calculated using both market and total income. Figure 3 reveals an increase in unemployment for Spain, Portugal and Greece between 2009 and 2010, where it continues to rise throughout the 2010-2013 period. Unemployment increases are only noticeable in Italy in the 2010-2013 period, while the continental countries appear unaffected. Patterns in equivalized income are less obvious, and appear mostly in the last rotation group in the southern countries, especially Greece. Not surprisingly, in

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<sup>18</sup> We do not check the statistical significance of changes across rotation groups. While they might be relevant (e.g. comparing the change in IRHI from the onset of the financial crisis), we only observe the same set of individuals over a period of 4 years.

periods of economic growth the generalized Gini coefficient of market income tends to increase. The addition of transfers leads to lower absolute income inequality. For countries that suffered noticeable household income declines after the economic crisis, the generalized Gini index decreased.

Given these trends, we distinguish between 3 different periods in our analysis. Following Jenkins et al (2012), we consider the 2004-2007 period to be the pre-crisis period; a time of relatively normal growth for the 7 countries. We term the rotation group spanning 2007-2010 the crisis period. Finally, the post-crisis rotation period (2010-2013) is when consequences of the crisis are most obvious in southern countries, while large effects for household income, inequality and employment are absent for the continental countries.

Comparisons of household statistics in figures 2-4 and IRHI in figure 1 reveal that IRHI trends differ in good and bad economic times. Years in which countries experience noticeable income growth – such as Greece, Spain and Italy in the pre-crisis period – coincide with significant increases in IRHI. Further, average income drops – and increasing unemployment – appear to be linked to decreases in IRHI; notably Greece and Portugal in the post-crisis period. Our subsequent analysis is motivated by these observations – why does IRHI follow a pro-cyclical pattern, with significant increases (decreases) during times of economic growth (recession)? The decomposition will focus on the pre-crisis (2004-2010) and post-crisis (2010-2013) periods. This is because these periods encapsulate clear phases of economic growth or decline for countries, while the crisis period (2007-2010) includes both.<sup>19</sup>

### *Decomposition results*

Figures 5 and 6 show the estimated *income mobility* and *inequality change* terms, respectively. The *ageing and migration* term proves to be unimportant for explaining IRHI evolution.<sup>20</sup> The upper and lower panels in figure 5 show the results of, respectively, the *pre-crisis* and *post-crisis* rotation groups for all countries. Focusing on the upper-most panel, which shows the 2004-2007 results, the leftmost cluster of bars show (in order from left to right) the contribution that *market-related mobility* (blue), *transfer-related mobility* (red) and *total income mobility* (green, and the sum of the previous two terms) had on IRHI changes in Austria between 2004 and 2007. The remaining clusters/panels have a similar interpretation for the different countries and rotation groups. In figure 6 each cluster of bars shows, per country, the effect that *market-related inequality change*, *transfer-related inequality*

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<sup>19</sup> We present the decomposition results of the 2007-2010 period in an appendix, figure A13.

<sup>20</sup> See figure A14.

*change* and *total inequality change* (sum of the previous two terms) had on IRHI change in that rotation group.

The *mobility* terms are far larger in magnitude than the inequality terms, and thus appear to be the most important determinant of IRHI change. The reason for this is that the association between ageing and health is stronger than the association between income and health.<sup>21</sup>

### *Mobility terms*

Figure 5 reveals that across countries and periods, *market mobility* tends to be positive and sizable. In comparison – though usually negative – the size and sign of *transfer mobility* is more varied, and therefore it is often this term which leads to differences in the *total mobility* term across country-period comparisons.

Recall that the mobility terms can be further split into per-age/sex groups and per-region contributions (see equation 5). Doing so gives an indication of which age/sex group's income movements are influencing the direction of the separate mobility terms, and therefore gives insight into the patterns in figure 5. While we don't explicitly reference these more detailed results, they inform much of the following discussion, and can be found in the appendix for each country, mobility term and for both the pre- and post-crisis period.<sup>22</sup>

The reason for the IRHI increasing effect of *market mobility* is that improvements in market incomes help the youngest, and therefore healthiest, groups to climb the income ladder, thus increasing the disparities in health by market income. Greece and Portugal are amongst the only countries to not experience significantly positive *market mobility* in the post-crisis period as market incomes no longer grew in this period and the very elderly were least affected by shrinking market incomes. Given the variation in *transfer mobility*, we distinguish between the following distinctive patterns.

First, one can distinguish between periods and countries in which transfer mobility fully compensates for the increase in IRHI caused by *market mobility*, such as in Austria (pre- and post-crisis), Portugal (pre-crisis period) and Spain and Italy (post-crisis), and periods and countries in which transfer mobility is close to zero, such as in Belgium and France (pre- and post-crisis), and Spain (pre-crisis). Our results

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<sup>21</sup> For example, in Portugal, the country with the largest predicted health difference between the oldest and the youngest individuals, the difference between the individuals with the minimum and the maximum income-related health value is roughly the same as the difference in predicted health between a 16-25 year old and a 56-65 year old man. See table A3 in the appendix.

<sup>22</sup> See tables A4-A10 for the results per age/sex group. The results per region are suppressed as they are small and not important to the decomposition, but are available upon request from the authors.

show that *transfer mobility* tends to be IRHI reducing, as transfers mainly consist of pensions, which disproportionately benefit older and relatively less healthy groups. However, the crucial difference between the above two patterns is the income position of the very elderly (75+) compared to young age groups. We return to this observation below.

Second, there are countries for which *transfer mobility* is large and positive, such as Italy and Greece pre-crisis. Further decomposition of these terms reveals that this can be attributed to household structure. Rather than solely being enjoyed by the old, also younger people in Italy and Greece benefited from the large increase in pension incomes between 2004 and 2007. This is due to young individuals in these countries continue living at their parent's home, and therefore benefiting from their parent's (or grandparent's) influx in pension income upon retirement. This increase in transfer income for the young and the just-retired, but to the exclusion of the very-elderly, served to increase the disparities in health between the healthy and the unhealthy, and therefore increased IRHI.

Lastly, there is a noticeable pattern for the southern countries post-crisis, whereby *transfer mobility* is large and negative in the final rotation group. This is most noticeable in Greece and Portugal, where this term "over-compensated" for *market mobility*. In such cases *total income mobility* is negative, and leading to decreases in IRHI between 2010 and 2013. This is due to the "stickiness" of pensions relative to income from work – while the crisis led to a significant fall in the incomes of the young, the incomes of elderly (and, on average, healthier) pensioners were less affected. This led to a fall in IRHI.

### *Market and Transfer Inequality Change*

The market *inequality change* term tends to be positive in most countries and periods as market incomes tend to become more unequally distributed over time (see Figure 6).<sup>23</sup> This occurs primarily due to two reasons. Firstly, wage growth for the employed is typically positive. Second, as shown in figure 3, the number of retirees in our panels – those who have much lower market incomes – typically increases over time. These two phenomena tend to increase the inequality in market incomes, and therefore the distribution of (predicted) market-income related health.

By contrast, the transfer-related *inequality change* terms tend to be negative, leading to IRHI decreases. This hides two facts. First, the redistributive effect of transfers was negative in each year, i.e. market income-related health inequalities ( $z_{it}^M \theta(y_{it}^M)$ ) were always larger than total income-

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<sup>23</sup> Portugal (post-crisis) is the only exception which combines an increase in *market inequality change* with a decrease of the generalized Gini index (see figure 4). This happens because the partial association between income and health – the  $\theta()$  function – is steeper and more concave in Portugal than other countries (see Appendix Table A.3), and because average incomes were declining at the same time.

related health inequalities ( $z_{it}\theta(y_{it})$ ). Second, the redistributive effect became larger (i.e. more negative) over time in most countries. We further find that the *transfer-related inequality change* terms compensate, in most countries and periods, the increase in *market inequality change* such that the changes in total income *inequality change* are usually close to zero.

The most important social transfer, in terms of change in the redistributive effect, is pensions. To demonstrate this, we repeat our decomposition and redefine *transfer* income to only include income from “old age benefits” and “survivor benefits”<sup>24</sup>, attributing the remaining transfer components to market income. The results are shown in the appendix (figure A11). Although the magnitudes change slightly for some countries, we observe much the same pattern as in figure 6. This confirms that old-age and survivor benefits are the primary source of the increasingly redistributive effect of transfers over time.

In addition to transfers working to decrease IRHI through the *mobility* terms, these results highlight a secondary IRHI reducing mechanism of transfers, and more specifically pensions. The  $\theta()$  function describes the association between income and health conditional on age (and gender and region). Pensions reduce IRHI rises by providing income to, on average, poorer individuals, thereby reducing disparities in market income related health by improving the poor’s (age-independent) health and income rank. Those that benefit from pensions are in worse health not only because they are old, but also because their market incomes provide little market income-related health.

The smaller association between income and health relative to the association between age and health means that the pro-cyclical pattern seen in the *mobility* terms is less obvious for the *inequality change* terms. For each of the crisis countries, the effect of total-income *inequality change* does in fact switch from positive to negative (Greece, Spain, Italy) or becomes more negative (Portugal), when comparing the results from 2004-2007 to 2010-2013. However, with the exception of Greece these changes are quantitatively unimportant.

### *Pension policies and IRHI*

The decomposition results highlight the particular importance of *transfer mobility* in determining the trends in IRHI: the income position of the old and very elderly (75+) as compared to young age groups

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<sup>24</sup> The EU-SILC data is organized in such a way that separating these components, and focusing only on old age benefits, is impossible for the early rotation groups, such as the 2004-2007 rotation groups. However, for the years in which we can separate these components we find that the average contribution across all countries of old age benefits (pensions and other lump cash benefits afforded to those who have reached the required age) to household income is approximately €7,000 while for survivor benefits the average contribution is €300.

turned out to be crucial. A natural next step, and the goal of this section, is to check whether different trends in transfer mobility are related to differences in pension policies across countries. This is a first and necessary step towards understanding the role of pension policies for IRHI trends, although we must acknowledge that the selection to 7 countries (see data section) and the nature of cross country comparisons inevitably restricts the scope of our analysis.

We restrict the analysis to the pre-crisis 2004-2007 period because – in contrast to later periods – this was a time of relatively normal economic growth. The severity of the crisis (and the policy reaction) in the post-crisis period differed substantially across countries. Therefore, any meaningful conclusion about the association between pension policies and IRHI trends across countries requires more than our 7 countries.

Panel (a) of table 3 shows the average change in levels and ranks of transfer incomes between 2004 and 2007 for different age groups (as defined in 2007). *Transfer mobility* in Portugal and Austria led to large reductions in IRHI because the very elderly enjoyed gains in transfer income (ranks) relative to working-age groups, especially the young. The effect of *transfer mobility* is muted in Belgium, Spain and France because the very elderly's relative transfer income position has stagnated. Finally, as discussed in the previous sections, in both Greece and Italy the transfer incomes of the young largely outperform those of the 65+ (Italy) and 75+ (Greece) age groups. Therefore, even in situations where newly retired individuals in the 56-65 group are compensated for their loss in market incomes, it is apparently not always sufficient for the net effect of *transfer mobility* to be IRHI reducing. Because of the large drops in predicted health as individuals age, any relative income losses for those in the 66-75 and especially those in the 75+ age categories will have IRHI increasing effects.

The phenomenon of relatively low incomes of the very elderly (75+) compared to more recent retirees is observed across Europe and elsewhere (OECD, 2008). In our setting, the crucial factor is how transfer incomes change the income position of the very elderly (i.e. how much they move up or down the income ladder), relative to others in the population – especially young groups. Differential growth in pensions compared to transfer payments to other age groups can be driven by several factors. First, if there is a large jump in the generosity between retirement generations then the relative losses of the already-retired will be larger. This will be magnified if pension incomes from the recently retired are shared across younger household members while no similar sharing mechanism holds for the very elderly. Secondly, the indexation policy of pensions matters. If indexation is pegged to inflation, the real value of pensions will not increase. However, some countries use other indexing rules such as pegging pensions to average earnings, or “progressive” indexation, where smaller pensions enjoy higher proportional increases (OECD, 2009). Third, the age at which an individual retires will have

consequences for the *transfer mobility* term. Because poor health rises sharply with age, the IRHI reducing effect of an increase in pension income at retirement will be larger the later-in-life an individual retires.<sup>25</sup>

In order to get a sense of the role of the different institutional settings, panel (b) of table 3 shows a number of different pension scheme entitlement indicators in 2007; while panel (c) shows the type of indexing rules in effect per country during the 2004-2007 period. Examining panel (b), there is little evidence to suggest that generosity is related to the IRHI reducing effect of pensions. Austria consistently has amongst the highest level of pension generosity, while Portugal has amongst the lowest, yet the *transfer mobility* for both of these countries significantly reduced IRHI. Belgium, France and Spain occupy different ranks according to the generosity measure used, yet for these countries *transfer mobility* is close to zero. As stressed above, it is the *relative* changes in transfer income rank which are crucial to determining *transfer mobility*, and for those who are already retired pension generosity may do little to increase their income rank further.

Indexation policy, shown in panel (c), may also be important for differences in *transfer mobility*. Austria, which employs discretionary increases in pensions, has adjusted pensions between 2004 and 2007 in a progressive manner (Whitehouse, 2009). Benefits rose with prices up until the median pension, while all pensions above the median increased by a flat amount. Portugal had a similar progressive indexation. In Belgium, France and Spain, all pensions were adjusted in line with prices, without progressivity adjustments (OECD, 2007). Because the very elderly have among the smallest pension benefits, any progressivity in indexation will naturally favour them, thus plausibly increasing pension incomes ranks for these groups relative to younger groups, and reducing IRHI (OECD, 2009).

The age of new retirees in Austria between 2004 and 2007 is also important for *transfer mobility*. The large increase in transfer income for those aged above 75 is in part due to a number of newly retired pensioners who, in 2007, were aged 75 or more. According to calculations using our data, approximately 10% of the new retirees in this period fit this description in Austria. Thus, the influx of transfer income to these old age and relatively poor-health individuals increased the IRHI reducing effect of the mobility for transfers.

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<sup>25</sup> However, due to large age brackets, our decomposition may fail to pick up the IRHI effect of small differences in the retirement age between countries. Moreover, the income position of the very elderly might not be directly affected by this; but only indirectly as compared to the newly retired.

### *Greek austerity measures and IRHI*

The largest policy changes in this period were enacted in Greece. In exchange for two bailout packages in 2010 and 2011, the Greek government introduced a wide ranging set of austerity measures. Among these were cuts in social transfers such as pensions and unemployment benefits, taxing of pensions greater than €1,400 a month by 5-10%, and freezing mandatory increases in public pensions between 2011 and 2015.<sup>26</sup>

As mentioned above, the pattern for the *inequality change* term for Greece between 2010 and 2013 is noticeably different from other countries, as the transfer term is positive while the market term is negative. The decrease in absolute income inequality thanks to the large drop in income from work over this period means that market *inequality change* is negative, leading to reductions in IRHI. The positive sign for transfer *inequality change* indicates that the reduction in inequality between 2010 and 2013 was larger when considering market-related health than when considering total income-related health; or in other words that the redistributive nature of transfers declined as a result of reduced social transfers due to the austerity measures, especially for pensions.

The possible impact of the Greek austerity measures is less obvious when looking at the *mobility* results between 2010 and 2013, though their impacts are visible in the 2010-2011 comparison when the *transfer mobility* term is large and positive.<sup>27</sup> The immediate impact of the Greek austerity measures was a worsening of the incomes of the elderly relative to the young, as the drop in pensions between 2010 and 2011 was larger than the drop in income from work. This worsened the relative income position of older groups, and increased IRHI. However, the *transfer mobility* term switches sign to become negative between 2011 and 2012. This is due to the sudden nature of the cut in transfer incomes, compared to the more gradual decline in market incomes. Though incomes were already falling in Greece between 2010 and 2011, it is in the subsequent two years in which the largest falls occur (see figure 2). Between 2011 and 2013 income from work in Greece fell by enough to outweigh the initially IRHI increasing effects of the austerity measures.

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<sup>26</sup> OECD (2013) provides a list of pension reforms that occurred as a result of these austerity measures.

<sup>27</sup> Figure A12.

## Conclusion

Our paper makes a number of contributions to the literature on health inequalities. First, for a range of European countries, we show for the first time how IRHI have evolved between 2004 and 2013, a time period that covers the largest global economic contraction in the post-war era. We document distinct time and geographic trends in IRHI. Before the crisis, southern countries, and to a lesser extent continental countries, saw IRHI rising. After 2008, IRHI started falling in the southern countries that were most affected by the crisis. These European trends confirm the largely pro-cyclical pattern of IRHI documented for 2 countries in earlier work (Baeten et al, 2013; Coveney et al, 2016).

Secondly, using a novel decomposition, we provide important new empirical findings concerning IRHI growth. We find that market incomes tend to increase inequalities in health, while the relation between social transfers and IRHI reveals a more varied pattern, in some cases decreasing and in other cases decreasing IRHI. This varied pattern occurs because social transfers – most importantly pensions – are targeted at the elderly and other poor groups who are otherwise excluded from gains from income growth, but also because in some countries, the young tend to live with their parents and therefore benefit from their pension benefits upon retirement. The decomposition also explains the perhaps initially puzzling finding that IRHI falls during crises. This occurs as the logical consequence of the stickiness of pensions relative to income from work, and the age-based income re-ranking effect that this entails.

Finally, we examine how government policies relate to IRHI change. We look at the heterogeneity in the IRHI decreasing effect of transfers across countries and time, and find that the most “successful” pensions payments (in terms of reducing IRHI) are those where the very elderly (75+) groups are not left behind by income growth. Our results also demonstrate that the large reduction in pension payments between 2010 and 2013 due to the austerity measures in Greece initially coincided with an increase in IRHI, and is likely to have dampened the IRHI reducing effects of transfers in later years.

Based on these empirical findings, our results suggest that government transfer policies can and do appear to have a large effect on IRHI. Especially in times of crisis, pensions help to reduce IRHI by improving the relative income position of the elderly. In periods of economic growth, however, transfers may not adequately protect these groups. Key is the income protection afforded to the elderly and in particular the very elderly, a group that is likely to keep growing in the near future. Our results show that in situations where this group is excluded from gains, the net effect of transfers may no longer be IRHI reducing. Governments concerned with rising levels of IRHI should develop policies aimed at improving the relative incomes of the very elderly. While our descriptive study could not confirm the IRHI reducing effectiveness of different policies, our findings suggest that pension

generosity alone does not guarantee lower levels of IRHI; while policies that favor the eldest groups, such as progressive indexation and appropriate discretionary increases, have greater potential to successfully reduce IRHI. Though in general our findings indicate that IRHI is pro-cyclical, the Greek experience shows that austerity measures can kill much of the IRHI reducing effect of pensions during crises.

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## Figures and Tables

**Table 1 – Observations per wave, rotation group, country in EU-SILC dataset**

Rot. group	1	2	3	4	5	6	7
Period	2004-2007	2005-2008	2006-2009	2007-2010	2008-2011	2009-2012	2010-2013
<b>Observations</b>							
Austria (AT)	2,294	1,923	1,901	1,894	1,882	2,200	2,163
Belgium (BE)	1,315	2,126	1,966	1,987	1,670	1,762	1,886
Greece (EL)	2,221	2,113	2,498	2,238	2,756	2,479	2,244
Spain (ES)	4,136	4,918	5,046	5,474	5,522	5,177	4,571
France (FR)	1,433	2,323	2,360	2,359	2,399	2,295	2,316
Italy (IT)	8,240	7,898	7,673	7,709	6,730	5,652	4,986
Portugal (PT)	1,945	1,758	1,770	2,014	2,101	2,612	2,571

Table shows for each rotation group the period spanned and the number of balanced observations (observed for the whole 4 year period) for each country.

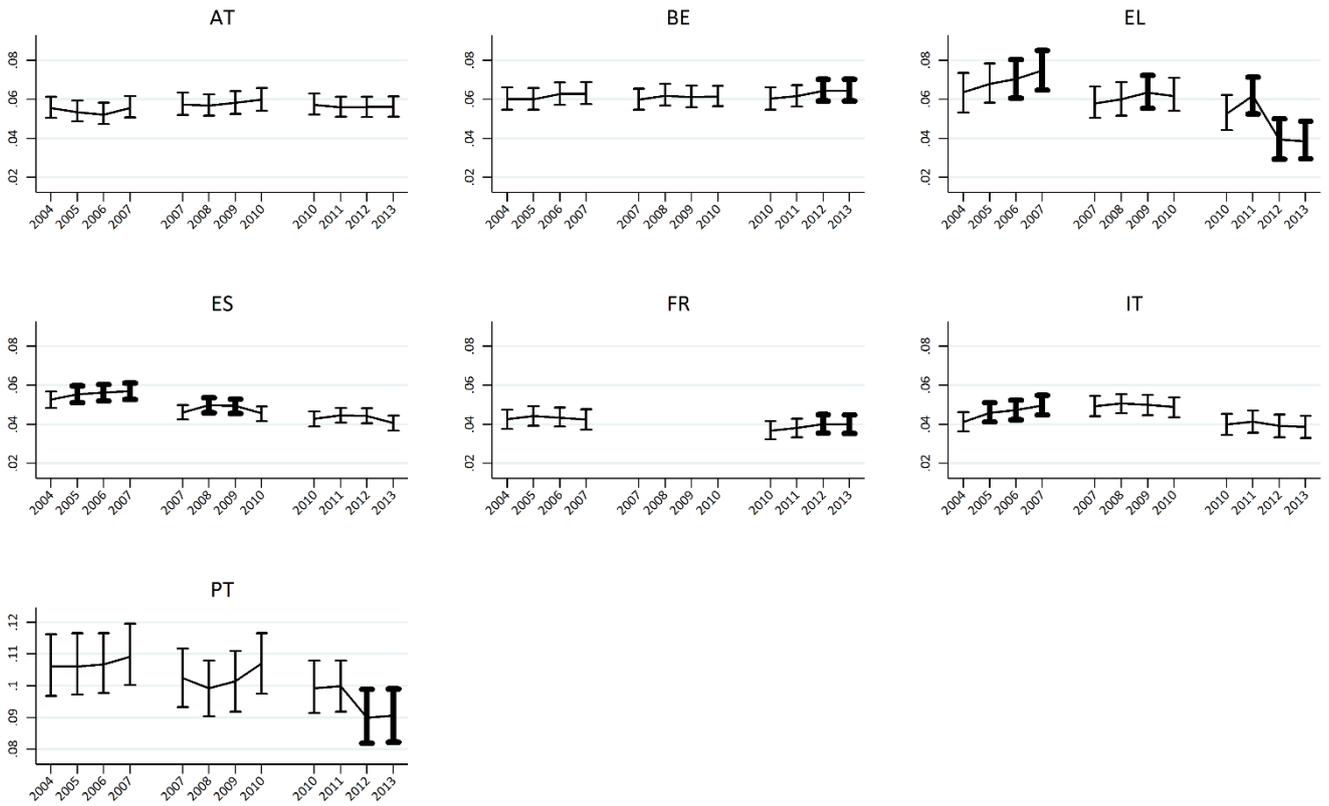
**Table 2 – income components of transfer and market incomes**

Transfer income	Market income
<ul style="list-style-type: none"> <li>• Unemployment benefits</li> <li>• Old-age benefits</li> <li>• Survivor benefits</li> <li>• Sickness benefits</li> <li>• Disability benefits</li> <li>• Education-related allowances</li> <li>• Family/children related allowances</li> <li>• Social exclusion not elsewhere classified</li> <li>• Housing allowances</li> </ul>	<ul style="list-style-type: none"> <li>• Gross employee cash or near cash income</li> <li>• Company car</li> <li>• Gross cash benefits or losses from self-employment</li> <li>• Pensions received from individual private plans</li> <li>• Income from rental of a property or land</li> <li>• Regular inter-household cash transfers received</li> <li>• Returns from unincorporated business</li> <li>• Income received by people aged under 16</li> </ul>
	<p><i>Minus</i></p> <ul style="list-style-type: none"> <li>• Regular taxes on wealth</li> <li>• Regular inter-household cash transfer paid</li> <li>• Tax on income and social insurance contributions</li> </ul>

Table shows the makeup for our definitions of *Transfer* and *Market* incomes. These are the same definitions as used in the SILC survey.

**Figure 1**

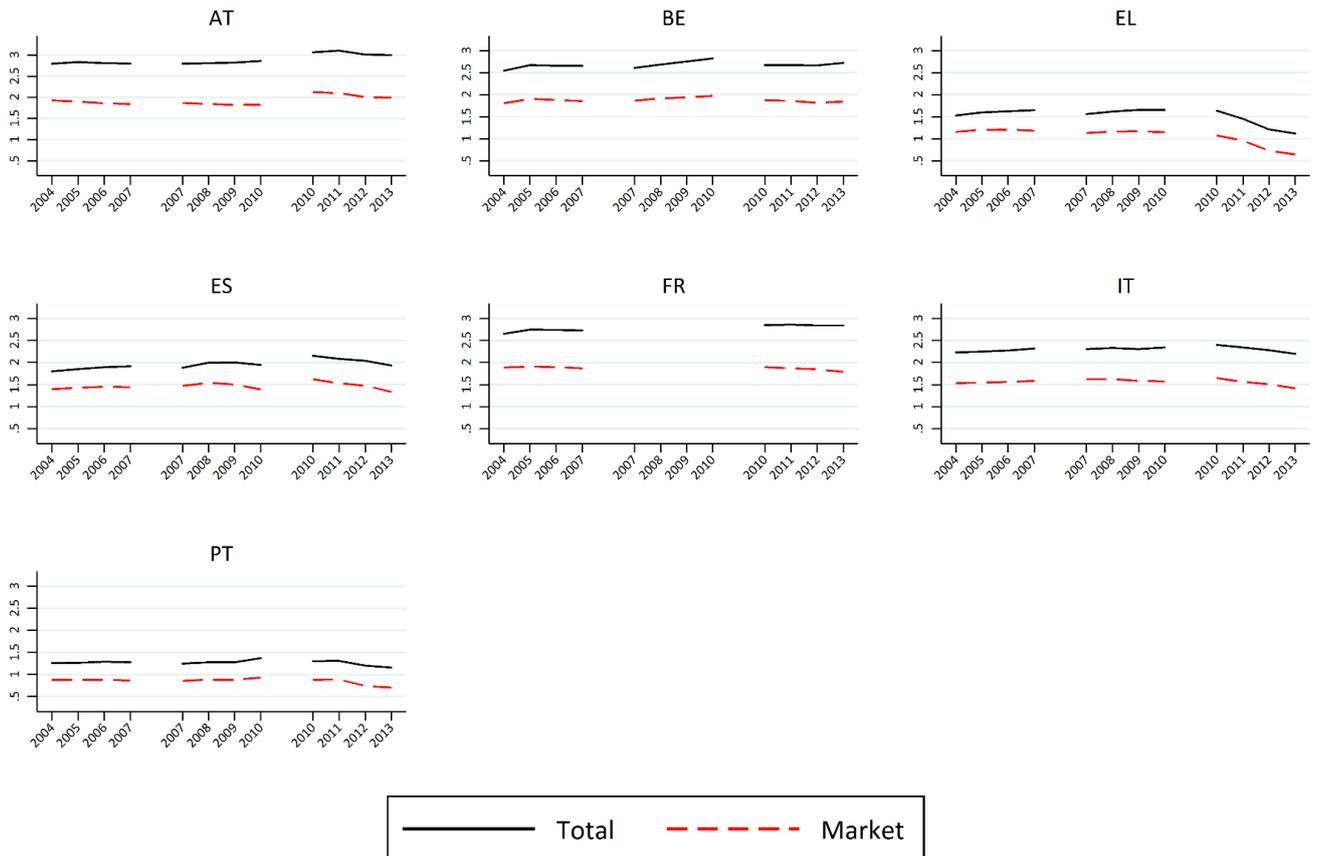
IRHI trends



Note different scale of Portugal  
 Bold bars indicate years in which change in CCI compared to base year is significant ( $p < 0.05$ )  
 Y-axis: value of the CCI

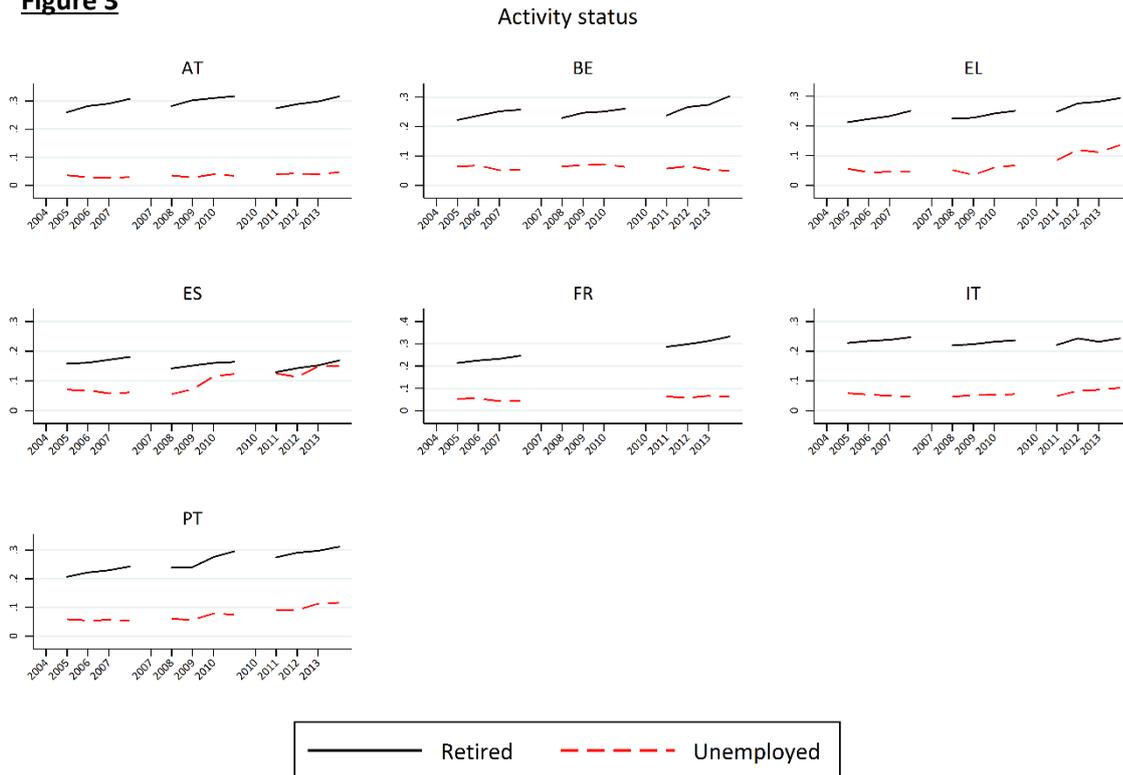
**Figure 2**

Equiv. inc trends



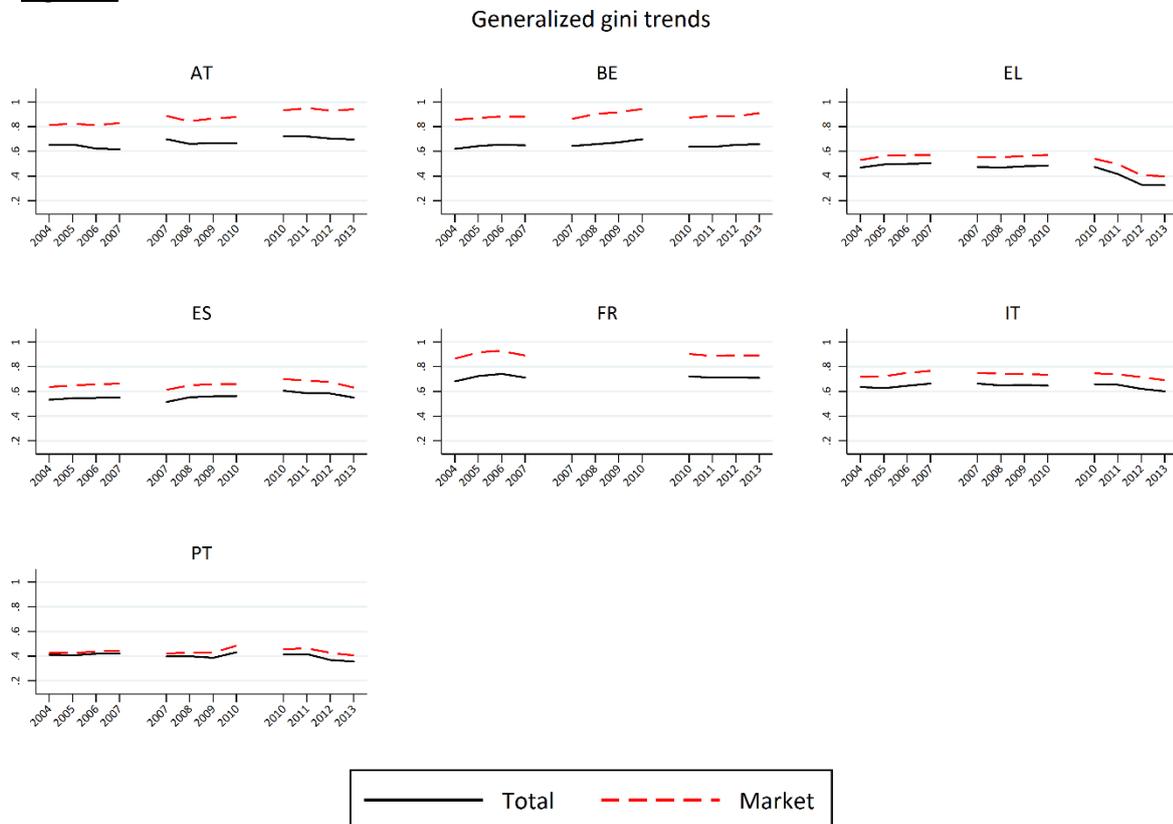
Y-axis: value of average equivalized household income (in 2013 Euros, divided by 10,000)

**Figure 3**



Y-axis: fraction of individuals in given year & rotation group  
 Note different scale for FR

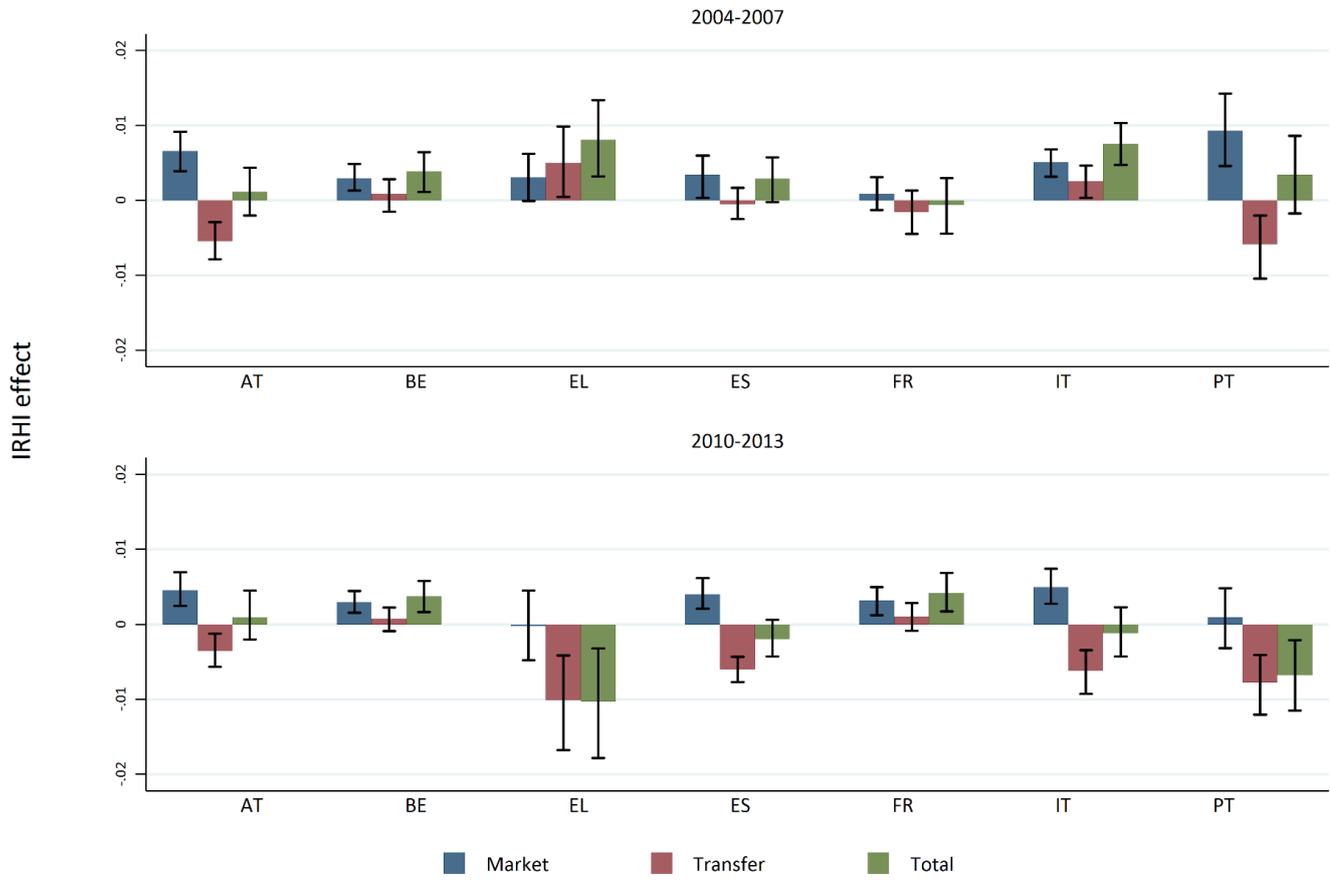
**Figure 4**



Y-axis: value of the generalized Gini

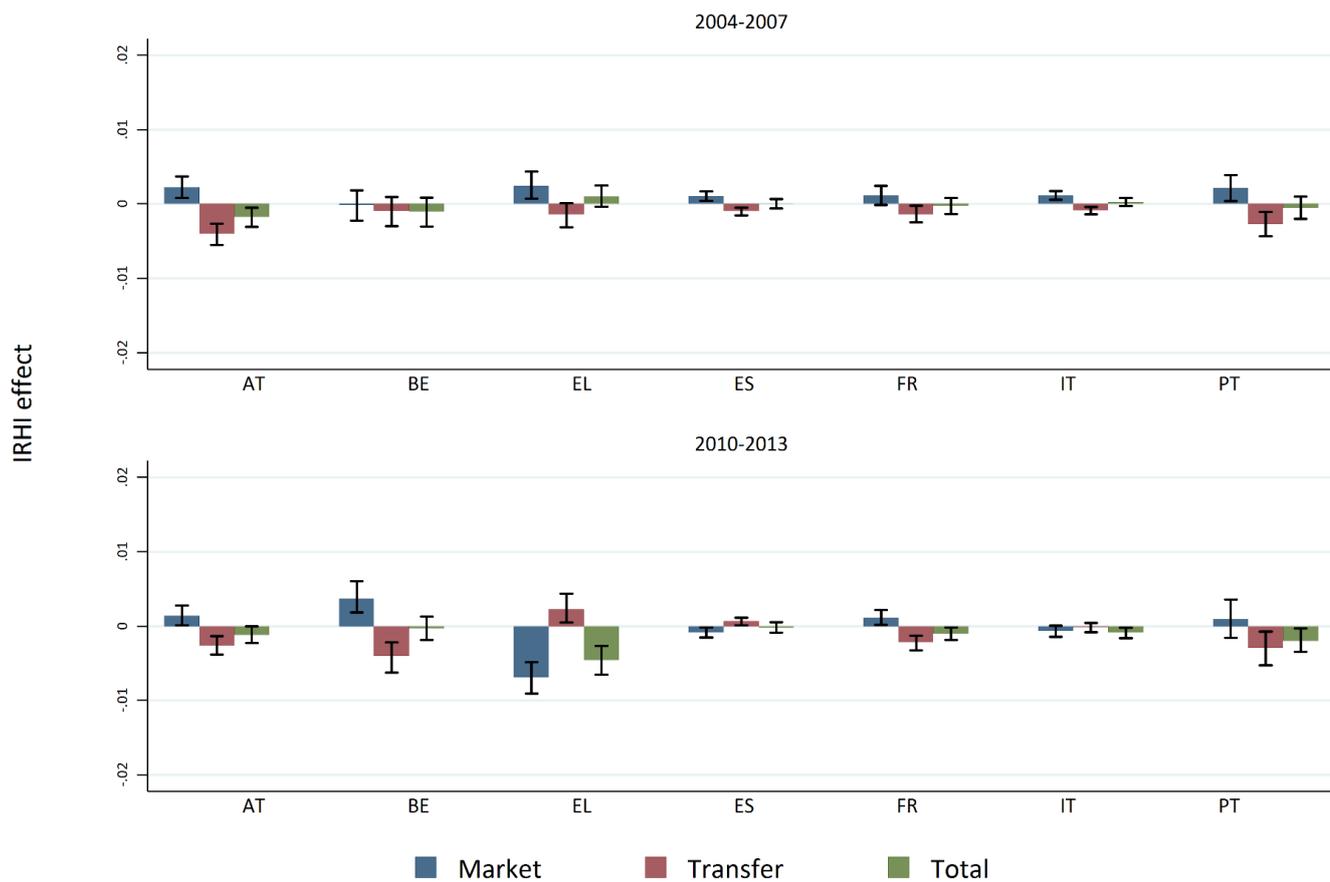
**Figure 5**

Income Mobility terms



**Figure 6**

Income Inequality terms



**Table 3**

<b>(a)</b>							
	<b>Austria</b>	<b>Belgium</b>	<b>Greece</b>	<b>Spain</b>	<b>France</b>	<b>Italy</b>	<b>Portugal</b>
Change in transfer income levels 2004-2007 per age group (€)							
16 - 35	-314	323	486	81	988	358	-87
36 - 55	-72	352	327	519	730	-34	187
56 - 65	4635	3187	3913	2341	2183	1602	1264
66 - 75	579	450	283	1241	1003	68	952
76+	1950	-101	240	357	3	346	179
Change in transfer income ranks 2004-2007 per age group (€)							
16 - 35	-21	6	-13	-13	5	7	-19
36 - 55	-16	-6	-8	0	-3	-5	-4
56 - 65	68	39	67	33	36	27	23
66 - 75	-11	-16	-22	1	-9	-20	24
76+	24	-28	-10	-15	-42	-13	-4
<b>(b)</b>							
Pension generosity indicators (2007)							
Rep. rate (lifetime) <sup>i</sup>	0.91	0.63	1.1	0.85	0.63	0.78	0.69
Rep. rate (current) <sup>ii</sup>	0.62	0.44	0.4	0.48	0.6	0.49	0.47
Pension Wealth <sup>i</sup>	9	5.6	13	10	8.1	8.4	7.9
<b>(c)</b>							
Indexation policies (2004-2007) <sup>i</sup>							
	Disc. prog	Price*	Disc.	Price	Price	Price prog.	Price prog.

Panel (a) shows the changes in transfer income levels and corresponding ranks between 2004 and 2007 for 5 different age groups, as well the average across all age groups. Panel (b) shows 3 different sets of pension generosity indicators; the replacement rate as a ratio of the pension entitlement over the average annual life-time income of a hypothetical man who earned the mean income, the replacement rate as a ratio of the current income of pensioners over the current (2007) earnings of those aged between 50 and 59, and pension wealth, which is the number years of average annual income one can expect upon retirement, taking into account life-expectancy, indexing rules and retirement age. Panel (c) classifies the different indexation methods used across countries; “disc”= discretionary increases, “price” = price indexed, “price\*” = price index for a select basket of goods, “prog.” = indexed or discretionary increases favour poor pensions with larger increases. (i) Source: OECD *Pensions at a Glance* reports, 2005 and 2007. (ii) Source: Eurostat aggregate replacement ratio statistics.

## Supplementary figures and appendix

**Table A1 - SILC data available per country**

	Observations per year (unbalanced)											Missing rotation groups	Missing health information	Selected countries
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total			
<b>AT</b>	4,674	7,113	10,458	13,393	10,955	11,057	11,493	8,158	5,434	2,532	85,267		0%	✓
<b>BE</b>	2,571	6,122	9,063	11,803	11,487	11,382	11,539	7,803	4,928	2,501	79,199		1%	✓
<b>BG</b>	0	0	5,125	7,161	9,796	12,336	13,776	11,321	6,759	2,784	69,058	1,2	0%	
<b>CY</b>	0	4,441	6,589	8,468	8,087	7,557	9,106	6,895	5,101	3,232	59,476	1	0%	
<b>CZ</b>	0	8,628	14,856	19,293	22,644	19,713	18,209	12,890	9,033	4,565	129,831	1	15%	
<b>DK</b>	3,015	5,352	7,376	8,243	7,610	7,326	7,155	5,215	3,418	1,682	56,392	7	50%	
<b>EE</b>	2,232	3,415	6,982	10,005	10,849	11,308	11,213	7,844	5,068	2,646	71,562	7	15%	
<b>EL</b>	3,526	6,405	9,831	12,345	14,119	15,043	14,784	9,429	5,475	2,573	93,530		0%	✓
<b>ES</b>	7,875	15,895	21,989	28,809	30,081	30,217	30,229	20,643	13,021	5,856	204,615		1%	✓
<b>FI</b>	4,018	7,528	10,602	13,578	13,222	12,569	15,551	11,428	7,878	4,861	101,235		<b>53%</b>	
<b>FR</b>	2,108	5,268	8,392	11,392	12,697	12,666	12,854	9,209	6,051	2,788	83,425		0%	✓
<b>HR</b>	0	0	0	0	0	0	8,511	14,628	9,336	2,609	35,084	1,2,3,4	42%	
<b>HU</b>	0	8,351	13,127	18,452	18,623	20,334	20,410	14,414	9,626	3,961	127,298	1	1%	
<b>IE</b>	1,500	3,667	6,020	6,111	4,531	1,870	2,668	2,306	1,498	812	30,983	4,5,6	0%	
<b>IS</b>	1,561	2,980	4,140	5,398	5,427	5,409	5,658	3,998	2,480	1,185	38,236		<b>57%</b>	

Table shows the number of observations available per country in the 2004-2013 longitudinal release of SILC, and the criteria used to select countries for analysis. Data is presented with minimal cleaning, so numbers do not necessarily represent usable final sample sizes. In addition to observations per year, the number of missing rotation groups between 2004 and 2013 is also listed, as well as the proportion of missing self-assessed health – our criteria for determining country selection. Of the countries without missing information between 2004 and 2013, 3 countries are excluded due to high amounts of missing health data: Iceland, Sweden and Finland.

**Table A1 (cont.) - SILC data available per country**

	Observations per year (unbalanced)											Missing rotation groups	Missing health info	Selected countries
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total			
<b>IT</b>	13,335	24,769	35,329	44,619	44,273	43,067	40,305	26,562	15,656	6,508	294,423		1%	✓
<b>LT</b>	0	4,910	7,969	10,913	10,472	11,211	11,603	8,225	5,636	2,874	73,813	1,2,5,6	11%	
<b>LU</b>	7,602	7,522	7,726	7,745	7,513	6,136	8,409	7,276	6,542	1,680	68,151	7	0%	
<b>LV</b>	0	5,408	7,399	9,269	9,020	12,202	12,992	9,505	6,055	3,007	74,857	1	1%	
<b>MT</b>	0	0	2,710	4,979	6,454	8,482	8,716	6,501	4,601	2,299	44,742	1,2	0%	
<b>NL</b>	0	13,604	15,310	19,623	19,519	18,254	19,134	12,847	7,719	3,845	129,855	1	48%	
<b>NO</b>	1,538	1,576	1,542	1,503	1,355	2,499	3,619	3,238	2,284	1,411	20,565	7	49%	
<b>PL</b>	0	18,705	27,739	34,675	33,694	31,671	30,803	21,878	14,029	6,907	220,101	1	6%	
<b>PT</b>	2,946	5,456	7,180	7,852	6,692	6,184	6,471	5,915	4,956	3,005	56,657		0%	✓
<b>RO</b>	0	0	0	12,760	16,525	16,282	12,001	7,825	3,923	0	69,316	1,2,3,7	0%	
<b>SE</b>	3,606	6,859	9,157	12,319	12,441	12,431	12,223	7,993	4,866	2,200	84,095		<b>50%</b>	
<b>SI</b>	0	15,702	20,616	24,546	24,908	25,379	25,239	16,505	9,666	4,348	166,909	1	64%	
<b>SK</b>	0	6,424	9,377	12,027	12,524	13,472	13,524	9,877	6,584	3,137	86,946	1	0%	
<b>UK</b>	0	11,799	14,933	17,458	16,804	15,615	15,111	9,396	5,523	2,509	109,148	1	5%	

**Table A2– Percentage of market and transfer income due to pensions and wages per rotation group**

		Rot. 1	Rot. 2	Rot. 3	Rot. 4	Rot. 5	Rot. 6	Rot. 7
AT	Pen. %	40.77	42.03	44.11	41.73	39.64	39.85	38.77
	Wage %	70.91	69.38	66.15	68.49	66.62	67.11	67.40
BE	Pen. %	32.69	33.20	35.32	32.95	32.80	30.65	31.06
	Wage %	68.35	66.96	65.10	66.95	67.94	66.87	66.85
EL	Pen. %	63.69	62.03	62.04	61.36	61.19	63.57	62.74
	Wage %	57.21	53.09	55.71	57.36	58.19	56.83	56.04
ES	Pen. %	54.85	60.21	54.49	52.70	48.63	37.18	33.12
	Wage %	77.57	78.53	80.88	80.33	79.95	73.59	71.92
FR	Pen. %	39.39	41.04	40.65	41.37	44.62	45.63	46.14
	Wage %	69.56	70.77	69.44	67.35	65.07	65.20	64.94
IT	Pen. %	57.59	55.91	55.00	52.47	54.16	55.34	54.87
	Wage %	60.48	62.73	61.23	62.63	62.38	60.88	61.76
PT	Pen. %	41.73	45.42	45.69	43.12	46.00	47.51	45.91
	Wage %	75.13	76.66	77.94	78.79	77.75	79.21	78.18

Table shows for each rotation group and country the percentage of transfer income due to pensions (first row per country) and the percentage of (gross) market income due to wages (second row per country), computed on the sample where component information is available. Our data indicates that on average *wages* and *pensions* are the most important sources of income within market and transfer income, respectively.

**Table A3 – Interval regression results**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	AT	BE	EL	ES	FR	IT	PT
<b>Eqinc</b>	0.0321***	0.0388***	0.0268***	0.0193***	0.0220***	0.0133***	0.0730***
<b>Eqinc<sup>2</sup></b>	-0.00270***	-0.00391***	-0.00314***	-0.00183***	-0.00167***	-0.000985***	-0.0106***
<b>F 16-25</b>	-0.00172	-0.00535*	0.00178	-0.00107	-0.00842***	-0.00143	-0.00621
<b>M 26-35</b>	-0.0138***	-0.0179***	-0.0118***	-0.0132***	-0.0179***	-0.0137***	-0.0242***
<b>F 26-35</b>	-0.0119***	-0.0226***	-0.00824***	-0.0153***	-0.0245***	-0.0152***	-0.0263***
<b>M 36-45</b>	-0.0295***	-0.0310***	-0.0219***	-0.0267***	-0.0324***	-0.0276***	-0.0400***
<b>F 36-45</b>	-0.0311***	-0.0391***	-0.0245***	-0.0291***	-0.0386***	-0.0312***	-0.0532***
<b>M 46-55</b>	-0.0541***	-0.0534***	-0.0422***	-0.0424***	-0.0537***	-0.0446***	-0.0699***
<b>F 46-55</b>	-0.0568***	-0.0530***	-0.0490***	-0.0499***	-0.0595***	-0.0510***	-0.0969***
<b>M 56-65</b>	-0.0834***	-0.0585***	-0.0785***	-0.0684***	-0.0670***	-0.0713***	-0.116***
<b>F 56-65</b>	-0.0679***	-0.0589***	-0.0866***	-0.0813***	-0.0674***	-0.0806***	-0.152***
<b>M 66-75</b>	-0.0827***	-0.0587***	-0.119***	-0.0864***	-0.0906***	-0.104***	-0.151***
<b>F 66-75</b>	-0.0870***	-0.0747***	-0.144***	-0.114***	-0.0929***	-0.125***	-0.194***
<b>M 76-85</b>	-0.122***	-0.0818***	-0.186***	-0.122***	-0.133***	-0.151***	-0.195***
<b>F 76-85</b>	-0.148***	-0.0973***	-0.216***	-0.158***	-0.129***	-0.180***	-0.248***
<b>N</b>	57,028	50,848	66,192	139,372	61,932	195,552	59,084

\* p<0.05 \*\* p<0.01 \*\*\* p<0.001

Table shows the interval regression results, used to generate the ratio-scaled health variable and the coefficients of which are used in the decomposition. Note that *EL* refers to Greece, and *ES* refers to Spain - the rest of the country names are straightforward. *Eqinc* refers to equalized household income. The constant has been suppressed, as well as the regional dummies because they are small and not important to the decomposition. Full regression results are available from the authors upon request. Robust standard errors used, clustered at the individual level.

**Table A4 – Sub-mobility terms for Austria**

	Pre-crisis (2004-2007)						Post-crisis (2010-2013)					
	-1 Coeff.	-2 Prop.	-3 Market Weight	-4 Transfer Weight	-5 Market Inc. (€)	-6 Transfer Inc. (€)	-7 Prop.	-8 Market Weight	-9 Transfer Weight	-10 Market Income (€)	-11 Transfer Income (€)	
<b>M 16-25</b>	-	4.87	71.37***	-8.802	2882.9*	-429.8	5.16	37.83	-23.89	1018.1	-912.3	
<b>F 16-25</b>	-0.00172	4.94	12.65	-22.37	56.78	91.47	3.1	27.09	-29.42	-498	-988.5	
<b>M 26-35</b>	-0.0138***	7.12	-8.664	-18.94	-1855.7	64.65	7.79	0.567	-35.89**	-1260.8	-294	
<b>F 26-35</b>	-0.0119***	6.3	51.41*	-23.03	2128	-1042.6	6.89	11	-13.58	-1627.5	146.1	
<b>M 36-45</b>	-0.0295***	10.47	36.14*	-17.28*	1237.3	-472.7	7.42	37.25*	1.276	529.9	357.6	
<b>F 36-45</b>	-0.0311***	10.6	10.39	-23.77**	-559.8	-207.2	8.81	21.4	-15.11	-737.3	-37.78	
<b>M 46-55</b>	-0.0541***	9.37	35.45*	-15.97	1151.8	-324.9	10.33	24.95*	-4.515	37.28	-188.3	
<b>F 46-55</b>	-0.0568***	9.53	0.00472	-12.21	-368.7	580.1	10.42	-1.454	-10.09	-1187.9	225.2	
<b>M 56-65</b>	-0.0834***	7.22	-77.99***	71.50***	-5070.7***	4621.3***	8.1	-53.67**	36.37**	-3966.7***	2758.0***	
<b>F 56-65</b>	-0.0679***	9.15	-80.39***	58.81***	-5330.1***	4365.0***	8.94	-59.19***	46.78***	-4752.6***	3481.0***	
<b>M 66-75</b>	-0.0827***	6.2	12.6	-15.89	-908.4	899	6.89	-5.316	22.68	-1347.7	1384.9*	
<b>F 66-75</b>	-0.0870***	6.28	-3.961	-10.06	-1068.1	357.8	7.39	-8.168	4.638	-1528.7*	841.7	
<b>M 76-85</b>	-0.122***	3	-55.14	18.39	-4198.6*	793.9	3.81	-12.57	-20.96	-1960.7	-4.252	
<b>F 76-85</b>	-0.148***	4.96	-16.5	37.10*	-1013	2650.3***	4.94	8.501	8.034	-284	282.5	

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table shows different elements of the market and transfer mobility terms for Austria in the 2004-2007 and 2010-2013 decompositions. Column 1 shows the age/sex coefficient in the health regression, column 2 shows the proportion of individuals in each age/sex group in 2007, columns 3, 4, 5 & 6 show the change between 2004 and 2007 for each age/sex groups in market income weights, transfer income weights, actual market incomes and transfer market incomes, respectively. Columns 7-11 show the identical information for the post-crisis 2010-2013 period. These changes are summarized by a no-constant regression where the change in the income weight/amount is regressed on a set of age/sex dummies which refer to the last wave in the rotation group. All currency amounts in 2013 euros.

**Table A5 – Sub-mobility terms for Belgium**

	Pre-crisis (2004-2007)						Post-crisis (2010-2013)					
	-1 Coeff.	-2 Prop.	-3 Market Weight	-4 Transfer Weight	-5 Market Inc. (€)	-6 Transfer Inc. (€)	-7 Prop.	-8 Market Weight	-9 Transfer Weight	-10 Market Income (€)	-11 Transfer Income (€)	
<b>M 16-25</b>	-	5.15	23.37	-17.31	2301.2*	-752.3	4.41	26.41	-9.864	1581.2	-418.3	
<b>F 16-25</b>	-0.00535*	4.96	35.22	20.25	2269.1	773.9	4.12	26.17	-31.28	1004.7	-537	
<b>M 26-35</b>	-0.0180***	6.55	24.89	13.32	2023.3	734.3	6.53	16.92	19.37	1292.9	1057.0*	
<b>F 26-35</b>	-0.0226***	6.63	56.92**	7.056	3219.5**	413.4	6.83	45.38**	29.90*	2750.3**	773	
<b>M 36-45</b>	-0.0308***	9.51	19.63	-2.297	1703.9*	-15.73	9.68	13.3	4.89	1151.3	666.5	
<b>F 36-45</b>	-0.0393***	10.36	1.277	-10.44	855.4	109.6	9.21	11.75	10.32	1305.8	692.9	
<b>M 46-55</b>	-0.0528***	11.51	-10.69	-11.94	131.5	181.9	9.05	-8.712	-7.544	-584	214.8	
<b>F 46-55</b>	-0.0528***	9.68	-27.39	3.794	-872.5	1172.2*	9.98	-3.926	-11.81	26.7	224.6	
<b>M 56-65</b>	-0.0581***	7.06	-74.17**	42.79**	-2624.6*	3626.2***	7.44	-29.29	5.4	-2356.0**	1885.0***	
<b>F 56-65</b>	-0.0582***	6.89	-43.04*	35.60*	-1676.9	2736.7***	8.05	-58.41***	28.88*	-4399.6***	3286.4***	
<b>M 66-75</b>	-0.0568***	5.61	6.525	-11.55	-209.1	616.2	5.91	-0.961	-13.87	-1658.2*	1009.6*	
<b>F 66-75</b>	-0.0732***	6.58	-0.13	-20.41	-1.682	307.7	6.91	-15.82	-10.21	-2345.9**	1344.7**	
<b>M 76-85</b>	-0.0805***	3.74	26.43	-50.41**	241.2	-253.7	4.5	-10.79	-4.537	-1052.1*	808.9	
<b>F 76-85</b>	-0.0958***	5.78	6.657	-12.84	566.1	-1.225	7.38	11.88	-29.06*	-355.1	124.6	

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table shows different elements of the market and transfer mobility terms for Belgium in the 2004-2007 and 2010-2013 decompositions. Column 1 shows the age/sex coefficient in the health regression, column 2 shows the proportion of individuals in each age/sex group in 2007, columns 3, 4, 5 & 6 show the change between 2004 and 2007 for each age/sex groups in market income weights, transfer income weights, actual market incomes and transfer market incomes, respectively. Columns 7-11 show the identical information for the post-crisis 2010-2013 period. These changes are summarized by a no-constant regression where the change in the income weight/amount is regressed on a set of age/sex dummies which refer to the last wave in the rotation group. All currency amounts in 2013 euros.

**Table A6 – Sub-mobility terms for Greece**

	Pre-crisis (2004-2007)						Post-crisis (2010-2013)				
	-1 Coeff.	-2 Prop.	-3 Market Weight	-4 Transfer Weight	-5 Market Inc. (€)	-6 Transfer Inc. (€)	-7 Prop.	-8 Market Weight	-9 Transfer Weight	-10 Market Income (€)	-11 Transfer Income (€)
<b>M 16-25</b>	-	3.72	34.27	-13.09	1860.6	507.1	3.69	-27.64	-55.38**	-7245.6***	-114.3
<b>F 16-25</b>	0.00178	4.27	9.961	6.878	1737.7	1042.4*	3.74	21.2	-7.963	-5665.0***	431.1
<b>M 26-35</b>	-0.0118***	8.05	32.33	-0.111	1376.2	869.9*	7.8	-2.049	10.89	-4715.2***	-425.8
<b>F 26-35</b>	-0.00824***	9.03	-4.421	18.27	10.24	1358.7**	8	21.4	-26.5	-4770.1***	-71.14
<b>M 36-45</b>	-0.0219***	9.38	31.50*	-9.901	1451.7**	362.7	9.91	13.82	-42.87***	-5466.9***	-1011.4*
<b>F 36-45</b>	-0.0245***	9.55	6.752	-15.18**	690	372.6*	9.55	21.14	-30.62**	-4849.5***	-417.9
<b>M 46-55</b>	-0.0422***	8.43	-11.23	-11.85	-487.7	559.0**	8.34	2.382	-16.29	-5343.5***	-219
<b>F 46-55</b>	-0.0490***	8.47	-20.83	24.94*	-540.9	1680.9***	8.26	-25.08	0.41	-5890.9***	-160.6
<b>M 56-65</b>	-0.0785***	6.91	-38.01	58.17**	-769.7	2796.7***	7.1	-5.091	29.35	-4681.2***	-465.3
<b>F 56-65</b>	-0.0866***	7.63	-20.34	20.25	-841.5	1750.1***	7.8	-19.12	15.17	-3769.6***	-1462.7*
<b>M 66-75</b>	-0.119***	6.17	-2.534	-2.548	-301.9	1298.3***	6.5	-68.47**	75.60***	-3895.3***	-1784.4***
<b>F 66-75</b>	-0.144***	8.06	-15.53	-15.76	-557.8	727.3**	7.22	-9.718	31.61*	-2340.9***	-2265.2***
<b>M 76-85</b>	-0.186***	4.51	-5.529	-28.14**	-328.8	243.7	5.25	47.16**	2.728	-1003.8**	-2582.6***
<b>F 76-85</b>	-0.216***	5.81	18.04	-52.43***	83.33	-202.7	6.85	24.65	22.04	-1134.3**	-2079.0***

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table shows different elements of the market and transfer mobility terms for Greece in the 2004-2007 and 2010-2013 decompositions. Column 1 shows the age/sex coefficient in the health regression, column 2 shows the proportion of individuals in each age/sex group in 2007, columns 3, 4, 5 & 6 show the change between 2004 and 2007 for each age/sex groups in market income weights, transfer income weights, actual market incomes and transfer market incomes, respectively. Columns 7-11 show the identical information for the post-crisis 2010-2013 period. These changes are summarized by a no-constant regression where the change in the income weight/amount is regressed on a set of age/sex dummies which refer to the last wave in the rotation group. All currency amounts in 2013 euros.

**Table A7 – Sub-mobility terms for Spain**

	Pre-crisis (2004-2007)						Post-crisis (2010-2013)				
	-1 Coeff.	-2 Prop.	-3 Market Weight	-4 Transfer Weight	-5 Market Inc. (€)	-6 Transfer Inc. (€)	-7 Prop.	-8 Market Weight	-9 Transfer Weight	-10 Market Income (€)	-11 Transfer Income (€)
<b>M 16-25</b>	-	4.53	27.52	0.956	1570.5**	317.4	4.28	19.7	-26.74*	-2102.3**	183.9
<b>F 16-25</b>	-0.00107	4.14	55.99**	2.05	2065.8*	309.2	4.03	23.54	6.371	-2059.4***	864.1**
<b>M 26-35</b>	-0.0132***	7.77	25.61	-11.61	2006.1**	122	7.15	8.356	-19.59	-3087.5***	319.5
<b>F 26-35</b>	-0.0153***	8.76	11.91	-23.75**	1375.9	-41.51	7.1	40.75*	-18.90*	-1581.7*	79.76
<b>M 36-45</b>	-0.0267***	10.06	-13.36	-6.835	343	325.3	10.44	30.92**	-35.31***	-1656.6***	-517.7
<b>F 36-45</b>	-0.0291***	10.91	25.30*	-4.839	2003.3***	139.2	10.98	11.25	-28.66***	-2684.3***	-261.7
<b>M 46-55</b>	-0.0424***	8.86	0.297	6.108	307.7	913.7**	10.3	2.699	-13.69	-3077.2***	321.7
<b>F 46-55</b>	-0.0499***	8.89	10.33	8.142	595.3	855.8*	9.98	-5.86	-5.204	-3415.6***	831.0**
<b>M 56-65</b>	-0.0684***	6.75	-64.46***	28.84	-2236.0**	2303.5***	7.19	-47.15**	46.54***	-4617.2***	2700.5***
<b>F 56-65</b>	-0.0813***	7.17	-68.26***	43.51**	-2372.3**	2450.9***	7.48	-66.19***	54.23***	-5573.0***	2601.6***
<b>M 66-75</b>	-0.0864***	5.72	-29.81	6.225	-1383.0*	1475.9**	4.82	-45.17*	44.31**	-3962.5***	1130.4**
<b>F 66-75</b>	-0.114***	6.3	4.318	-14.71	124.8	609.6	6	0.64	9.993	-1625.1**	-109.5
<b>M 76-85</b>	-0.122***	3.88	11.2	-13.52	327.1	548.1*	4.23	8.977	24.52*	-1446.9***	299.6
<b>F 76-85</b>	-0.158***	6.26	20.56	-18.64	963	153.1	6.02	10.86	20.40**	-1511.6***	422.9

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table shows different elements of the market and transfer mobility terms for Spain in the 2004-2007 and 2010-2013 decompositions. Column 1 shows the age/sex coefficient in the health regression, column 2 shows the proportion of individuals in each age/sex group in 2007, columns 3, 4, 5 & 6 show the change between 2004 and 2007 for each age/sex groups in market income weights, transfer income weights, actual market incomes and transfer market incomes, respectively. Columns 7-11 show the identical information for the post-crisis 2010-2013 period. These changes are summarized by a no-constant regression where the change in the income weight/amount is regressed on a set of age/sex dummies which refer to the last wave in the rotation group. All currency amounts in 2013 euros.

**Table A8 – Sub-mobility terms for France**

	Pre-crisis (2004-2007)						Post-crisis (2010-2013)				
	-1 Coeff.	-2 Prop.	-3 Market Weight	-4 Transfer Weight	-5 Market Inc. (€)	-6 Transfer Inc. (€)	-7 Prop.	-8 Market Weight	-9 Transfer Weight	-10 Market Income (€)	-11 Transfer Income (€)
<b>M 16-25</b>	-	5.5	-10.08	-9.324	-901.9	1704.2	4.77	13.27	-18.3	-1341.3	459.6
<b>F 16-25</b>	-0.00842***	5.49	-25.51	-41.17*	-1087.2	-256.7	3.74	48.06	-4.055	1023.6	-325.8
<b>M 26-35</b>	-0.0179***	8.35	28.27	-6.367	1189.5	562.5	5.55	33.34	7.683	761.1	529.7
<b>F 26-35</b>	-0.0245***	8.86	43.67**	-2.626	2408.9**	117.8	6.44	52.19***	4.266	1720.8*	301.5
<b>M 36-45</b>	-0.0324***	9.8	11.47	-18.63	492.3	-292.6	8.28	36.28**	-11.03	1713.6*	-455
<b>F 36-45</b>	-0.0386***	10.86	29.6	-0.112	1468.9	266.1	8.88	22.61*	-13.62	1440.7	-353.5
<b>M 46-55</b>	-0.0537***	8.77	7.619	-1.254	737.6	945.6	8.31	0.878	-12.98	-1173.4	115.5
<b>F 46-55</b>	-0.0595***	9.42	-26.98	-13.95	-1567.6	467.3	10.35	-21.49	-9.36	-2533.5**	922.7*
<b>M 56-65</b>	-0.0670***	7.09	-76.14**	76.78***	-3491.5*	4429.4***	9.64	-60.14***	46.81**	-4465.9***	4095.9***
<b>F 56-65</b>	-0.0674***	7.8	-54.77*	57.38*	-3215.3*	3443.4***	9.96	-70.55***	40.85**	-4988.4***	3149.1***
<b>M 66-75</b>	-0.0906***	4.69	0.395	-8.21	-928.6	1070.2	6.42	-7.063	0.235	-2034.6*	1623.5**
<b>F 66-75</b>	-0.0929***	6.08	16.65	-33.08*	398.9	-324.2	7.17	13.67	-11.29	-903.1	1322.3**
<b>M 76-85</b>	-0.133***	2.98	40.53**	-18.6	1093.9*	-432.4	4.47	19.5	-22.6	-239.6	337.2
<b>F 76-85</b>	-0.129***	4.3	16.11	-3.895	103.1	706.1	6.02	15.26	-37.92***	-136.4	-202.9

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table shows different elements of the market and transfer mobility terms for France in the 2004-2007 and 2010-2013 decompositions. Column 1 shows the age/sex coefficient in the health regression, column 2 shows the proportion of individuals in each age/sex group in 2007, columns 3, 4, 5 & 6 show the change between 2004 and 2007 for each age/sex groups in market income weights, transfer income weights, actual market incomes and transfer market incomes, respectively. Columns 7-11 show the identical information for the post-crisis 2010-2013 period. These changes are summarized by a no-constant regression where the change in the income weight/amount is regressed on a set of age/sex dummies which refer to the last wave in the rotation group. All currency amounts in 2013 euros.

**Table A9 – Sub-mobility terms for Italy**

	Pre-crisis (2004-2007)						Post-crisis (2010-2013)				
	-1 Coeff.	-2 Prop.	-3 Market Weight	-4 Transfer Weight	-5 Market Inc. (€)	-6 Transfer Inc. (€)	-7 Prop.	-8 Market Weight	-9 Transfer Weight	-10 Market Income (€)	-11 Transfer Income (€)
<b>M 16-25</b>	-	3.8	22.53	1.636	1594.2**	189.7	3.71	17.87	-37.88***	-2115.5***	-432.9
<b>F 16-25</b>	-0.00143	3.84	33.70**	17.88*	2173.1***	214.1	3.84	5.191	-5.838	-3006.8***	1014.6
<b>M 26-35</b>	-0.0137***	8.14	27.29**	-5.054	1897.2***	-52.83	6.71	30.88*	-8.388	-1385.9*	124.3
<b>F 26-35</b>	-0.0152***	7.88	16.02	16.28**	1451.6**	873.1***	5.71	16.04	8.223	-2100.9**	833.4
<b>M 36-45</b>	-0.0276***	9.42	12.08	-13.87**	1410.6***	-317.7	8.24	30.65***	-27.52**	-1505.0**	-496.9
<b>F 36-45</b>	-0.0312***	10.2	8.38	-6.77	1220.8**	-284.8	9.1	29.72***	-29.46***	-1525.0**	-688.7***
<b>M 46-55</b>	-0.0446***	8.18	6.458	-1.24	1395.2***	100.3	9.43	10.16	-28.46***	-2632.2***	-417
<b>F 46-55</b>	-0.0510***	7.95	-5.579	8.953	725.2	475.4	10.62	-5.887	-2.869	-2964.2***	644.7*
<b>M 56-65</b>	-0.0713***	7.67	-36.18***	34.23***	-870.5	1797.9***	8.02	-46.33***	34.16***	-4442.0***	1965.6***
<b>F 56-65</b>	-0.0806***	7.61	-23.22*	19.51**	-760.7	1447.6***	7.78	-43.99***	22.49*	-4229.7***	1543.4***
<b>M 66-75</b>	-0.104***	5.89	-13.98	-12.36	-993.7*	513.3	6.48	-25.89*	15.5	-2513.8***	331.6
<b>F 66-75</b>	-0.125***	7.1	-19.09*	-27.02***	-866.0**	-293.3	7.39	-27.28*	20.84*	-2427.6***	385.4
<b>M 76-85</b>	-0.151***	4.54	-5.046	-20.55**	-317.2	314.9	5.11	-0.0254	29.53**	-1530.4**	670.3*
<b>F 76-85</b>	-0.180***	7.79	-9.769	-9.822	-383.4	333.6	7.85	18.03*	14.25*	-817.2*	150.5

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table shows different elements of the market and transfer mobility terms for Italy in the 2004-2007 and 2010-2013 decompositions. Column 1 shows the age/sex coefficient in the health regression, column 2 shows the proportion of individuals in each age/sex group in 2007, columns 3, 4, 5 & 6 show the change between 2004 and 2007 for each age/sex groups in market income weights, transfer income weights, actual market incomes and transfer market incomes, respectively. Columns 7-11 show the identical information for the post-crisis 2010-2013 period. These changes are summarized by a no-constant regression where the change in the income weight/amount is regressed on a set of age/sex dummies which refer to the last wave in the rotation group. All currency amounts in 2013 euros.

**Table A10 – Sub-mobility terms for Portugal**

	Pre-crisis (2004-2007)						Post-crisis (2010-2013)				
	-1 Coeff.	-2 Prop.	-3 Market Weight	-4 Transfer Weight	-5 Market Inc. (€)	-6 Transfer Inc. (€)	-7 Prop.	-8 Market Weight	-9 Transfer Weight	-10 Market Income (€)	-11 Transfer Income (€)
<b>M 16-25</b>	-	5.37	6.78	0.641	-478	555.2*	3.62	40.45*	-13.89	-703	-138.2
<b>F 16-25</b>	-0.00621	4.38	51.55**	-15.07	1205.6*	-59.6	3.8	19.68	-10.75	-1027	195
<b>M 26-35</b>	-0.0242***	7.83	6.407	-13.9	368.1	-82.51	6.04	23.16	-26.78	-901.7	-557.5
<b>F 26-35</b>	-0.0263***	7.53	48.31*	-37.13*	1301.3**	-489.5	6.49	25.21	-23.25	-803.3	25.49
<b>M 36-45</b>	-0.0400***	8.25	38.70**	-9.996	1150.2**	-213	8.74	-7.735	-31.05**	-2638.2***	85.41
<b>F 36-45</b>	-0.0532***	9.09	2.019	-15.25	13.51	-230.6	10.25	-0.255	-26.90***	-2441.4***	43.39
<b>M 46-55</b>	-0.0699***	8.89	0.851	-2.633	-291.4	493.1*	8.34	-6.581	-3.896	-1873.0***	475.8
<b>F 46-55</b>	-0.0969***	9.7	-2.91	7.746	-392.7	589.4**	9.49	-0.275	4.726	-2092.6***	536.8**
<b>M 56-65</b>	-0.116***	6.34	-59.86**	35.16	-1547.2**	1574.9***	7.82	-27.77	39.38**	-2781.4***	1272.1***
<b>F 56-65</b>	-0.152***	7.75	-48.50*	14.73	-1276.1**	1085.7***	8.85	-39.20*	34.38*	-2684.6***	1050.9***
<b>M 66-75</b>	-0.151***	6.02	-32.61	31.79*	-1024.1*	1159.5***	6.96	-31.33*	46.79**	-2158.3***	907.7*
<b>F 66-75</b>	-0.194***	8.18	-3.944	18.91	-452.4	829.8***	7.5	3.48	16.25	-1248.7***	215.1
<b>M 76-85</b>	-0.195***	3.68	13.28	7.988	-186.6	120.9	5	29.69*	-26.12	-326.1	-447.6
<b>F 76-85</b>	-0.248***	6.99	-8.314	-13.2	-587.6	179.3	7.1	29.60*	1.347	-537.6	467.8

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Table shows different elements of the market and transfer mobility terms for Portugal in the 2004-2007 and 2010-2013 decompositions. Column 1 shows the age/sex coefficient in the health regression, column 2 shows the proportion of individuals in each age/sex group in 2007, columns 3, 4, 5 & 6 show the change between 2004 and 2007 for each age/sex groups in market income weights, transfer income weights, actual market incomes and transfer market incomes, respectively. Columns 7-11 show the identical information for the post-crisis 2010-2013 period. These changes are summarized by a no-constant regression where the change in the income weight/amount is regressed on a set of age/sex dummies which refer to the last wave in the rotation group. All currency amounts in 2013 euros.

**Figure A11**



Figure shows the results of a decomposition in which transfer income only consists of pensions/old-age benefits, and all other transfer sources are attributed to market mobility.

**Figure A12 – Full 2010-2013 decomposition results for Greece**

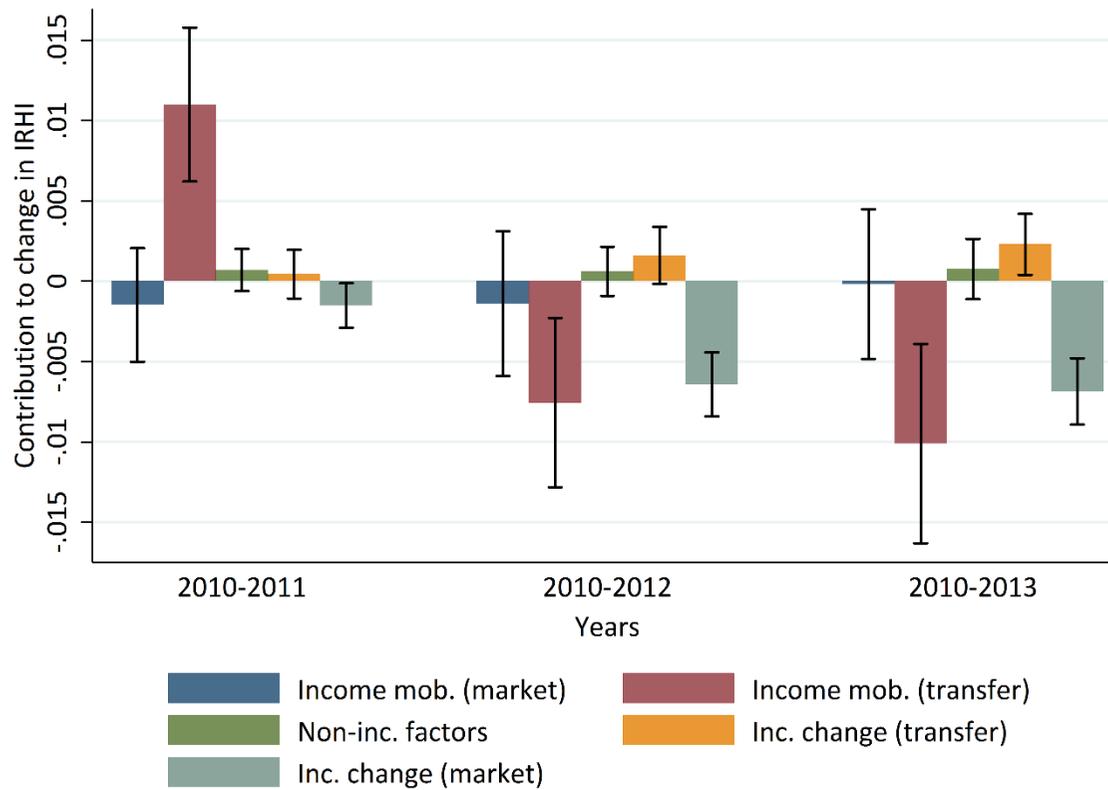
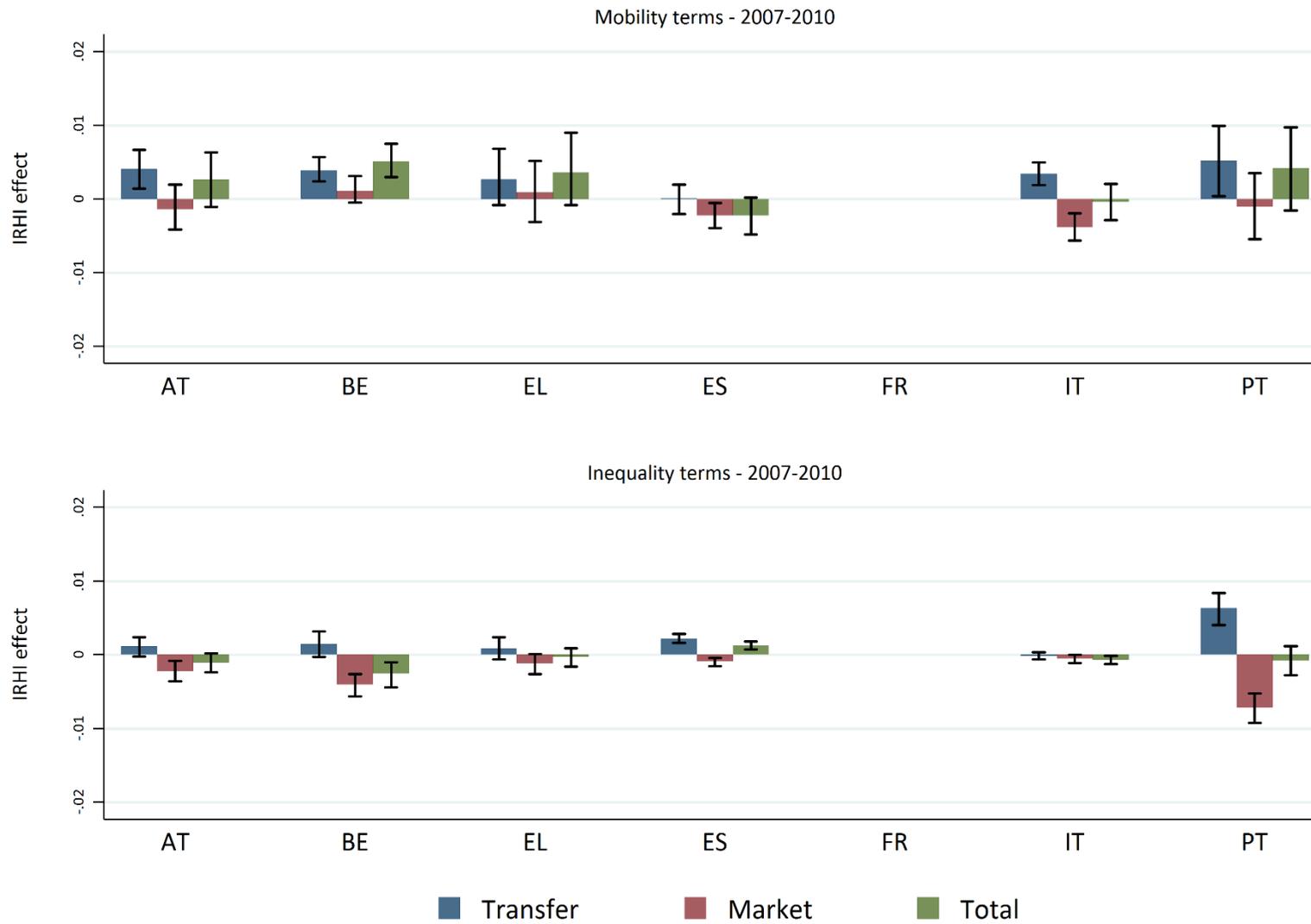


Table shows full decomposition results for each year between 2010 and 2013 for Greece. Results highlight the initially inequality increasing effect of transfer *income mobility*, presumably due to austerity measures.

**Figure A13 – Decomposition of 2007-2010 results**



**Figure A14 – Non-income factors decomposition results**

