



# GINI

## **IMPUTED RENT AND INCOME RE-RANKING. EVIDENCE FROM EU-SILC DATA**

*Virginia Maestri*

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**GROWING INEQUALITIES' IMPACTS**

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# Imputed rent and income re-ranking

Evidence from EU-SILC data

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# Table of contents

ABSTRACT .....	7
INTRODUCTION .....	9
1. MOTIVATION .....	11
2. DATA AND METHODOLOGY .....	13
2.1.Measures of imputed rent in EU-SILC data.....	13
2.2.Measurement of re-ranking .....	14
3. DESCRIPTIVE STATISTICS.....	17
4. EMPIRICAL RESULTS .....	19
4.1.Extent of re-ranking .....	19
4.2.Trend of re-ranking .....	21
4.3.Re-ranking by quintile .....	21
4.4.Re-ranking by tenure group .....	22
4.5.Re-ranking by age group .....	23
5. FINAL REMARKS .....	25
BIBLIOGRAPHY .....	27
TABLES AND FIGURES.....	29
GINI DISCUSSION PAPERS .....	39
INFORMATION ON THE GINI PROJECT.....	41





# Abstract

The inclusion of the in-kind housing advantage in the concept of economic well-being reduces inequality and poverty in most European countries. However, it also generates income re-ranking among households and reduces the redistributive capacity of tax systems. We calculate the proportion of households who are re-ranked due to the inclusion of imputed rent in the income concept, before and after taxes, by income quintile, tenure and age groups. We find that imputed rent re-ranks about 18% of households before taxes and 32% after taxes at European level, although the extent varies widely across countries. The analysis identifies three broad groups of countries according to the impact of imputed rent on income re-ranking for different tenure categories. In Eastern European countries, households are re-ranked more within than across tenure groups. In Southern and continental countries renters in the private market are mostly re-ranked downward and outright homeowners upward. In Nordic countries, a large share of homeowners with an outstanding mortgage is re-ranked downward, with the exception of Sweden. Older households are the ones who mostly benefit from imputed rent, again with the exception of Sweden. The paper concludes with some remarks on EU-SILC data.







# Introduction

Measures of income distribution and redistribution are generally based on a monetary concept of income. Nonetheless, there are important non-cash components of income, such as imputed rent for homeowners and tenants paying rent below-market price<sup>1</sup>. Considering non-cash advantages bound in housing allows for a more comprehensive measure of economic well-being (Smeeding, 1993). Imputed rent for owner-occupied accommodation is the most important form of non-cash income advantage. The importance of imputed rent from homeownership is due to dual nature of housing, representing at the same time consumption and investment. In the last decades, government policies of most OECD countries boosted homeownership through mortgage interests' deductions, financial deregulation (Andrews et al., 2011) and the lack of a tax on imputed rent is common to most countries (Poterba & Sinai, 2008).

Recent studies on the distribution of income addressed expert recommendations on the importance of imputed rent for a superior assessment of economic well-being (Smeeding, 1993; Canberra Group, 2001). These studies focus on the distributional effect of the inclusion of imputed rent in the income concept. For almost all European countries, the inclusion of imputed rent in the measurement of economic well-being reduces both inequality and poverty<sup>2</sup>, especially among the elderly and improves the relative position of outright owners (Eurostat, 2010; Frick *et. al.*, 2010). In 2007, the reduction in inequality due to the inclusion of imputed rent in the income concept ranged from a minimum of -0.3% in France to a maximum of -11% in the United Kingdom (Eurostat, 2010). The only two exceptions are the Netherlands and Norway, where the inclusion of imputed rent increases inequality by 1%. Frick et al. (2010) find similar results for a subset of countries in 2002-2004. The decline in the Gini coefficient after the inclusion of imputed rent was highest in the United Kingdom (-6%) and lowest in Belgium (-1.3%). Notwithstanding the different impact of imputed rent on inequality across countries, their ranking according to the inequality level does not change substantially (Eurostat, 2010): only Italy becomes more unequal than the United Kingdom when imputed rent is included (Frick *et. al.* 2010).

The inclusion of imputed rent seems particularly relevant for poverty analysis. Situations of income poverty may not translate into material deprivation once imputed rent is taken into account. On the other hand, non-income poor may fall into material deprivation as they spend a large part of their income for paying the rent. For instance, 80% of people deprived in two or more items have income above the median (OECD, 2008). Indeed, Eurostat (2010) finds that assessing poverty based on a definition of income inclusive of imputed-rent poverty gives more consistent results in terms of material deprivation: cash and imputed rent poor generally are more deprived than only cash poor. As for inequality, one of the largest reduction in poverty due to imputed rent is found for the United Kingdom: the share of people with

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1 According to EU Commission regulation no. 1980/2003 (Frick et. al. 2008).

2 At least until 2009.

income below 60% of the median declines by 17% (Frick and Grabka, 2010) to 28% (Eurostat, 2010). Ireland, Estonia and Spain also enjoy a considerable reduction in poverty (20-29%) thanks to the inclusion of imputed rent (Eurostat, 2010). Greece<sup>3</sup> also shows a considerable decline in poverty due to imputed rent (Frick and Grabka, 2010).

The importance of the effect of imputed rent on measures of income distribution and redistribution depends on the share of home-owners and of tenants with below-market rent in each country, their position along the income distribution, the relative income change due to the inclusion of imputed rent and the correlation between imputed rent and income. Indeed, the size of the effect of the inclusion of imputed rent in the income concept varies widely across countries. The literature on the redistributive effect of imputed rent considers the change from disposable income to disposable income augmented with imputed rent. Nonetheless, imputed rent is exempted from taxation in most European countries. As a consequence, this source of non-monetary income is not taxed or not as much as the main source of cash income: labour. Therefore, taking into account imputed rent may generate income re-ranking among households. Although the existing literature on imputed rent and economic well-being stresses the positive effects of imputed rent in reducing inequality and poverty, the negative side effects generated by the omission of imputed rent from taxable income as income re-ranking are under researched. A valuable contribution to complementary aspects of imputed rent is represented by the literature on the redistributive effects of taxing imputed rent (see for instance Figari *et al.* (2012); Pellegrino *et al.* (2011)).

The contribution of this work is to extend the existing literature on the distributional effect of imputed rent by considering the re-ranking effect generated by the inclusion of imputed rent in the income concept. The analysis allows to assessing how the relative position of different tenure and age groups changes when a measure of economic well-being including imputed rent is considered.

This paper analyzes the re-ranking effect across EU27 countries generated by the inclusion of the non-monetary income derived from housing in the concept of economic well-being. The analysis shows the changes in the impact of imputed rent on income re-ranking over the period 2007-2009. The relative position of different tenure and age categories is considered in a comparative perspective across EU countries.

The remainder of the paper is organized as follows. Section 2 explains the relevance of the topic. Section 3 illustrates the measurement of imputed rent in EU-SILC data and the methodology used to compute the extent of re-ranking. Section 4 presents some descriptive statistics on the tenure and age structures of European countries. The results on the trend and extent of income re-ranking generated by the inclusion of imputed rent in the income concept are presented in Section 5. The Section summarizes the results by income quintile, tenure and age group. Finally, Section 6 draws some conclusive comments.

<sup>3</sup> Greece (and Germany) is not considered in Eurostat (2010).



# 1. Motivation

There are several reasons why re-ranking of economic well-being generated by imputed rent is a relevant issue. The ability to pay taxes is generally based on monetary income. In most countries, monetary and non-monetary sources of income are taxed differently. As a consequence, households with different combinations of cash and in-kind income may change their relative position along the income distribution when passing from gross to disposable income augmented with imputed rent, thanks to this differential tax treatment. Taxation of imputed rent exists, in principle, in Belgium, Latvia, Lithuania, Denmark, Luxembourg and the Netherlands (Eurostat, 2010a). However, in practice imputed rent is often based on cadastral values, fully deductible (e.g. for the main residence) or only partially subject to personal income taxation. Property taxes are more common. However, they tax housing separately from income. It is hardly the case that the taxation of housing is comparable to personal income taxes.

In a revenue neutral context Yagi and Tachibanaki (1998) find that the inclusion of imputed rent under taxable income would improve the effectiveness of the Japanese tax system in redistributing all sources of income (including imputed rent). For Italy, Pellegrino *et al.* (2009) show that the inclusion of imputed rent estimated at market values under taxable income (and at constant tax revenues) gives more progressive results than property taxes, if the redistributive effect is assessed over income augmented with imputed rent. However, if the effect is assessed against monetary income the taxation of imputed rent would increase inequality, due to the presence of income poor-housing rich households (among which elderly are over-represented). In a revenue neutral context, Figari *et al.* (2012) show that the inclusion of imputed rent under taxable income would increase inequality if compensated by a proportional rebate of personal income taxes, while it would decrease it if compensated by a lump-sum tax credit. The position of elderly (income poor house rich) is a key dimension for the assessment of the redistributive effect of imputed rent and its taxation.

Beyond the favourable tax treatment of imputed rent, governments in most OECD countries clearly boosted homeownership through the favourable tax treatment of capital gains (often untaxed) and mortgage interest tax deductions.

For these reasons, governments indirectly determine the extent and the effect of imputed rent on disposable income augmented with imputed rent for homeowners. Furthermore, most OECD countries, to a smaller or larger extent, provide housing subsidies for tenants in the form of public and social housing, cash housing subsidies, rent deduction and rent control. These latter policies determine the extent and the effect of imputed rent on disposable income augmented with imputed rent for tenants, who end up paying a rent below market values.

The literature about imputed rent focuses on the redistributive effect of the inclusion of the in-kind housing advantage in the income concept. The standard result is that the inclusion of imputed rent reduces inequality and poverty (Eurostat, 2010; Frick *et al.*, 2010). An exception is Onrubia *et al.* (2009) who find that replacing cadastral income with imputed rents calculated at market values would increase gross income inequality in Spain.

This paper wants to highlight a third effect induced by the inclusion of imputed rent in the income concept, namely the income re-ranking of households. Income re-ranking is important because it violates the principle of horizontal equity (Musgrave, 1990). Furthermore, the redistributive capacity of personal income taxes is reduced by the extent of re-ranking.

Saarima (2008) is one of a few studies that analyses the extent of households' income re-ranking due to the inclusion of imputed rent in the income concept. His findings point to a very large extent of re-ranking due to imputed rent for Finland (in 2004). The extent of re-ranking ranges between 20% and 68%, excluding the bottom and top income deciles. However, most of the shifts are concentrated in the very next decile. The inclusion of imputed rent under taxable income and the use of these the extra tax revenues for the provision of a lump-sum transfer to the households reduces inequality and, considerably, the extent of re-ranking (8%-24%, excluding the bottom and top decile) (Saarima, 2008).

In this article, we assess the impact of the inclusion of imputed rent in the concept of economic well-being on income re-ranking across European countries. Additionally, we investigate the effect of this inclusion on the relative economic position of different tenure and age groups.



## 2. Data and methodology

### 2.1. Measures of imputed rent in EU-SILC data

Imputed rent suffers from some measurement problems, both for internal validity and for comparability across countries. Results on the inclusion of imputed rent in the concept of economic well-being are sensitive to the estimation method (Frick et al., 2008). For instance, Onrubia et al. (2009) find a disequalizing effect of imputed rent on market income when imputed rent is measured at market rather than cadastral values. For homeowners, imputed rent can be estimated as the rent that they would pay if the house were rented (possibly net of costs such as mortgage interests). Alternatively, it can be estimated as the return on the housing value if that capital were invested in an alternative asset. For tenants, imputed rent is estimated as the difference between (estimated) market and actual rent.

The choice of whether to include tenants (paying rent below market prices) as beneficiaries of imputed rent (and therefore of the estimation method) is crucial for the results on the income distribution. Obviously, the inclusion of tenants with below-market rent reduces poverty and inequality. On the other hand, the inclusion of only home-owners as beneficiaries of imputed rent leads to less positive results: according to Frick *et. al.* (2008) inequality and more considerably poverty tend to increase, in particular in Germany. For instance, for the Netherlands the use of the capital market approach (rent is imputed for homeowners only) leads to an increase in inequality and poverty. On the other hand, if market rent is imputed also for tenants with below-market rent inequality and poverty decrease (de Vos, 2007).

Estimated measures of imputed rent for a large number of countries are available in a few datasets. We use EU-SILC data from 2007 to 2009<sup>4</sup>. Since 2007, national statistical offices of Member States are required to collect information on imputed rent. Nonetheless, the choice of the estimation method is left to Member States. Following Eurostat (2010a, 2010b) and Frick *et al.* (2010) we can distinguish between two approaches and five methods.

1. The rental equivalence approach consists of estimating the market rent that homeowners or below-market rate tenants should pay if they had to rent their places at full price. The rental equivalence may be estimated by four methods.

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<sup>4</sup> We could not use EU-SILC 2009 for Portugal as there are some problems for variable HB080 and HB090 (Person 1 and 2 responsible for the accommodation). We excluded also Germany as data on mortgage interest repayments were missing in EU-SILC data. Bulgaria and Romania only enter the EU-SILC data in 2008. Data for Malta are not available. Denmark and France could not be included in the analysis.

- a. The first method is an objective measure: the rental equivalence is estimated by an hedonic regression (with Heckman correction).
  - b. The second measure is objective and is based on the stratification method.
  - c. The third method is based on a subjective measure: direct self-assessment of the should-be rent.
  - d. The fourth measure is subjective and is based on the stratification method.
2. The capital market approach is radically different, as it corresponds to the potential returns of investing the house value in an alternative portfolio.

The table below reports the grouping of countries made by Eurostat (2010) according to the approach and method they follow for the estimation of imputed rent in EU-SILC data.

*Table 1- Methods imputed rent*

<b>A1) RENTAL EQUIVALENCE — REGRESSION (HECKMAN)</b>	AT, BE, CY, IT, LU, LV, NL, PL, UK
<b>A2) RENTAL EQUIVALENCE OBJECTIVE — STRATIFICATION</b>	EL, IE, ES, FI, LT, NO, SI
<b>A3) RENTAL EQUIVALENCE — SUBJECTIVE</b>	EL, ES
<b>A4) SUBJECTIVE</b>	CZ
<b>B1) CAPITAL MARKET</b>	EE, IS, SE, SK

We obtain net imputed rent by subtracting mortgage interest payments from the estimated value of imputed rent, as done in Eurostat (2010). Following Frick *et al.* (2010) we set negative values of net imputed rent to zero. We note here that most countries allow for a mortgage interest tax relief. This means that the value of mortgage interests' payments is higher than the amount actually paid after taxes. Unfortunately, the EU-SILC data do not allow to assessing the value of mortgage interests effectively paid<sup>5</sup>. The approach of setting negative values of net imputed rent to zero should partially overcome this problem.

## 2.2. Measurement of re-ranking

Income re-ranking is measured by the difference between the Gini coefficient of post-tax income and the concentration coefficient of post-tax income (Lambert, 1993). The inclusion of imputed rent in the concept of disposable income partially offsets its gap-narrowing effect on the Gini coefficient. The extent of re-ranking is highest in the Netherlands (where it increases inequality by 1.1 pp) and equal to zero in Czech Republic (Eurostat, 2010b). Nonetheless, this is a measure of aggregate re-ranking. Aggregate re-ranking does not allow to identify at which parts of the distribution re-ranking occurs. We consider transition matrixes in order to have a better insight

<sup>5</sup> EU-SILC data contain two variables for the interests paid on mortgage: gross and net mortgage interest repayments. The net variable measures effective payments after taxes. However, for most countries the values of the two variables coincide, even in those where it is possible to deduct mortgage interest repayments.



into households re-ranking across income quintiles. Transition matrixes show the income position of the household before imputed rent is added to income and afterward. Table 2 illustrates an example of transition matrix.

*Table 2 - Transition matrix for imputed rent, Italy 2007*

QUINTILE	1	2	3	4	5
1	77.64	20.52	1.82	0.03	0.00
2	21.22	55.38	21.49	1.92	0.00
3	0.93	22.39	56.81	19.54	0.32
4	0.12	1.52	19.60	66.67	12.09
5	0.10	0.18	0.26	11.81	87.65

The table shows which proportion of households in the  $n$ th quintile (rows) moves to each of the other  $n$ th quintiles after imputed rent has been included in the measure of their economic well-being (columns). The same method is used e.g. in Saarima (2008).

We calculate the share of households who re-rank up or down of at least one quintile, in order to obtain a synthetic measure of re-ranking. We report the tenure and age composition of the share that re-rank up and down for each quintile. We consider both re-ranking before and after tax.







### 3. Descriptive statistics

Figure 1 reports the tenure structure of European countries in 2007. In most European countries the share of homeowners is above 60% of the population. However, this figure hides large cross-country differences in the extent of outright and with a mortgage homeownership.

For historical reasons, Eastern European countries display an extremely high share of outright owner households (60-80%). Poland is an exceptional case with a share of outright homeowners below 60% and an extremely high share of free tenants (38%). Southern European countries have also a traditionally high share of outright homeowners (50-60%). At the other end, there are some Nordic countries (Iceland, Netherlands, Norway, Sweden) with a relatively low share of outright homeowners (below 30%). Other European countries have a share of households who outright own a house ranging between 30% and 50%.

The Nordic countries with a low share of outright owners correspond to the countries with a large share of homeowners with a mortgage (from 46% in Sweden up to 65% in Iceland in 2007). The share of homeowners with a mortgage is low in most Eastern European countries (below 10%). Greece and Italy have a similar share. However, the other two Southern European countries (Spain and Portugal) have a considerable share of households with an outstanding mortgage (31% and 21% respectively). In the other European countries the share of homeowners with a mortgage is approximately between 20% and 30%.

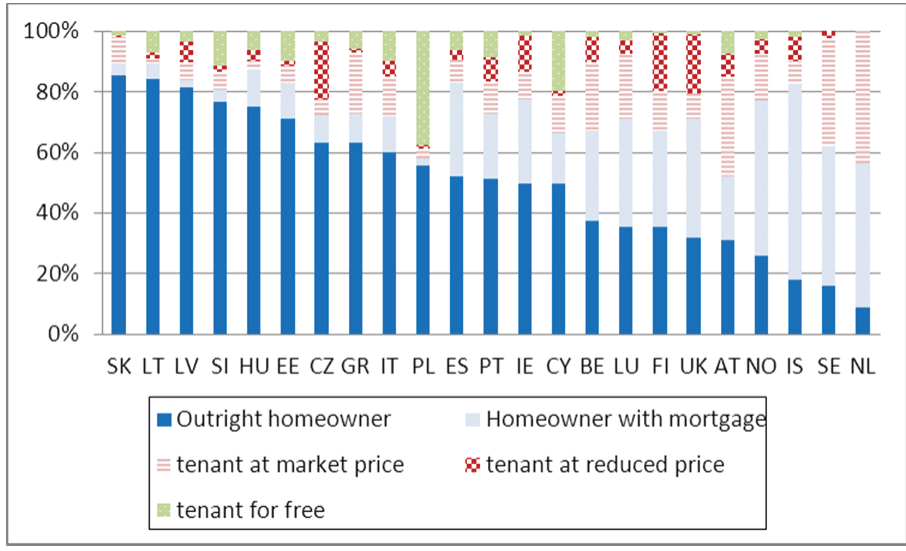
The share of tenants mirrors that of homeowners. Nonetheless, countries differ in the importance of different types of tenancy. Tenancy at a reduced price has a considerable importance in Czech Republic, Finland and the United Kingdom<sup>6</sup> (around 20% of all households). Finally, the share of free tenants is considerable in Italy, Slovenia, Portugal (around 10%) and extremely high in Cyprus (20%) and Poland (38%).

Tenure status is correlated with the age of the household head, as older homeowners have finished to pay their mortgage. Countries differ in their age structure. However, these differences are less pronounced than for the tenure structure. Figure 2 plots the distribution of the population of each country by the age bracket of the household head. Greece and Italy have the highest share (above 40%) of households with the head over 60 year-old. In most of the other countries this share ranges between 32%-37%. Only Iceland and Norway have a share around 30%. These countries (together with Sweden) have the highest share of young households<sup>7</sup>.

6 Netherlands would probably fit in this group. However, the EU-SILC data for the Netherlands do not distinguish between tenants at reduced and tenants at market price.

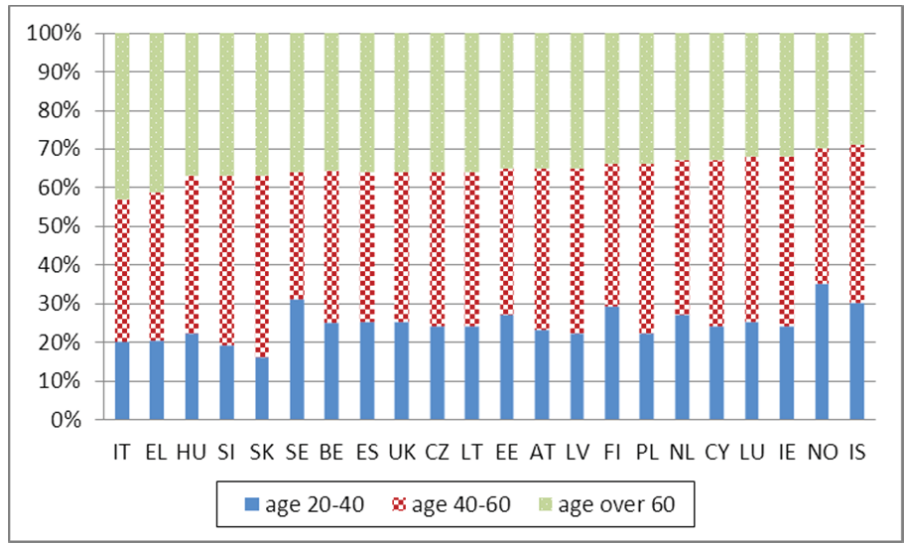
7 However, this fact may be due to the definition of households (e.g. for Sweden).

Figure 1 - Tenure structure (% of households), 2007



Note: own elaborations based on 2007 EU-SILC data. Countries are sorted in descending order of the share of outright owners.

Figure 2 - Age structure (% households), 2007



Note: own elaborations based on 2007 EU-SILC data. Countries are sorted in descending order of the share of household head's age over 60.



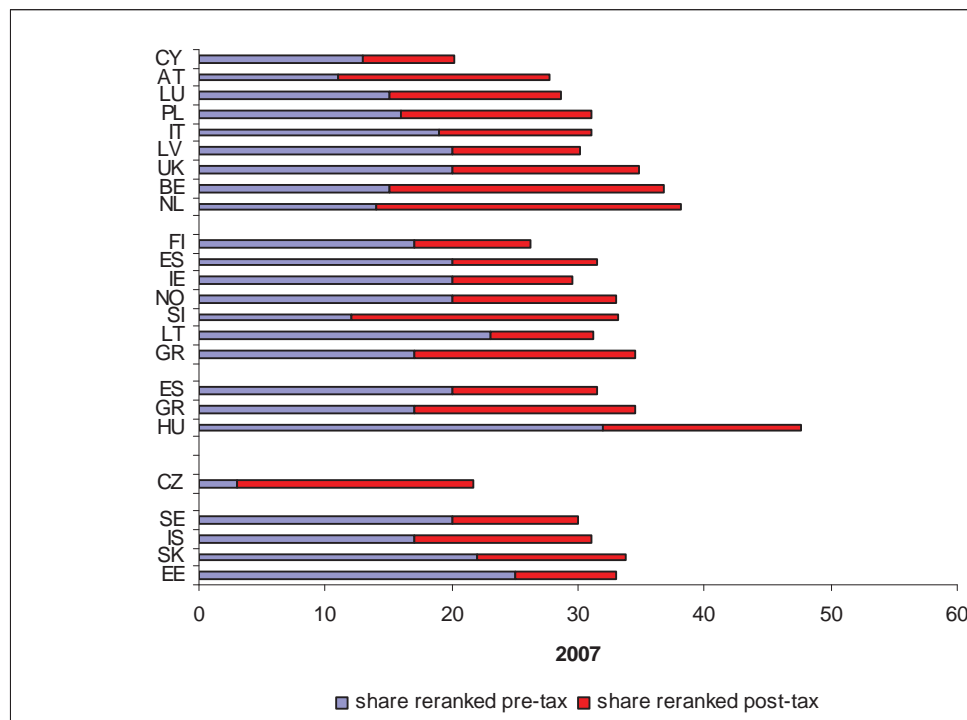
## 4. Empirical results

### 4.1. Extent of re-ranking

Figure 3 shows the pre-tax and after-tax shares of re-ranked households by country in 2007. On average, the inclusion of imputed rent in the concept of economic well-being re-rank 18% of the households before tax and 32% after tax. However, the figure shows that the extent of re-ranking varies considerably across countries. Czech Republic reports the lowest extent of re-ranking due to imputed rent (3%) and Hungary the highest (32%), by considering pre-tax income. Hungary has again the largest extent of re-ranking when considering after tax income (38%), while Cyprus has the smallest (20%).

The extent of re-ranking due to imputed rent is larger for post-tax income than for income before taxes, even considering property taxes. Indeed, property taxes are deducted from gross income and included for the calculation of disposable income. This result suggests that the burden of taxation on imputed rent is smaller than that on other sources of income (e.g. labour).

*Figure 3 - Extent of re-ranking, 2007*



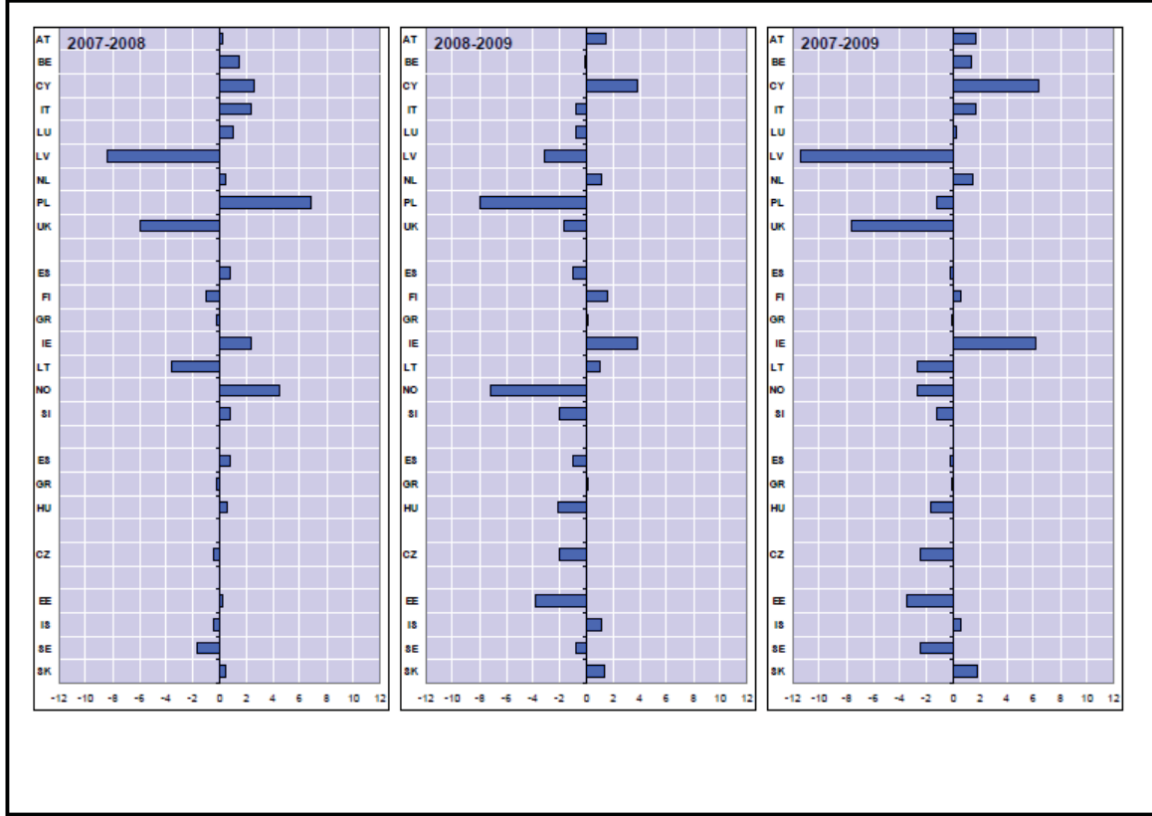
Nonetheless, the extent of re-ranking can be more meaningfully compared across countries that calculate imputed rent with the same method. In Figure 3 countries are grouped according to the method used (see Table 1).

Figure 3 shows that the calculation of imputed rent with the capital market approach corresponds to a lower extent of re-ranking. Indeed, the effect of imputed rent calculated with this method affects a smaller share of households, namely homeowners. The results for 2008 and 2009 are very similar to those reported in Figure 3 in terms of country ranking.

The inclusion of imputed rent in the income concept re-ranks households, on the one hand, and redistributes economic well-being, on the other. In fact, in most countries the inclusion of imputed rent in the concept of economic well-being reduces cash income differences across households<sup>8</sup>. The overall change in inequality due to the inclusion of imputed rent in the definition of income can be decomposed into the redistributive and re-ranking effect. The two effects go in opposite directions, as re-ranking reduces the power of redistribution. Figure 5 plots the correlation between the redistributive and re-ranking effect of imputed rent. Countries in which imputed rent have a higher redistributive impact are also characterized by a larger extent of re-ranking.

Nonetheless, it is possible to identify two groups of “vicious” and “virtuous” countries. The first group (Lithuania, Netherlands and Norway) have a limited redistributive effect of imputed rent that causes, on the hand, a large extent of income re-ranking. The second group (Ireland, Slovenia and United Kingdom) enjoy a considerable redistributive impact of imputed rent associated with a limited effect of re-ranking.

*Figure 4- Trend imputed rent re-ranking (post-tax)*



<sup>8</sup> See, for instance, Eurostat (2010), Frick and Grabka (2008, 2009) Firck et al. (2010).



## 4.2. Trend of re-ranking

Figure 4 shows the trend in the extent of re-ranking between 2007 and 2009, by country. On average across countries, the extent of re-ranking due to imputed rent remained stable in 2008 and in 2009 it slightly decreased by 1%.

A closer look at country specific experiences points to an exceptional increase in the extent of re-ranking in Cyprus (+36%) and Ireland (+19%), during the period 2007-2009. During the same period, Latvia and United Kingdom reported a considerable decline in re-ranking of 39% and 24%, respectively. Poland and Norway experienced dramatic changes in the extent of re-ranking, that went in opposite directions between 2007-2008 and 2008-2009. Indeed, the share of re-ranked households increased by 19% and 16%, respectively, in Poland and Norway between 2007 and 2008 and the following year decreased by 21% and 22%.

The time period covered in this study covers a very particular time span as it corresponds to the year immediately preceding and following the economic and financial crisis. On the one side, the financial crisis determined a fall in house prices. On the other, foreclosure increased the demand for rental houses and this, in turn, can increase rental prices. As a consequence, the housing advantaged of homeowners may change. However, the effect of the crisis on imputed rent can be transmitted into the value of imputed rent in a different way depending of the estimation method used. A fall in house prices translates into a fall in imputed rental values for homeowners if imputed rent is estimated according to the capital market approach. An increase in market rents could be observed in countries in which imputed rent is estimated with the rental equivalence or subjective methods. Nonetheless, it is difficult to single out the effect of the crisis from the extent of re-ranking generated by imputed rent.

## 4.3. Re-ranking by quintile

Figure 6 to 10 report the share of each quintile re-ranking upward and downward by at least one quintile and the tenure composition of these shares. In the figures countries are grouped according to the method used for the estimation of imputed rent.

As the figures show, the quintiles with the highest share of re-ranked households (both downward and upward) are the middle quintiles (second and third). This finding holds for most countries. In most cases the main gainers belong to the second quintile. In a smaller set of countries (Latvia, Estonia, Ireland, Spain, Sweden) the largest share of upward re-ranking is concentrated in the first quintile. In Austria and Finland the main gainers are concentrated in the third quintile. On the other hand, in most countries the households who lose the most from the inclusion of imputed rent in the income concept are concentrated in the middle-upper part of the income distribution

(third and fourth quintile). In a few countries (Czech Republic, Estonia, Latvia, Italy, Ireland, Spain) the largest downward re-ranking occurs for the middle-bottom quintiles (second and third).

When income re-ranking is assessed over income before taxes, in most countries households in the third quintile are better off than when taxes are considered (figure not reported). This finding suggests that that burden of taxation and the general exemption of imputed rent from taxation mostly penalizes middle income households.

#### 4.4. Re-ranking by tenure group

Table 6 to 10 show the extent of upward and downward re-ranking by tenure status. We can classify the countries in three broad groups, according to the impact of re-ranking on different tenure categories.

1. Eastern European countries: for these countries re-ranking mostly occurs within the category of outright owners and not between different tenure groups. This result is clearly affected by the very large share of outright homeownership that characterizes these countries.
2. Southern and most continental countries: renters in the private market are downward re-ranked by the inclusion of imputed rent and outright owners are upward re-ranked.
3. Nordic countries with a large extent of mortgages: homeowners with a mortgage are often re-ranked down (Iceland, Norway, United Kingdom). The UK tax system does not allow anymore the possibility to deduct mortgage interest payments for the main residence. Therefore, the result for the UK is not sensitive to the measurement of net imputed rent based on before tax mortgage repayments. In the Netherlands a considerable share of homeowners with mortgage are re-ranked down. However, homeowners in the Netherlands enjoy one of the most generous system of mortgage interest tax deductions. The amount they actually pay for mortgage interests is considerably lower than their face value and, consequently, their effective net imputed rent is higher than that calculated with these data and method. In Sweden homeowners with a mortgage are the most re-ranked category as in the other Nordic countries. Contrary to the other Nordic countries, this re-ranking mostly occurs upward. Sweden also allows for a mortgage interest tax relief. Therefore, the advantage of homeowners with a mortgage could be even higher if mortgage interests' payments after taxes were considered in the calculation of net imputed rent, instead of their gross value.



The analysis of re-ranking by tenure status suggests some specific comments for the categories of social and free tenants.

- A. Social tenants (in countries where social tenancy is relatively high): in Belgium and the United Kingdom social tenants are considerably re-ranked upward, as expected. Indeed, they should be better off than market tenants and in some cases they are better off than homeowners with an outstanding mortgage. This also means that households not eligible for social housing (e.g. because they have income above the cutoff threshold) lose in relative terms of economic well-being once considering their housing (dis)advantage. In fact, the difference they have to pay for renting a house in the private market with respect to social tenants may offset their relative net monetary income advantage. For the Netherlands, a considerable share of private tenants is re-ranked upward. However, the EU-SILC data for the Netherlands do not distinguish between private and social tenants, although a considerable share of tenants live in social housing. On the other hand, in a few countries (Czech Republic, Ireland, Norway) and in particular in Finland many social tenants are re-ranked downward almost as much as market tenants. This result suggests that in these countries the housing advantage of social renters is small (e.g. the social rent may be relatively high) or the estimated “market value” of social houses very low.
- B. Free tenants: Figure 6 to 10 suggest additional observations. The category of free tenants enjoys a considerable upward re-ranking in Austria, Cyprus, Greece, Hungary, Italy and Spain. On the other hand, free tenants are re-ranked downward in some Eastern European countries (Estonia, Lithuania, Slovenia). This fact means that they live in smaller/cheaper houses. In Poland the extent of re-ranked free tenants is striking both upwards and downwards (above 30%). Indeed, the share of free tenants is above 30% overall. It is difficult to identify the characteristics of this group of tenants (Eurostat, 2010b). However, the definition of this particular tenure category deserves further investigation for some Eastern and Southern countries.

#### 4.5. Re-ranking by age group

Figure 11 to 15 show the extent of quintile re-ranking by the age of the household head. The inclusion of imputed rent in the income concept (after taxes) mostly benefit over 60 year-old. Indeed, older households are over-represented in upward re-ranking, while households with the head aged between 20 and 40 are mostly re-ranked downward. In most countries, the upward re-ranking of over 60 year-old occurs between the first and the second quintile, while the downward re-ranking of middle aged households mostly occurs between the second and third or third and fourth quintile. Sweden is an exception to the general pattern. In fact, Figure 15 shows that household



re-ranking due to the inclusion of imputed rent does not seem to depend on age as much as in the other European countries.





## 5. Final remarks

This analysis suggests that the inclusion of imputed rent in the definition of economic well-being does not simply reduce inequality and poverty, but may also generate a considerable amount of income re-ranking. This fact raises the issue of which income dimension should be considered as a benchmark to define “poor” and “rich” households or households with a low and high economic well-being. The grouping of households into quintiles based on cash income omits an important part of household economic well-being and, as a consequence, cash income poor may be housing rich and *vice versa*.

The economic advantage of a positive imputed rent may derive from two different sources. The first is a private source and it corresponds to imputed rent assigned to homeowners. Private imputed rent is the result of household investment decisions (although influenced by policy) and it is linked to housing wealth. The relationship between imputed rent and net housing wealth is more cumbersome for homeowners with an outstanding mortgage, as only interest payments are generally deducted from the value of imputed rent, while the principal repayment is excluded. The second source is public and it corresponds to imputed rent assigned to tenants paying a rent below market prices. This may be the result of rent control or the availability of social housing.

The (partial) omission of imputed rent from the taxable income base generates a bias with respect to the distribution of cash income. Generally, middle income quintiles are the most penalized by this tax exemption. The inclusion of imputed rent in the income concept favors outright homeowners and penalizes renters in the private market. However, there are exceptions to this general pattern. In fact, in Eastern European countries what matters is the value of imputed rent for outright homeowners rather than tenure status. Homeowners with an outstanding mortgage deserve a particular attention, especially in Nordic countries. In Eastern and Southern European countries particular attention should be paid to free tenants. Elderly are overrepresented among those who benefit from the tax exemption of imputed rent.

The taxation of imputed rent should take into account differences among countries. The taxation of this (in-kind) income sources is generally conceived as a tax on the income advantage of homeowners. However, the analysis shows that in some countries also tenants may enjoy a considerable income advantage, namely free and social tenants. Therefore, taxation of imputed rent (or higher property taxes) may be more effective in reducing income re-ranking in Eastern European countries (with the exception of Poland) and less in countries such as the United Kingdom, where the relatively large category of social tenants enjoy an (in-kind) income advantage without being homeowners.

Although the analysis of the effects of imputed rent on income distribution and redistribution is promising from different perspectives, it still suffers from methodological challenges. With particular reference to EU-SILC data, the different approaches adopted by national statistical offices for the measurement of imputed rent undermines a robust comparability of the impact of imputed rent across countries. Moreover, better information on mortgage interest repayments should be provided in the EU-SILC data. Indeed, net (of deductions) mortgage interest repayments are only available for a few countries<sup>9</sup>. This problem is particularly relevant for countries such as the Netherlands, where mortgage interest deductions considerably reduce net interest repayments. The definition of tenure status in EU-SILC data has also some problems. For instance, for the Netherlands all tenants are defined as private tenants, while a considerable share of the rental market is social. Country-specific analyses are needed to shed more light on these measurement problems and, in particular, for the Netherlands.

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9 Finalnd, Ireland and Sweden in the 2007-2009 UDB EU-SILC data.



# Bibliography

- Andrews, D., A. Caldera Sanchez, and A. Johansson (2011). "Housing markets and structural policies in OECD countries." *OECD Economics Department WP No. 836*.
- Canberra Group (2001). "Expert group on household income statistics". Final report and recommendations.
- Eurostat (2010a). "The comparability of imputed rent." *Eurostat Methodological Working Paper*.
- Eurostat (2010b). "The distributional impact of imputed rent in EU-SILC". Eurostat Methodological Working-Paper.
- Figari, F., Paulus, A., Southerland, H., Tsakloglou, P., Verbist, G., Zananomio, F. (2012). "Taxing homeownership: distributional effects of including net imputed rent in taxable income". Department of International and European Economic Studies - Athens University of Economic and Business Working Paper Series 1208.
- Frick, J. R., Grabka, M. M., Smeeding, T. M., & Tsakloglou, P. (2010). "Distributional effects of imputed rents in five European countries". *Journal of Housing Economics* 19, 167-179.
- Lambert, P. J. (1993). "The distribution and redistribution of income". Manchester: Manchester University Press.
- Musgrave, Richard (1990). "Horizontal Equity Once More." *National Tax Journal* 43 (2), 113-23.
- Onrubia, J., Rodado, M., & Ayala, L. (2009). How do services of owners-occupied housing affect income inequality and redistribution? *Journal of Housing Economics*, 18, 224-232.
- Pellegrino, S., Piacenza, M., & Turati, G. (2011). Assessing the distributional effects of housing taxation in Italy: from the actual tax code to imputed rent. *CESIFO Working Paper*, n. 3368.
- Poterba, J., & Sinai, T. (2008). Tax expenditures for owner-occupied housing: deductions for property taxes and mortgage interest and the exclusion of imputed rental income. *American Economic Review*, 98(2), 84-89.
- Saarima, T. (2008). Imputed rental income, taxation and income distribution in Finland. *VATT Discussion Paper*.
- Yagi T., T. T. (1998). Income redistribution through the tax system: a simulation analysis of tax reform. *Review of Income and Wealth*, 44 (3), 397-415.





# Tables and Figures

Figure 5 - Correlation between redistributive and re-ranking effect of imputed rent

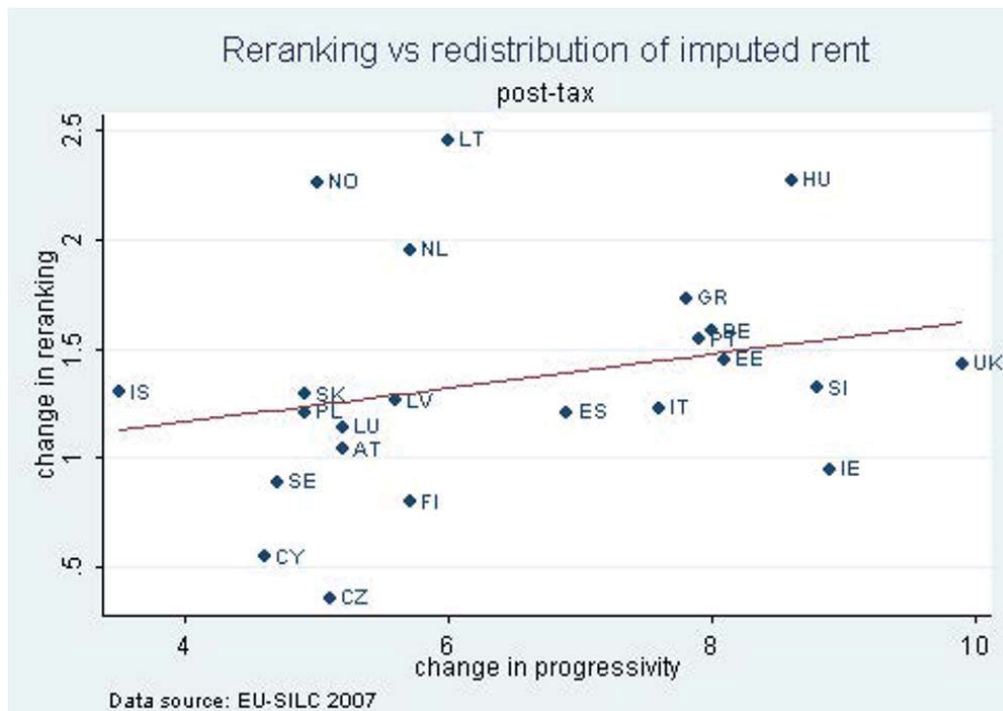


Figure 6 — Re-ranking by tenure (Post-tax, 2007), group 1a

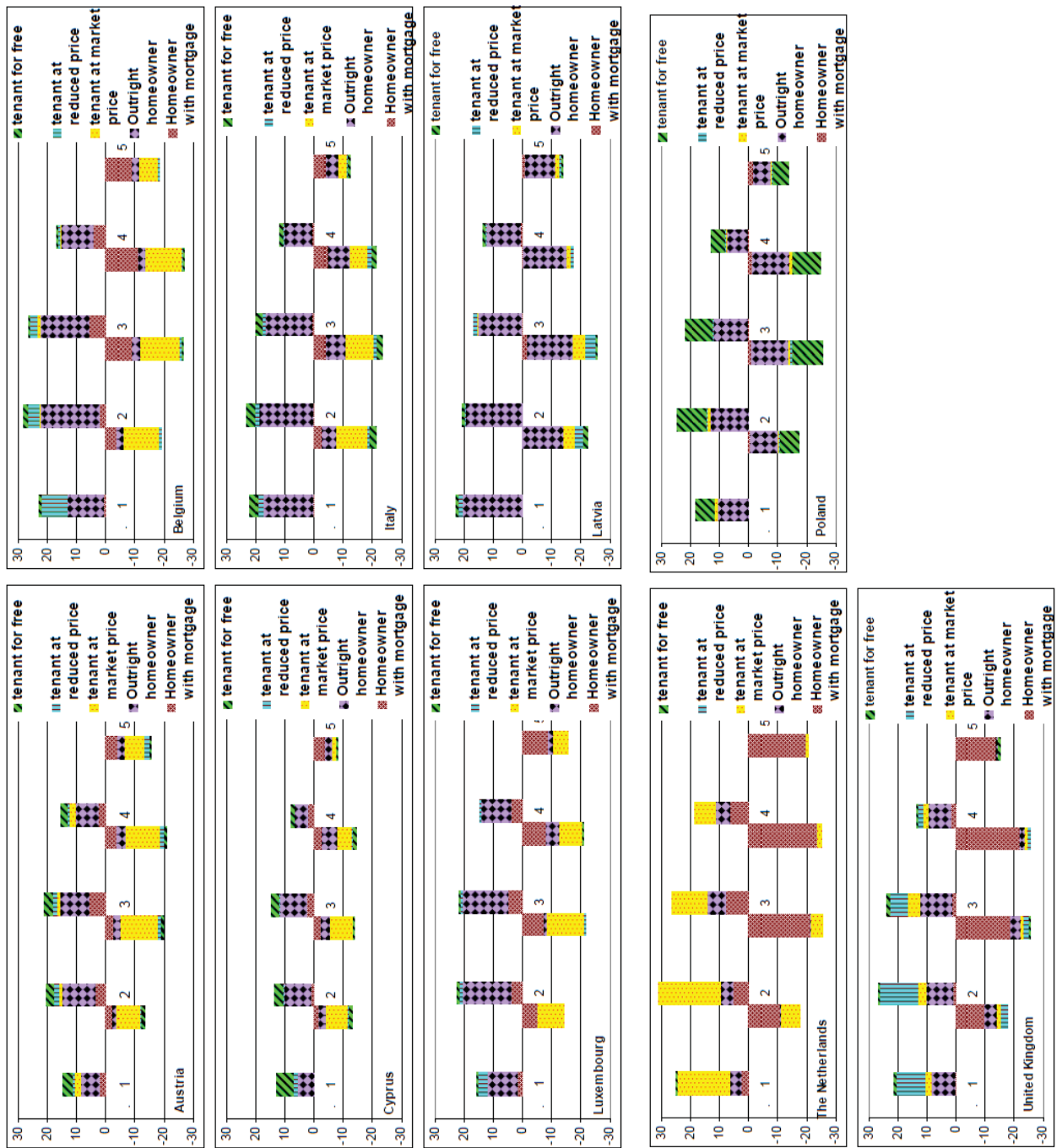




Figure 7 – Re-ranking by tenure (post-tax, 2007) – group 2

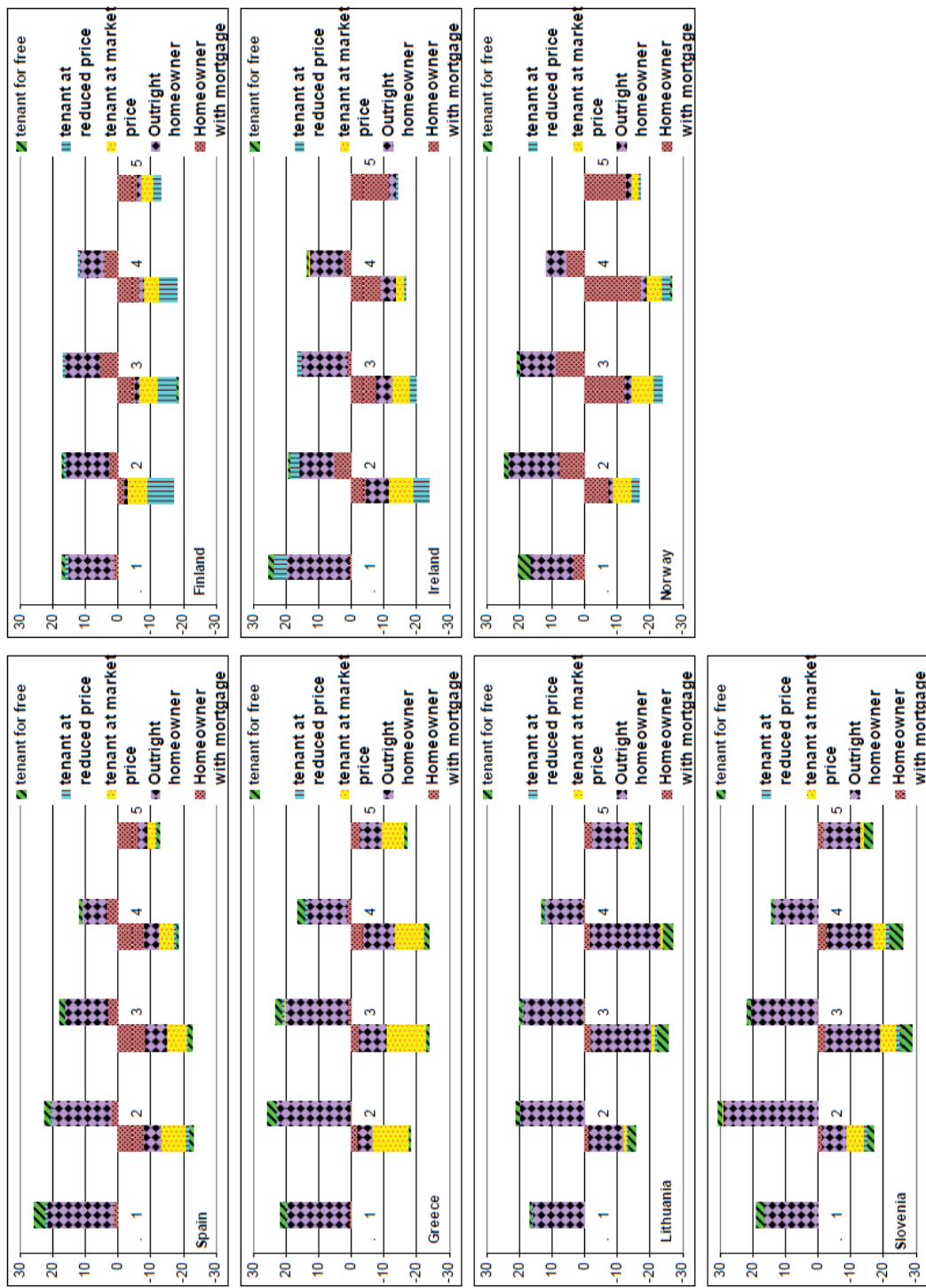


Figure 8 – Re-ranking by tenure (post-tax, 2007) – group 3

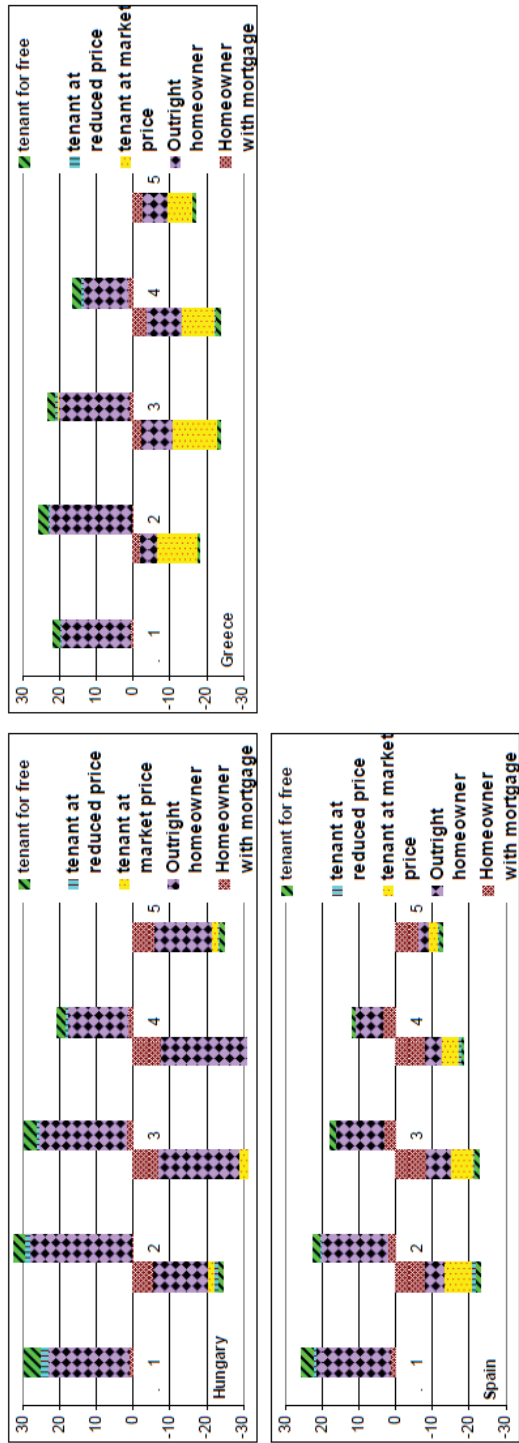


Figure 9 – Re-ranking by tenure – group 4

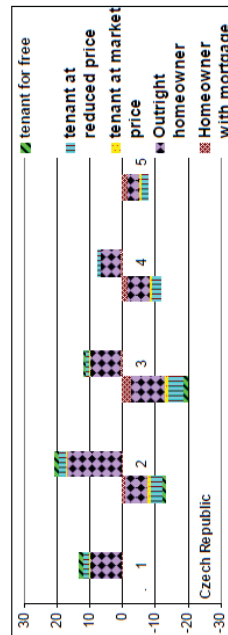






Figure 10 – Re-ranking by tenure – group 5

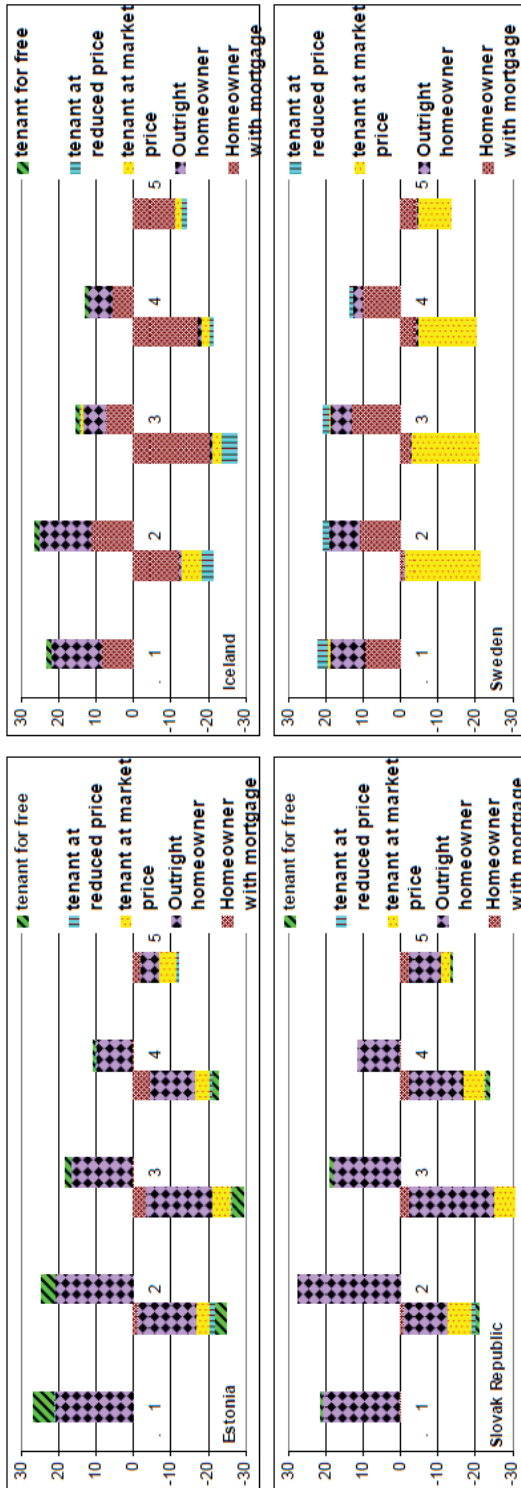
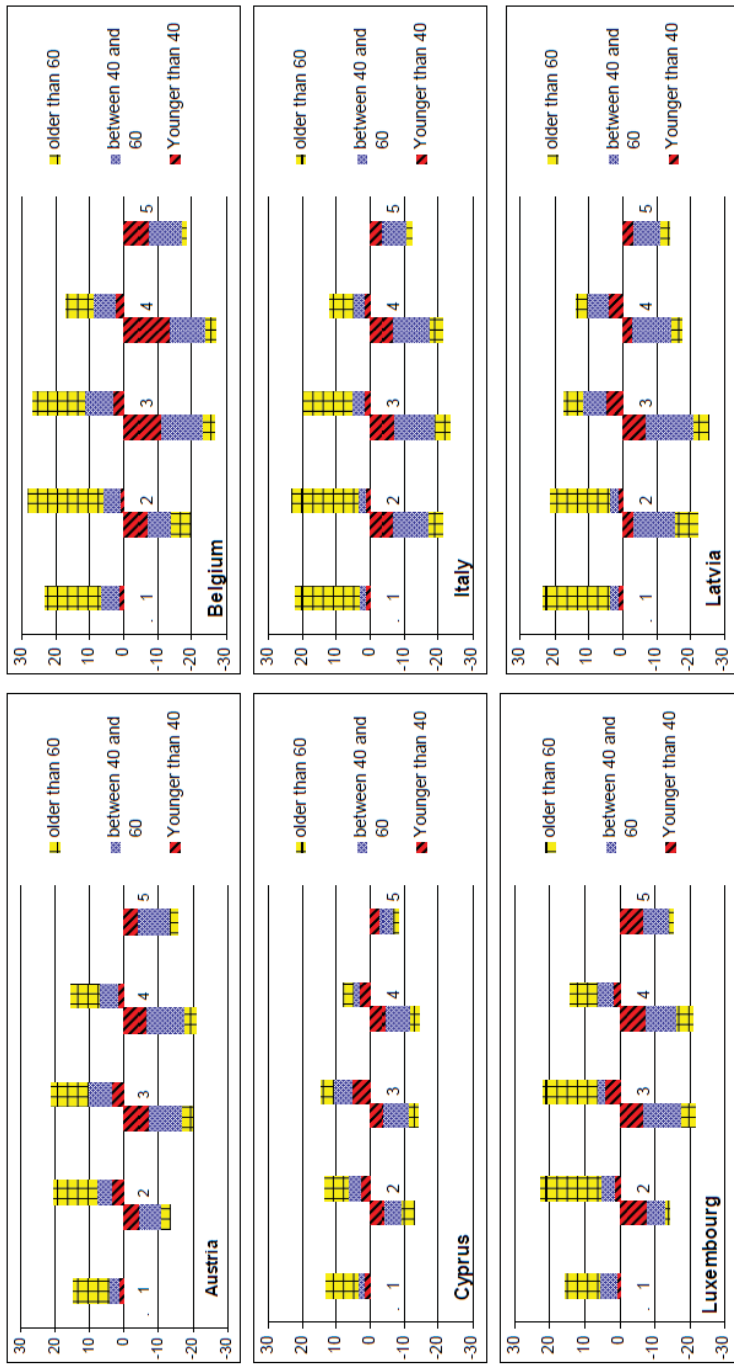


Figure 11 – Re-ranking by age – group 1



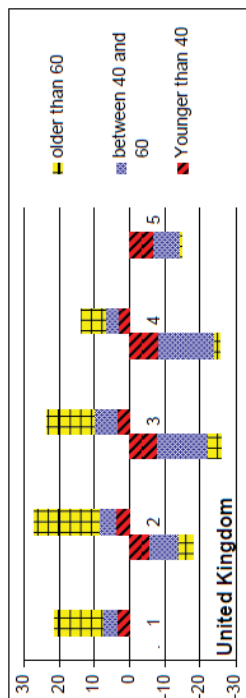
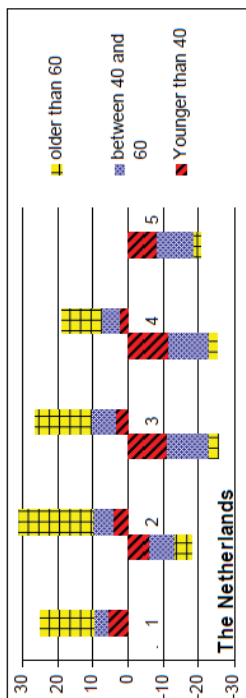
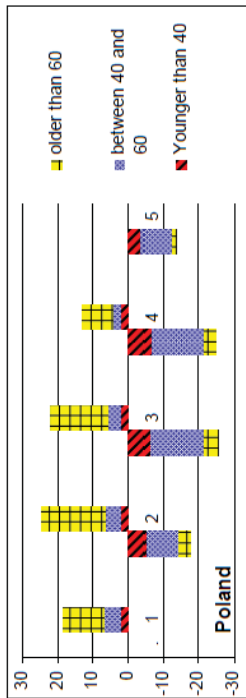


Figure 12 – Re-ranking by age group, 2007 – group 2

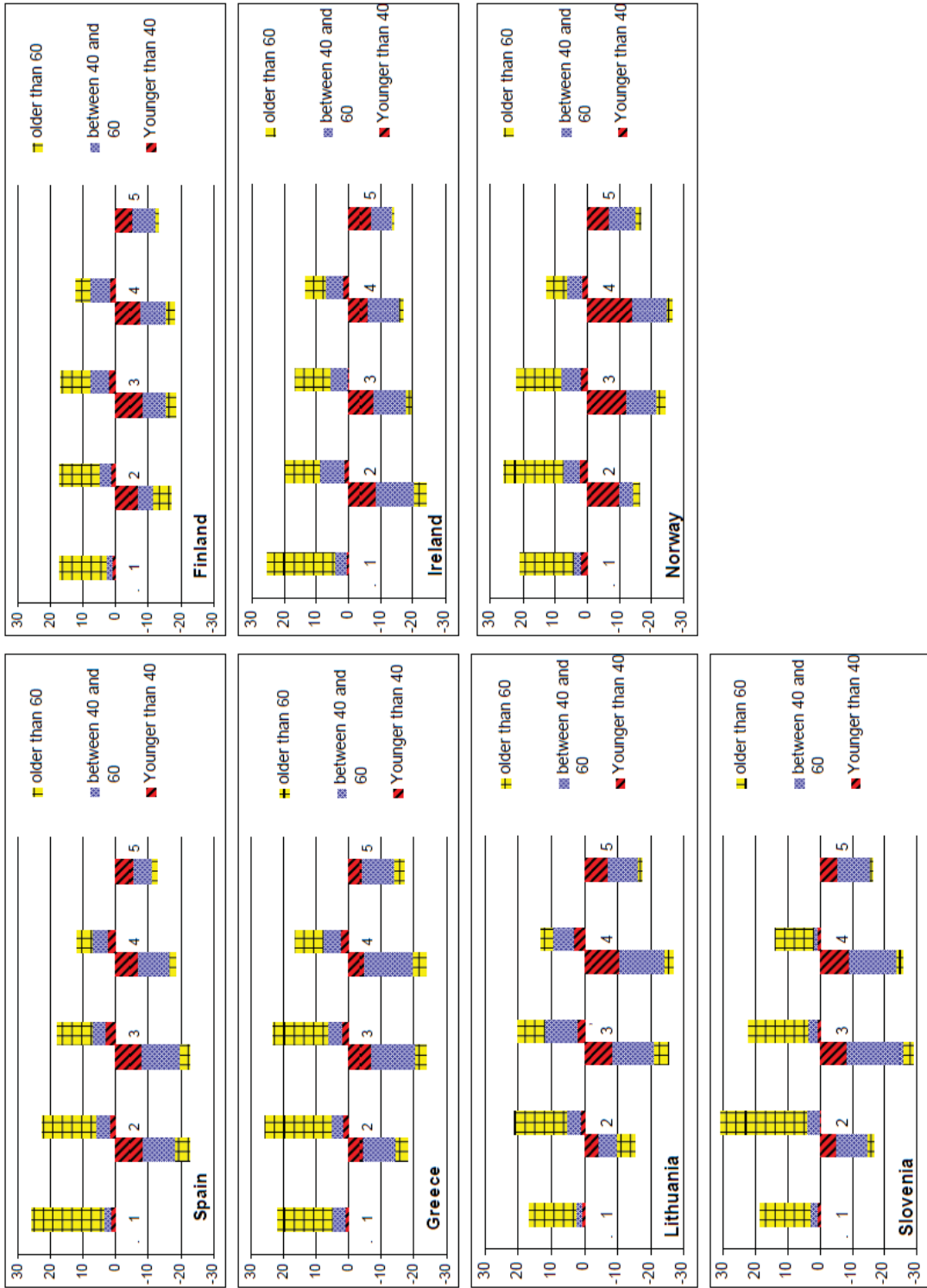




Figure 13 – Re-ranking by age group, 2007 – group 3

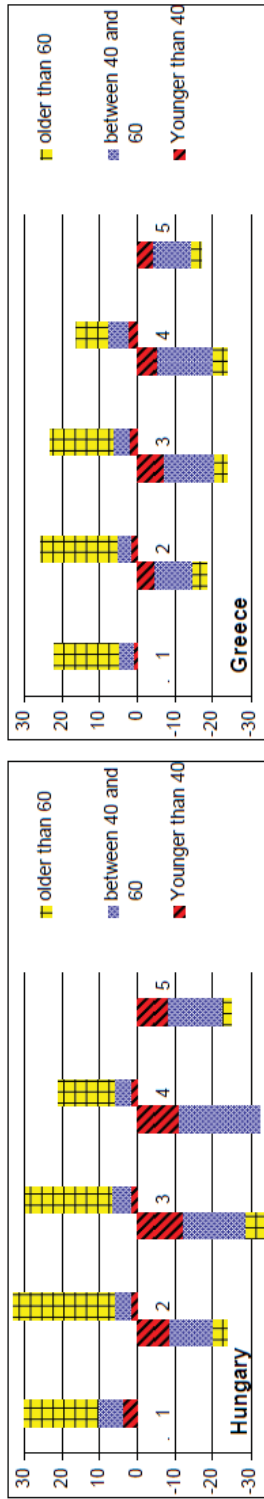


Figure 14 – Re-ranking by age group, 2007 – group 4

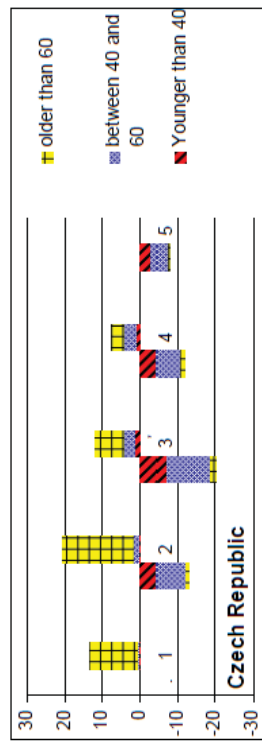
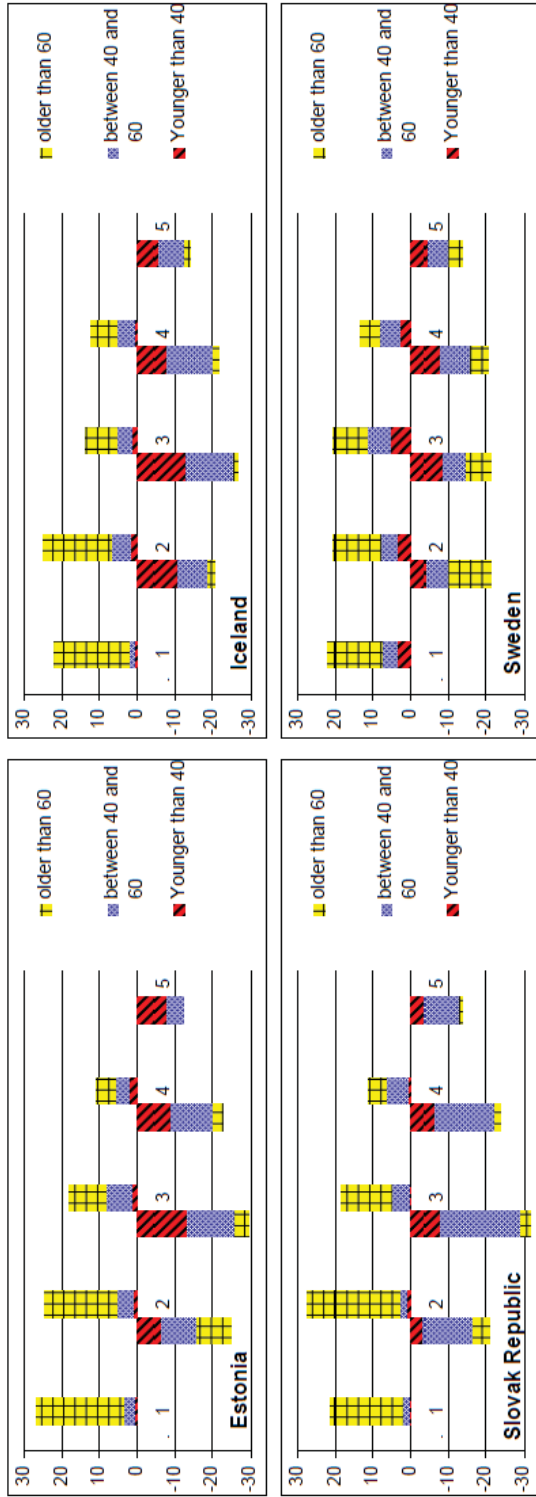


Figure 15 – Re-ranking by age group, 2007 – group 5





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 Tim Goedemé  
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# Information on the GINI project

## Aims

The core objective of GINI is to deliver important new answers to questions of great interest to European societies: What are the social, cultural and political impacts that increasing inequalities in income, wealth and education may have? For the answers, GINI combines an interdisciplinary analysis that draws on economics, sociology, political science and health studies, with improved methodologies, uniform measurement, wide country coverage, a clear policy dimension and broad dissemination.

Methodologically, GINI aims to:

- exploit differences between and within 29 countries in inequality levels and trends for understanding the impacts and teasing out implications for policy and institutions,
- elaborate on the effects of both individual distributional positions and aggregate inequalities, and
- allow for feedback from impacts to inequality in a two-way causality approach.

The project operates in a framework of policy-oriented debate and international comparisons across all EU countries (except Cyprus and Malta), the USA, Japan, Canada and Australia.

## Inequality Impacts and Analysis

Social impacts of inequality include educational access and achievement, individual employment opportunities and labour market behaviour, household joblessness, living standards and deprivation, family and household formation/breakdown, housing and intergenerational social mobility, individual health and life expectancy, and social cohesion versus polarisation. Underlying long-term trends, the economic cycle and the current financial and economic crisis will be incorporated. Politico-cultural impacts investigated are: Do increasing income/educational inequalities widen cultural and political 'distances', alienating people from politics, globalisation and European integration? Do they affect individuals' participation and general social trust? Is acceptance of inequality and policies of redistribution affected by inequality itself? What effects do political systems (coalitions/winner-takes-all) have? Finally, it focuses on costs and benefits of policies limiting income inequality and its efficiency for mitigating other inequalities (health, housing, education and opportunity), and addresses the question what contributions policy making itself may have made to the growth of inequalities.

## Support and Activities

The project receives EU research support to the amount of Euro 2.7 million. The work will result in four main reports and a final report, some 70 discussion papers and 29 country reports. The start of the project is 1 February 2010 for a three-year period. Detailed information can be found on the website.

[www.gini-research.org](http://www.gini-research.org)





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