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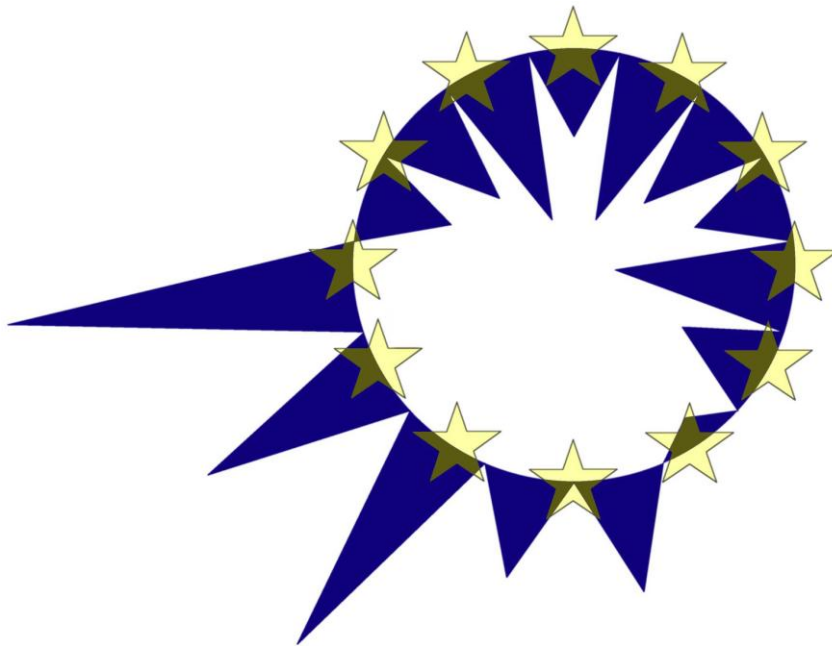
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Economic well-being and distributional effects of
housing-related policies in 3 European countries

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Economic well-being and distributional effects of housing-related policies in 3 European countries¹

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Abstract

This paper evaluates the redistributive effect of a comprehensive set of housing-related policies, taking into account the housing advantage of homeowners and social tenants. We use the Euromod microsimulation model to simulate housing policies in Estonia, Italy and the United Kingdom. Disentangling the contribution to inequality and poverty of each housing-related policy, we find that the current design of property taxes is not progressive and that other housing policies have a limited impact on inequality in Estonia and on both inequality and relative poverty in Italy. In all three countries, housing-related policies favor the elderly.

JEL Classification: H23; H53; I38

Keywords: Housing policies; Imputed rent; Inequality; Microsimulation

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The results presented here are based on EUROMOD version 3+. EUROMOD is maintained, developed and managed by the Institute for Social and Economic Research (ISER) at the University of Essex in collaboration with national teams from the EU member states. EUROMOD is continually being improved and updated and the results presented here represent the best available at the time of writing. Any remaining errors, results produced, interpretations or views presented are the author's responsibility. This paper uses data from the 2003 UK Family Resources Survey made available by the UK Office for National Statistics (ONS) through the Data Archive, the Estonian and Italian national version of EU-SILC 2006 provided by Statistics Estonia and ISTAT. The author is indebted to all past and current members of the EUROMOD consortium for the construction and development of EUROMOD.

1. Introduction and motivation

Housing represents a considerable part of households' wealth and spending. In the last decades there has been a surge in house prices and a parallel increase in the share of household spending on housing in most OECD countries. The increase in house prices was not only driven by economic and demographic factors (declining interest rates, positive net migration, changes in the household structure), but also by public interventions. Financial deregulation, mortgage innovation and favorable tax treatment of homeownership have all contributed to this trend. The contemporaneous increase in the rate of homeownership is only partially explained by population aging and it is potentially an outcome of this policy set-up (Andrews *et al.*, 2011).

In the same period most OECD countries made extensive use of mortgage interest tax deductions. This policy represents a subsidy to home-ownership. The most used argument in support of mortgage interests' deductions is that boosting homeownership strengthens the stake people have in society (Glaeser and Shapiro 2003). Nonetheless, the effect of mortgage interest tax deductions on the probability of homeownership is questionable, suggesting that the impact is rather on the quantity of housing consumption (Glaeser and Shapiro, 2003). In more tightly regulated housing markets mortgage interest deduction may even have an adverse impact on the likelihood of homeownerships, due to the capitalization of the mortgage tax subsidy into house values (Hilber and Turner, 2010). The over-consumption of housing and its effect on house prices translates into redistribution from new entrants in the housing market to insiders (Andrews *et al.*, 2011). Moreover, mortgage interest tax deductions are regressive (Mastaganis and Flevotomou, 2007). The disequalizing effect and the missed tax revenues of this form of tax relief eventually led some countries to introduce limitations (e.g. Estonia in 2005) and abolition (in Germany in 1987, in France in 1997, in UK in 2000) (Mastaganis and Flevotomou, 2007).

The behavioural and redistributive effects of this housing-related policy depend on the national extent of mortgage take-up that in turn depends on some country-specific characteristics such as development of the credit market and household structure. Indeed, both the share of outright homeowners and the share of homeowners with an outstanding mortgage vary widely across countries. The share of outright homeowners is high in Mediterranean and in Eastern European countries (above 50%), while the share of homeowners with a mortgage is high in most Nordic and Anglo-Saxon countries (above 30%)².

Similarly, homeownership is boosted by the partial or full exemption of capital gains and imputed rent from taxation. Although homeownership is an important asset among low-income people, a well-designed reform introducing the taxation of imputed rent can achieve redistributive goals. In a study for a set of European countries, a revenue-neutral reform that includes imputed rent in taxable income while introducing a lump-sum tax credit is inequality reducing (Figari *et al.*, 2012). A study about Japan shows that the inclusion of imputed rent in taxable income, as well as financial wealth income, guarantees a more progressive distribution of economic well-being (Yagi and Tachibanaki, 1998).

² Source: 2007 EU-SILC data.

Governments need to collect revenues and an easy (though politically difficult) way to do this is to tax an immovable and stable³ tax base such as property. Property taxation generally affects the same households which benefit from government interventions designed to promote homeownership. Property taxation is deemed to be progressive as a tax on capital for the top of the income distribution and regressive for its excise effect at the bottom, due to larger expenditures on housing services (Musgrave, 1974). Nonetheless, property taxes are generally local taxes and they are often designed more as service than capital taxes. Moreover, property taxes are often based on outdated cadastral values. Pellegrino *et al.* (2011) find that, in Italy, the replacement of cadastral incomes from dwellings with a taxation of imputed rent estimated at market values would guarantee more progressive results. However, elderly would be worse-off as the typical composition of their income (pensions and imputed rent) would not benefit from a reduction in marginal personal income tax rates due to the extension of the tax base.

Beyond the above mentioned housing-related policies, governments use other instruments for redistributive purposes such as that of housing affordability. This policy aim is normally pursued through housing subsidies, the provision of social housing and rent control.

Generally, most households are eligible for mortgage interests' deductions, while housing subsidies and social housing are generally targeted at households in the bottom of the income distribution. Governments may pursue further objectives through other housing-related policies. For instance, the Italian tax code includes a deduction for the refurbishment of buildings. In the post 2008 years, this deduction continues to be extended and its requirements relaxed with the aim of boosting business in the housing sector.

Although oriented towards different aims, these interventions have a redistributive impact on the economic well-being of households. This study extends the existing literature by considering a comprehensive set of housing-related policies on the redistribution of economic well-being. The effect of these policies is assessed by taking into account the housing advantage of households, measured with imputed rent. The importance of the inclusion of imputed rent in the concept of economic well-being is well summarized in Frick *et al.* (2010) and Eurostat (2010a, 2010b).

To the best of our knowledge, this is the first paper that evaluates a comprehensive set of housing policies taking into account imputed rents. A similar work is Matsaganis and Flevotomou (2007), which assess the redistributive effect of mortgage interests' deductions and housing benefits in five European countries. However, they do not consider the relative advantage that outright homeowners have with respect to homeowners with an outstanding mortgage. We evaluate the marginal redistributive effect of each housing policy for different quintiles of the economic well-being distribution, different tenure and age groups in Estonia, Italy and the United Kingdom.

The rest of the paper is organized as follows. Section 2 presents the data and the methodology used. Section 3 contains an overview of housing-related policies in Estonia, Italy and UK and some descriptive statistics. Section 4 discusses the findings on inequality and relative poverty for different income, tenure and age groups. Finally, Section 5 draws some conclusive comments.

³ Tax revenues from property are stable when they are based on cadastral values.

2. Data and methodology

2.1 *EUROMOD and input data*

For the tax and benefits structure we use the EUROMOD⁴ micro-simulation model. The input data used in EUROMOD are the 2003 UK Family Resources Survey, the Estonian and Italian national version of EU-SILC 2006. Income refers to 2005, as well as the policy year used for this analysis. 2006 EU-SILC data contain information on estimated imputed rent, mortgage interests' payments and paid property taxes⁵. The other housing-related policies are simulated with EUROMOD. The current analysis is restricted to Estonia, Italy and the United Kingdom as these are the only countries for which the input data used in version 3+ of EUROMOD contain both information on imputed rent⁶ and on paid property tax.

2.2 *Imputed rent*

The utility households derive from housing depends on whether they own a house, have an outstanding mortgage, pay a below-market rent or live in a house for free. Tenants paying a rent at market price do not enjoy any housing advantage.

The assessment of the distributional effect of housing-related policies should take into account the non-monetary housing advantage enjoyed by households and the exemption of imputed rent from taxation, given that the literature agrees on the considerable distributional effect of imputed rent (Frick *et al.*, 2010, Eurostat, 2010b). As a result, the assessment of the distributional effects of property taxes and mortgage interests' deductions is misleading if it does not take into account the housing advantage of households.

However, there are several ways to measure imputed rent. 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.
 - a. The first method is an objective measure: the rental equivalence is estimated by a 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 probable rent.
 - d. The fourth measure is subjective and is based on the stratification method.

⁴ For more information about EUROMOD see Southerland (2007).

⁵ EUROMOD uses the EU-SILC variable "Regular taxes on wealth" for property tax. This variable corresponds to the overall amount paid for property tax that may include the tax paid on properties beyond the main residence. However, EU-SILC input data do not provide values of imputed rent for properties that are not the household's main residence.

⁶ The collection of data on imputed rent in the EU-SILC survey is compulsory only since 2007.

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 values of imputed rent used in this analysis are based on the estimation by EU-SILC national teams for Estonia and Italy, while for the United Kingdom estimates are based on Mullan *et al.* (2007). Unfortunately for comparative purposes, estimates of imputed rents in the three countries are based on different approaches. For Estonia, imputed rents are estimated with the capital market approach (Vork *et al.*, 2010). For Italy, imputed rents are based on a subjective assessment. Finally, for the United Kingdom imputed rents are calculated with the opportunity cost method: mortgage interests' payments, maintenance costs, charges and structural insurance are deducted for owner-occupiers (Mullan *et al.*, 2007). For Estonia and Italy we obtain net imputed rent by subtracting mortgage interest payments from estimated imputed rent. Following the approach adopted by Frick *et al.* (2010) we replace negative values of net imputed rent with zero.

For the United Kingdom, social imputed rent is calculated as the difference between estimated market rent and the rent actually paid by tenants in subsidized or reduced rent housing⁷ (Mullan *et al.*, 2007). The same holds for Estonia. For Italy social imputed rent is not available.

We distinguish between market and social imputed rent. The first is assigned to homeowners and free tenants⁸, while the second is assigned to social housing tenants and tenants who pay a rent below market value.

2.3 *Benefit incidence approach*

We assess the redistributive effects of housing-related policies with the benefit incidence method (OECD, 2008). The benefit incidence method estimates the marginal distributional effect of an additional component of income. Box 1 below shows the step-by-step inclusion of housing-related policies in the concept of economic well-being.

As discussed by Lerman and Yitzhaki (1995) the ordering of the various steps is not neutral: alternative orderings may produce different distributional outcomes. As far as possible, we introduce each step in a logical order. Households are ranked according to their original monetary market income (employment and self-employment income, income from property, investment income, private pensions, and private transfers). In the second step, we add private⁹ imputed rent. We calculate disposable income as gross monetary income, minus taxes, plus transfers excluding those housing-related and, in a further step, we add private imputed rent to this income. In the subsequent steps, we introduce each housing-related policy at a time in order to assess their marginal distributional impact. Private imputed rent is added before the deduction of personal income taxes, as we want to illustrate the distributional effect of the tax exemption of imputed rent. Property tax is introduced after the inclusion of imputed rent, mortgage interests' and other housing-related deductions, as this extended concept of disposable income defines the household's tax capacity. The fiscal deduction of the property

⁷ Social imputed rent may also be attributed to a tiny minority of households who pay part rent/part mortgage.

⁸ The category of free tenants corresponds to households occupying a dwelling free of charge.

⁹ Market imputed rent is assigned to homeowners (outright and with outstanding mortgage) and free tenants.

tax is introduced after the payment of the property tax. As a last step, we add social imputed rent for social housing tenants.

Box 1 – Steps of economic well-being, before and after taxes and benefits

- Original market income (A1)
- Original market income plus private imputed rent (A2)
- Income net of taxes and benefits, excluding those housing-related (B1)
- Income net of taxes and benefits, excluding those housing-related plus private imputed rent (B2)
- B2 plus mortgage interests deductions (C)
- C plus other housing-related deductions (D)
- D minus property tax (E)
- E plus deduction for property tax (F)
- F plus housing benefits (G)
- G plus social imputed rent (H)

The factor source decomposition (Shorrocks, 1982) is an alternative method used to assessing the contribution of each income source to overall inequality. This method allows avoiding assumptions about the order in which components are added together. However, the factor source decomposition method was not originally designed to assess the redistributive effect of taxes and benefits and some notable studies raised important questions on the comparison between the two methods. For instance, Fuest *et al.* (2010) analyze the redistributive effects of social contributions, direct taxes and cash transfers using both the benefit incidence and factor source decomposition methods. They find contrasting redistributive results. Similarly, Figari and Paulus (2012) use both methods to assess the contribution of different income sources and taxes to overall inequality. Notably, they find a dis-equalizing contribution of imputed rent and an equalizing contribution of indirect taxes by using the factor source decomposition. These results are at odds with the bulk of related literature. On the basis of this, Figari and Paulus (2012) suggest that reconciliation between the two methods deserve further research. We use a conservative stance and follow the mainstream literature on the analysis of the redistributive effects of taxes and benefits and adopt the benefit incidence approach.

We calculate the income share's change from one step to the other for each quintile of the income distribution. The analysis by income quintiles shows which parts of the income distribution are affected by housing-related policies. We calculate the marginal contribution of each policy to inequality and relative poverty. Furthermore, we consider the marginal redistributive effect of each housing-related policy for different tenure and age groups. The variation in the Gini coefficient achieved by the tax or benefit corresponds to the Reynolds-Smolesky index.

3. Overview of housing-related policies and descriptive statistics

3.1 Mortgage reliefs

Mortgage interest payments may be fully (as in the Netherlands and Greece) or partially (as in Italy, Sweden and Finland) deductible from income tax (Mastaganis and Flevotomou, 2007). Mortgage interest tax relief can also be granted as a tax credit.

United Kingdom abolished mortgage relief in 2000 (Mastaganis and Flevotomou, 2007).

In Estonia households can deduct 100% of their mortgage interest payments for the main house from taxable income. From 2005, the deductible amount of mortgage and study loan interests cannot exceed 50000 EEK or 50% of taxable income (Vork *et al.*, 2010).

In Italy, mortgage interest payments for the purchase of the main residence can be deducted up to 3615,20 euro¹⁰ per year (Ceriani and Gigliarano, 2010). In addition, in 2005 it was possible to claim a tax credit for 36% of the expenses incurred for the refurbishment of buildings up to 48000 euro (Ceriani and Gigliarano, 2010).

3.2 Property tax

In the United Kingdom the property tax (Council tax) is charged to all occupiers of domestic properties and is based on the estimated market value of the property on 1 April 1991 (Mirrlees *et al.*, 2011). Properties are assigned to nine bands (A to I) according to their capital value. Each local authority sets a tax rate for band D and apply an increasing ratio for the other bands (Haux *et al.*, 2010). This tax is designed to be regressive relative to its tax base, as the proportion paid for Council Tax is lower the higher the value of the house (Mirrlees *et al.*, 2011). The Council tax is reduced by 25% if the property is inhabited by only one adult resident and by 50% if nobody is resident (second home ,etc.). Low income families are eligible for the Council Tax Benefit. This is a rebate of the Council Tax. The amount depends on the characteristics of the household (single parent, disability, over 60, etc.). Council Tax Benefit is inversely proportional to income and can be assigned to households with no one in work, such as unemployed and pensioner households (Haux *et al.*, 2010).

In 2005 Italy levied a municipal property tax (ICI) based on the cadastral value of the building raised by 5% multiplied by a coefficient that is different according to the building type (Ceriani and Gigliarano, 2010). In 2008, main residences were exempted from ICI, apart from luxury flats, castles, villas and palaces of historical or artistic importance. In 2012 property tax was re-introduced under the name of IMU. In 2005 it was not possible to deduct property tax from taxable income.

Estonia does not levy a property but a land tax. This is a state tax based on the assessed value of the land. The rates of the Land tax range between 0.1% and 2.5% of the assessed value of the land. There are no fiscal deductions for the Land tax.

¹⁰ In 2008 this amount has been raised to 4000 euro.

3.3 *Housing benefits*

In the United Kingdom the Housing Benefit covers the costs of the rent for low income families, including those not working. The subsidy consists of “eligible rent”, corresponding to the rent paid. Premiums and allowances are granted according to the household’s characteristics. Local authorities specify the maximal amount of the “eligible rent”.

Estonia offers a Subsistence Benefit guaranteeing a minimum income to all residents. If household income after payments of housing expenses (excluding mortgage interest tax payments) is below a defined subsistence level, the household is entitled to Subsistence Benefit. In 2005 the Subsistence level was 750 EEK for the household head plus 80% of this amount for any other member. Housing costs are subject to a limit according to the household size and the square meters of the flat. It is a means-tested benefit.

The variable defined as housing benefits in the Italian data includes rent-related benefits, mortgage benefits and a residual component. The residual component includes regional vouchers such as the *Buono Casa*. This voucher promotes the purchase of the main residence and it is addressed to specific type of households (usually young married couples).

3.4 *Descriptive statistics*

Table 1 shows the tenure structure of each country. Estonia and Italy have a large share of outright owners (76% and 60%, respectively), while the United Kingdom has a considerable share of homeowners with an outstanding mortgage (47%). There are two other striking differences between Estonia and Italy, on the one hand, and the United Kingdom, on the other. These differences are related to the share of tenants in social housing and the share of tenants in the private market paying no rent. For social tenants the share is 18% in the latter country versus no more than 5% in the other two. For free tenants the figures are 1% versus more than 7%.

Table 2 reports the value of each-housing related policy as a percentage of household equivalised disposable income. Private imputed rent has the largest contribution to disposable income in Estonia (31%), followed by Italy (18%) and the United Kingdom (10%). On the other hand, social imputed rent is more important in the United Kingdom than in Estonia (1.7% versus 0.3%).¹¹ Similarly, housing benefits represent a large share of disposable income in the United Kingdom (3.8%) and a negligible share in the other two countries (smaller than 1%). The same applies to property tax: relatively important in the United Kingdom (5.5%) and negligible in the other two countries (1% or less).

¹¹ Social imputed rent is not available for Italy.

4. Discussion of the results

4.1 *Housing-related policies and inequality*

The inclusion of market imputed rent in the concept of economic well-being has a clear redistributive effect. Indeed, adding the value of imputed rent to original income reduces inequality¹², as shown by column 1 (grY) to 2 (grYIRpriv) in Tables 1, 2 and 3. The strongest effect is found for Estonia (-15%), followed by Italy (-8%) and the United Kingdom (-5%). The fall in inequality due to the inclusion of imputed rent when considering disposable income is smaller: -10%, -2% and -4%, respectively (columns 3 and 4 in Table 1-3). Frick et al. (2010) find a 3% and 6% decline in disposable income inequality for Italy and the United Kingdom, respectively, in 2004¹³. The values reported under Column 3 (netY) correspond to the change between disposable monetary income and gross monetary income (column 1). The values reported under Column 4 correspond to the change between disposable income augmented with imputed rent and gross income augmented with imputed rent (column 2). In the top panel of Tables 1, 2 and 3 the first column reports the gross monetary income shares, while from column 4 to column 9 the values reported correspond to the change with respect to the previous income step.

The redistributive effect of overall taxation is smaller for economic well-being than for monetary income. Indeed, the change in the Gini coefficient in column 4 (corresponding to the difference between column 4 and 2) is smaller than that reported in column 3 (corresponding to the difference between column 3 and 1) for all the three countries (Tables 1, 2 and 3).

Mortgage tax reliefs are slightly regressive in Italy, but less than when the imputed rent is not included in the income concept as done in Mastaganis and Flevotomou (2007). Indeed, the first two quintiles slightly lose in relative terms with respect to the other three quintiles (column 6 of Table 4). In Estonia the effect of mortgage interest tax relief is very limited in terms of income redistribution (column 6 of Table 3).

Property taxes are slightly regressive in the United Kingdom, even after taking into account the reduction of property taxes for low income households (column 7 of Table 5). In Estonia and Italy, property taxes have no redistributive effect (column 7 of Table 3 and column 8 of Table 4, respectively).¹⁴

Housing benefits are clearly progressive in the United Kingdom, though they also generate a considerable re-ranking among households. Indeed, income re-ranking reduces the redistributive power of housing benefits by an amount corresponding to 9% of the absolute

¹² The Data Appendix reports inequality measured with the Gini coefficient. We calculated also inequality with the Theil index and the Half Squared Coefficient of Variation (not reported). The results with different inequality measures are completely consistent in all the tables.

¹³ Frick et al. (2010) used estimations of imputed rent based on regression and opportunity cost approach (see AIM-AP project for more details: <http://www.iser.essex.ac.uk/research/euromod/research-and-policy-analysis-using-euromod/aim-ap/deliverables-publications>). Due to the small population of private renters no Heckman correction was applied for Italy and the UK.

¹⁴ For Italy, rounding of the results with more decimals show a slightly regressive effect of mortgage deductions and property tax: the two bottom quintiles (especially the first) have a negative sign.

change in inequality¹⁵. In Estonia and Italy the redistributive effect of housing benefits is modest.

The inclusion of social imputed rent in the income concept (only possible for Estonia and UK) improves the relative position of the bottom quintiles in the UK, where it also generates a considerable amount of re-ranking. In Estonia it has nearly no effect.

The last column of the bottom panel of Table 1, 2 and 3 reports the overall redistributive impact of all housing policies, excluding the tax exemption of imputed rent¹⁶.

4.2 *Housing-related policies and relative poverty*

Housing benefits and social imputed rent are the most effective tools in reducing relative poverty¹⁷. Indeed, poverty is reduced by 40% in the United Kingdom and by 7% in Estonia. In Italy, housing benefits generate a negligible reduction in the relative poverty rate (smaller than 1%). As previously mentioned, these benefits are targeted to homeowners and not to tenants as in Estonia and UK.

Although the British Council Tax increases relative poverty, the possibility for low income households to deduct this tax has a more than counterbalancing effect on the relative poverty rate.¹⁸

Moreover, if the tax exemption of imputed rent reduces the redistributive power of the tax system, it relieves some households at the bottom of the income distribution, with the notable exception of Italy, where this tax exemption does not reduce the number of poor households.

In Section 4.1 we discussed that the exemption of imputed rent from taxable income entails a potential redistributive loss. Nonetheless, in the UK this exemption has a favorable impact on relative poverty.

4.3 *Housing-related policies and tenure categories*

Tables 4, 5 and 6 report the results for the decomposition of inequality by tenure groups. The half-squared coefficients of variation estimates show that inequality within tenure groups is higher than between tenure groups in all three countries.

In Estonia (Table 6), outright owners and free tenants are the categories who benefit most from housing-related policies, while renters in the private market and homeowners with mortgage lose in terms of relative economic well-being. The analysis by tenure categories for

¹⁵ The absolute change in inequality is calculated as the sum of the absolute change in the Gini coefficient due to re-ranking and the absolute change in Gini due to redistribution.

¹⁶ This change corresponds to the difference between the values in column IRsoc and netYIRpriv.

¹⁷ Poverty refers to individuals living in households in which the relevant concept of equivalised income is below 50% of the median.

¹⁸ However, the Council Tax benefit is overestimated in Euromod (Haux *et al.*, 2010).

Italy shows similar results (Table 7). Outright owners are the “winners” and renters in the private market are the “losers”.

In the UK (Table 8), outright owners and reduced-rent tenants are the categories who gain from housing-related policies, whereas homeowners with a mortgage are the losers. With respect to owners with mortgage, outright owners have a relative advantage in the exemption of imputed rent from taxation. Reduced-rent tenants benefit from housing benefits and social imputed rent.

4.4 *Housing-related policies and age groups*

The analysis by age of the household’s head point to a clear-cut result: the main “winners” are over 60 year-old in all three countries (Table 7, 8, and 9). In Estonia the main “losers” from housing-related policies are in the youngest age group (under 40), in Italy both the young and middle age (under 60) and, finally, in the UK the middle aged group (between 40 and 60).

The relative advantage of over 60 year-old is clearly due to the inclusion of imputed rent in the concept of economic well-being. Outright homeowners are over-represented among over 60 year-old than younger households, due to a simple life-cycle effect: they may have just finished to paying off a mortgage¹⁹. Households in which a head is younger than 40 are better off in the UK than in Estonia or Italy. Indeed, these households are the target of British housing benefits and social housing. These cash and in-kind subsidies compensate for their disadvantage in terms of imputed rent.

4.5 *A comparative assessments of housing-related policies*

Figure 1 reports the pattern of inequality from market income to a wider concept of economic well-being for the three countries considered. Figure 2 shows the contribution of imputed rent and (other) housing-related policies to the reduction of inequality in the same countries.

Housing-related policies (including imputed rent) are most effective in reducing inequality in Estonia (-11%, in UK is -10%, in Italy -3%) and poverty in the UK (-56%, -28% in Estonia, no effect in Italy). However, by considering housing-related policies excluding imputed rent the United Kingdom has the most redistributive policies both for inequality (-7%, in Estonia is nearly zero, in Italy is zero) and for poverty (-39%, nearly zero in Estonia and zero in Italy). The green bar in Figure 2 shows this result. To sum up, in Italy housing policies are ineffective both in terms of inequality and relative poverty reduction. The inclusion of imputed rent on top of net income has a limited redistributive effect compared to the other two countries. Indeed, in Estonia the small extent (although progressive) effect of housing policies is compensated by the large redistributive effect of imputed rents.

¹⁹ However, in Estonia and Italy where the share of households with a mortgage is around 10% (2007 EU-SILC) the age aspect of the tenure structure may not be a life-cycle but a cohort effect.

From an inequality-reducing standpoint, is the distribution of imputed rent more important than (other) housing-related policies? Only in the United Kingdom is the redistributive effect of housing policies more important than the effect of imputed rent (Figure 2). This finding holds not only in relative terms (the importance of imputed rent is smaller in the United Kingdom than in the other two countries), but also in absolute terms.

From a poverty-reducing standpoint, the same question may be asked. Figure 3 plots the pattern of relative poverty defined by each housing-related policy. Figure 4 shows the contribution of imputed rent and housing policies to the reduction of poverty. In the UK, housing policies are by far the most important tool for reducing poverty with respect to the distribution of imputed rent (-46% versus -10%). In Estonia it is again imputed rent (evaluated with respect to the distribution of net income) that reduces poverty (-22% with respect to 7% of housing policies), as well as, to a lesser extent, in Italy (-2% versus 0).

The tax exemption of imputed rent helps in reducing relative poverty (apart from Italy). This finding is illustrated by the comparison of the blue and red bars in Figure 4. On the other hand, it reduces the potential impact it could have on income inequality (the blue bar is larger than the red bar in Figure 2). These results suggest that the tax exemption of imputed rent helps improving the well-being of income-poor housing-rich, but it is not equitable at higher levels of incomes and imputed rents.

4.6 *Beyond the static effects of housing-related policies*

The analysis does not consider behavioural responses to changes in the tax and benefit structure of housing-related policies. Behavioural responses to housing-related policies are beyond the scope of this paper. Nonetheless, we mention that mortgage interest tax deductions, property taxes and the exemption of imputed rent from taxation have an impact of the probability that households enjoy a positive imputed rent and its size. Indeed, the popularity of mortgage interest tax deductions, together with the development of the credit market, boosted homeownership rates and increased the chance of low income families to own a house (Andrews *et al.*, 2011). Similarly, low property taxes and the exemption of imputed rent from taxable income make investments in housing more convenient than in other assets. In a behavioural framework, these three policies may be attributed to part of the redistributive effect due to imputed rent. We also mention that the current extent and distribution of housing wealth (and private imputed rent) may be due to economic factors such as high inflation (as in Italy during the '80s) and historical factors (as in Estonia). The surge in house prices in the last decades and consequently the increase in capital gains are another economic factor that explains the extent and distribution of imputed rent (if rents reflect house prices and imputed rent is measured with the "rental equivalence method"). The exemption of capital gains from taxation is the policy counterpart of this phenomenon.

Moreover, in a life-cycle perspective the distributional effects of housing-related policies may be different. As the analysis by age groups shows, the net gainers of housing-related policies, in particular the exemption of imputed rent from taxable income, are over 60 year-old household heads. This group is most likely to consist of households that have finished off repaying their mortgage loan.

5. Final remarks

The analysis in this study covers three countries with different housing regimes and policies. According to the Esping-Anders classification, the United Kingdom belongs to the liberal welfare state regime and Italy to the Mediterranean regime. However, housing regimes do not completely match the classification of welfare regimes (Eurostat, 2010a). Indeed, the UK housing regime includes both liberal (mortgage indebtedness is common) and universalistic aspects (large share of no-profit housing). Italy is a typical example of the Mediterranean housing regime: high level of homeownership, incentives for homeownership and irrelevant amount of social spending for housing. Table 1 shows that 60% of Italian households are outright homeowners. This is also due to the demographic and household structure that characterizes Italy. Nonetheless, other Mediterranean countries such as Portugal and Spain have a considerably larger proportion of homeowners with an outstanding mortgage than Italy or Greece. Beyond this classification, the tenure structure of Estonia is similar to the other two Baltic countries, as well as for other social aspects. These countries display higher levels of inequality than other Eastern European countries. In terms of tenure structure and housing policies Baltic countries are more similar to Mediterranean than to liberal or Nordic countries. As most Eastern European countries, they have an extremely large share of outright homeownership (although, it is due to different reasons than in Mediterranean countries) and a limited amount of public expenditure for housing.

The differences in housing regimes are mirrored in the structure of housing policies and their effect on the distribution of economic well-being. Indeed, housing-related policies are most important in the United Kingdom both for inequality and relative poverty, relevant in Estonia only for relative poverty and irrelevant in Italy. Nonetheless, we can identify some common features of housing-related policies. In all three countries the extent of inequality is larger within than between tenure categories. The current design of property taxes is not progressive. Housing-related policies follow a life-cycle redistributive effect: gainers belong to the over 60 year-old age group, mostly due to the exemption of imputed rent from taxable income.

Mortgage interest tax deductions have a slightly regressive effect in Estonia and no redistributive effect in Italy. These results are more conservative with respect to the existing literature (Mastaganis and Flevotomou, 2007), as we include imputed rent net of mortgage interest payments in the income concept. Indeed, homeowners with a mortgage have a lower housing advantage than outright homeowners. In addition, the limited regressive effect that we find for mortgage interest tax deductions is also due to the small extent of mortgages in Italy and Estonia (around 10% of the population). Results for countries such as the Netherlands (where the share of homeowners with a mortgage is above 40%²⁰) and the design of the mortgage tax relief much more beneficial to high income earners would be definitely more regressive, as shown in Mastaganis and Flevotomou (2007). The United Kingdom has a large share of owners with mortgage (larger than 45% of the population), but mortgage interest tax deductions were abolished in 2000²¹.

²⁰ 2007 EU-SILC data.

²¹ It is possible to get tax deductions for buy-to-let properties or where the property is partly used for business purposes (even when it also doubles up as the main home).

Housing policies are most important in the UK specific housing regime, both for inequality and relative poverty reduction. In the Baltic country, housing policies matter only for relative poverty reduction. In a Mediterranean country such as Italy housing policies seem to play no redistributive role. These results reflect the size of public expenditure on housing in the three countries: 1.42%, 0.03% and 0.02% of GDP in United Kingdom, Estonia and Italy, respectively²². Similarly, the regressive effect of the Council Tax (before deductions) found for the United Kingdom is affected by the relatively large importance of the property tax with respect to the other two countries (4.3%, 2% and 0.3% of GDP in United Kingdom, Italy and Estonia, respectively²³). Overall, the redistributive power of taxation is smaller when economic well-being is considered instead of monetary income.

The current policy debate suggests to shift taxation away from labour towards real estate (as well as towards VAT and green taxes) (European Commission, 2011; OECD, 2012). Indeed, most countries grant a favorable tax treatment to housing investments. Some governments have recently started reforming property taxation. This analysis shows that the current design of property taxes is not suitable if property taxes want to be raised without penalizing households at the bottom of the income distribution. Although the measurement of housing advantage (imputed rent) is still problematic²⁴ the results show that little redistribution is achieved with current forms of property taxation. The design of property taxes needs to be extensively revised in order to raise more revenues from households that have a high economic well-being also because of homeownership.

The theoretical literature suggests that exemption from property taxation of households with properties below a given threshold makes the property tax a tax on capital. A tax on all properties, irrespective of their values, means taxing also the consumption part of housing. The empirical evidence presented here shows that property tax deductions do relief poor households, in the absence of a property tax exemption. Moreover, the missing redistributive role of property taxes reflects the fact that they are not based on the actual value of the property. Alternatively, imputed rent could be taxed in place of property. The taxation of imputed rent under personal income has the advantage of assessing more carefully the level of economic well-being, as determined by cash and in-kind income. Nonetheless, the estimation of market imputed rents poses some practical difficulties.

The policy debate on mortgage interest tax relief is much more heated in countries not covered by this study (e.g. Netherlands). Efficiency theories prescribe to allow for mortgage interest tax relief if imputed rent (estimated at market values) is taxed. However, they generate side effects such as over-indebtedness (and its consequences on macroeconomic stability) and an increase in inequality. Mortgage interest tax relief lowers the income tax burden and provides an incentive to work. This translates into higher benefits for higher income earners and is exacerbated by particular tax designs (tax deduction versus tax credit, no cap for mortgage interests subject to the tax relief).

Overall, the current favorable tax treatment of housing in many OECD countries may be difficult to support from an efficiency and equity point of view. Indeed, it generates distortions in the allocation of capital and favors higher income taxpayers. A (revenue neutral and) tenure neutral subsidy has a higher redistributive (Matsaganis and Flevotomou, 2007) and efficiency potential.

²² SOCX data (OECD Social Expenditure Database) for 2005.

²³ OECD Tax database for 2005 Taxes on property (OECD code: 4000).

²⁴ The measurement of imputed rent in EU-SILC data is still based on different methods.

Nonetheless, the large within group dispersion of economic well-being suggests that the relevant parameters to be taken into account in the design of housing-related policies go beyond the tenure status. The analysis shows that the young are clearly penalized by the housing tax and benefit system. Policy reforms aimed at balancing the housing advantage typically enjoyed by the elderly should be designed by taking into account their effects on new (young) entrants in the housing market. Finally, the life-cycle and behavioral dimensions represent important aspects that need to be taken into account in the design of housing-related policies and deserve further research.

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7. Data Appendix

Table 1: Tenure structure, by country

	Estonia	Italy	United Kingdom
Outright homeowners	76.2%	59.8%	25.4%
Homeowners with mortgage	11.7%	13.1%	47.1%
Tenants at market price	3.5%	10.6%	8.5%
Tenants for free	7.0%	9.5%	1.1%
Social tenants	1.6%	5.2%	17.8%

Notes: weighted percentage of individuals. Source: authors' elaboration based on EUROMOD input data (2003 UK FRS, 2006 EE-SILC, 2006 IT-SILC).

Table 2: Average household income by source, % of disposable income

	All households			Bottom quintile			Top quintile		
	EE	IT	UK	EE	IT	UK	EE	IT	UK
Original Y	84.0	89.0	92.0	42.2	68.5	34.7	116.4	112.0	135.3
Private IR	31.1	17.6	10.3	55.9	38.3	23.2	17.2	10.1	5.1
Mortgage	0.18	0.2		0.0	0.1		0.4	0.1	
Ref Build		0.2			0.1			0.2	
Propr tax	-0.3	-1.1	-5.5	-0.6	-2.3	-11.7	-0.2	-0.8	-2.7
Ded Prtax			8.5			5.5			0.0
HouseBen	0.9	0.1	3.8	4.7	0.3	10.0	0	0.0	0.3
Social IR	0.3	na	1.7	0.7	na	5.3	0.1	na	0.1

Notes: quintile groups are formed by ranking individuals based on household disposable income equivalised with the OECD modified scale. Ratios are calculated on strictly positive values of equivalised disposable income. Original income (Y) does not include pensions. Private imputed rent is assigned to homeowners and free tenants. Sources: authors' elaboration based on EUROMOD 3+.

Table 3: Income shares by quintile, EE

Quantile	grY	grYIRpriv	netY	netYIRpriv	MortDed	PrTax	HouseBen	IRsoc	allHP
Q1	0.5	3.8	8.9	7.2	0	0	0.2	0	2.2
Q2	8.8	1.6	3.1	2.5	0	0	0	0	0.9
Q3	16.4	0.2	0.2	0.1	0	0	0	0	0.1
Q4	25.2	-1	-2.9	-2.3	0	0	-0.1	0	-0.6
Q5	49	-4.4	-9.3	-7.4	0.1	0	-0.1	0	-2.6
Gini	48.3	41	32.5	29.1	29.2	29.2	29	28.9	
Δ Gini (RS)		-7.3	-15.8	-11.9	0.1	0	-0.2	-0.1	-0.2
% redistribution		91	90	88	100	0	97	90	92
% re-ranking		9	10	12	0	0	3	10	8
Poverty	28.2	23.4	10.8	8.4	8.4	8.4	7.9	7.8	
Δ Poverty		-4.8	-17.4	-15	0	0	-0.5	-0.1	-0.6

Notes: grY = market income, IRpriv = private imputed rent, Ynet = disposable income before housing tax and transfers, MortDed = mortgage interests' payment relief, PrTax = - property tax, DedPrTax = + deduction for property tax, HouseBen = + housing benefits, IRsoc = social imputed rent, allHP = all housing policies (including private imputed rent in the top panel, excluding private imputed rent in the bottom panel). Quintile groups are formed by ranking individuals based on household original income equivalised with the OECD modified scale. The Gini coefficient and Reynold-Smolensky index are multiplied by 100. The poverty line is set at 50% of the relevant median equivalised income. Source: authors' analysis based on EUROMOD 3+. . Source: authors' analysis based on EUROMOD 3+.

Table 4: Income share by quintile, IT

Quantile	grY	grYIRpriv	netY	netYIRpriv	MortDe d	Refurb	PrTax	HouseBen	allH P
Q1	0.4	2.7	12.8	11.4	0	0	0	0	1.3
Q2	8.1	0.6	3.9	3.5	0	0	0	0	0.1
Q3	16	0	0.4	0.4	0	0	0	0	-0.1
Q4	25	-0.6	-3.6	-3.2	0	0	0	0	-0.2
Q5	50.5	-2.6	-13.6	-12.1	0	0	0	0	-1.1
Gini	50.1	45.95	31.8	31.1	31.1	31.1	31.1	31	
Δ Gini (RS)		-4.2	-18.3	-14.9	0	0	0	-0.1	-0.1
% redistribution		86	78	75	0	0	0	100	100
% re-ranking		14	22	25	0	0	0	0	0
Poverty	29	26.6	11.3	11.3	11.3	11.3	11.4	11.3	
Δ Poverty		-2.4	-17.7	-15.3	0	0	0.1	0	0

Notes: see Table 3. Refurb = tax credit for the refurbishment of buildings. Data on social imputed rent (IRsoc) are not available for Italy. Source: authors' analysis based on EUROMOD 3+.

Table 5: Income shares by quintile, UK

Quantile	grY	grYIRpriv	netY	netYIRpriv	PrTax	Ded PrTax	HouseBen	IRsoc	allHP
Q1	0.3	0.9	7.7	7.4	-0.4	0.5	1.4	0.4	2.5
Q2	7.5	0.8	4.7	4.5	-0.2	0	0.1	0.1	0.5
Q3	16.2	0.2	0.6	0.5	-0.1	-0.1	-0.3	0	-0.3
Q4	25.5	-0.3	-2.6	-2.5	0.1	-0.1	-0.4	-0.1	-0.8
Q5	50.5	-1.5	-10.4	-9.9	0.5	-0.3	-0.8	-0.3	-1.8
Gini	50.5	48.2	33.4	32.1	33	32.3	30.5	29.9	
Δ Gini (RS)		-2.3	-17.1	-16.1	0.8	-0.6	-1.9	-0.6	-2.2
% redistribution		93	93	93	98	98	91	86	87
% re-ranking		7	7	7	2	2	9	14	13
Poverty	30.9	29.7	14.3	12.9	13.6	12.5	7.5	6.3	
Δ Poverty		-1.2	-16.6	-16.8	0.7	-1.1	-5	-1.2	-6.6

Notes: see Table 3. Source: authors' elaboration based on EUROMOD 3+.

Table 6: Income shares by tenure group, EE

tenure	grY	grYIRpriv	netY	netYIRpriv	MortDed	PrTax	HouseBen	IRsoc	allHP
mortgage	20.9	-1.9	-3.2	-2.6	0.2	0	0	0	-1.1
outright	69.4	2.4	2.7	2.1	-0.2	0	0	-0.1	1.5
rented	3.3	-0.7	-0.1	-0.1	0	0	0	0	-0.6
reduced	1.1	-0.2	0.1	0	0	0	0	0.1	-0.1
free	5.2	0.4	0.6	0.5	0	0	0	0	0.3
HSCVbtw	0.04	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01
HSCVwit	0.43	0.31	0.21	0.17	0.17	0.17	0.17	0.16	0.16

Notes: see Table 3. HSCV btw = between groups Half squared coefficient of variation. HSCV wit = within groups Half squared coefficient of variation. Source: authors' analysis based on EUROMOD 3+.

Table 7: Income shares by tenure group, IT

tenure	grY	grYIRpriv	netY	netYIRpriv	MortDed	Refurb	PrTax	HouseBen	allHP
mortgage	17.8	-0.5	-3.5	-3.1	0.1	0	0	0	0
outright	58.1	3.2	4.7	4.1	-0.1	0	-0.1	0	2.4
rented	10.4	-1.1	-0.3	-0.2	0	0	0.1	0	-1.1
reduced	4	-0.5	0.2	0.2	0	0	0	0	-0.5
free	9.6	-1.1	-1.1	-1	0	0	0	0	-0.9
HSCVbtw	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
HSCVwit	0.6	0.5	0.23	0.21	0.21	0.21	0.21	0.21	0.21

Notes: see Table 3. HSCV btw = between groups Half squared coefficient of variation. HSCV wit = within groups Half squared coefficient of variation. Source: authors' analysis based on EUROMOD 3+.

Table 8: Income shares by tenure group, UK

tenure	grY	grYIRpriv	netY	netYIRpriv	PrTax	dedPrTax	HouseBen	IRsoc	allHP
mortgage	62.8	-1.4	-7.5	-7.2	0.3	-0.3	-1.1	-0.4	-2.6
outright	22.6	2.1	2.9	3	-0.1	0	-0.6	-0.2	1.3
rented	8.1	-0.5	0	-0.1	0	0	0.5	-0.1	0
reduced	5.6	-0.3	4.5	4.2	-0.2	0.2	1.1	0.7	1.2
free	0.9	0.1	0.1	0.1	0	0	0	0	0.1
HSCV btw	0.07	0.07	0.02	0.03	0.03	0.03	0.02	0.02	0.02
HSCV wit	0.62	0.56	0.28	0.25	0.27	0.26	0.25	0.25	0.25

Notes: see Table 3. HSCV btw = between groups Half squared coefficient of variation. HSCV wit = within groups Half squared coefficient of variation. Source: authors' analysis based on EUROMOD 3+.

Table 9: Income shares by age of household head, EE

age	grY	grYIRpriv	netY	netYIRpriv	MortDed	PrTax	HouseBen	IRsoc	allHP
under 40	42.5	-2.8	-4.7	-3.7	0.1	0	0	0	-1.8
40-60	47.7	-0.9	-5.1	-4.1	0	0	0	0	0.1
over 60	9.7	3.8	9.8	7.8	0	0	0	0	1.7
HSCVbtw	0.06	0.03	0.01	0	0	0	0	0	0
HSCVwit	0.41	0.31	0.22	0.18	0.18	0.18	0.18	0.17	0.17

Notes: see Table 3. HSCV btw = between groups Half squared coefficient of variation. HSCV wit = within groups Half squared coefficient of variation. Source: authors' analysis based on EUROMOD 3+.

Table 10: Income shares by age of household head, IT

age	grY	grYIRpriv	netY	netYIRpriv	MortDed	Refurb	PrTax	HousBen	allHP
under 40	32.1	-1.3	-4.5	-4	0	0	0.1	0	-0.7
40-60	55.6	-1.5	-9.4	-8.3	0	0	0	0	-0.5
over 60	12.2	2.8	13.9	12.3	0	0	-0.1	0	1.2
HSCVbtw	0.06	0.04	0	0	0	0	0	0	0
HSCVwit	0.56	0.48	0.24	0.22	0.22	0.22	0.22	0.22	0.22

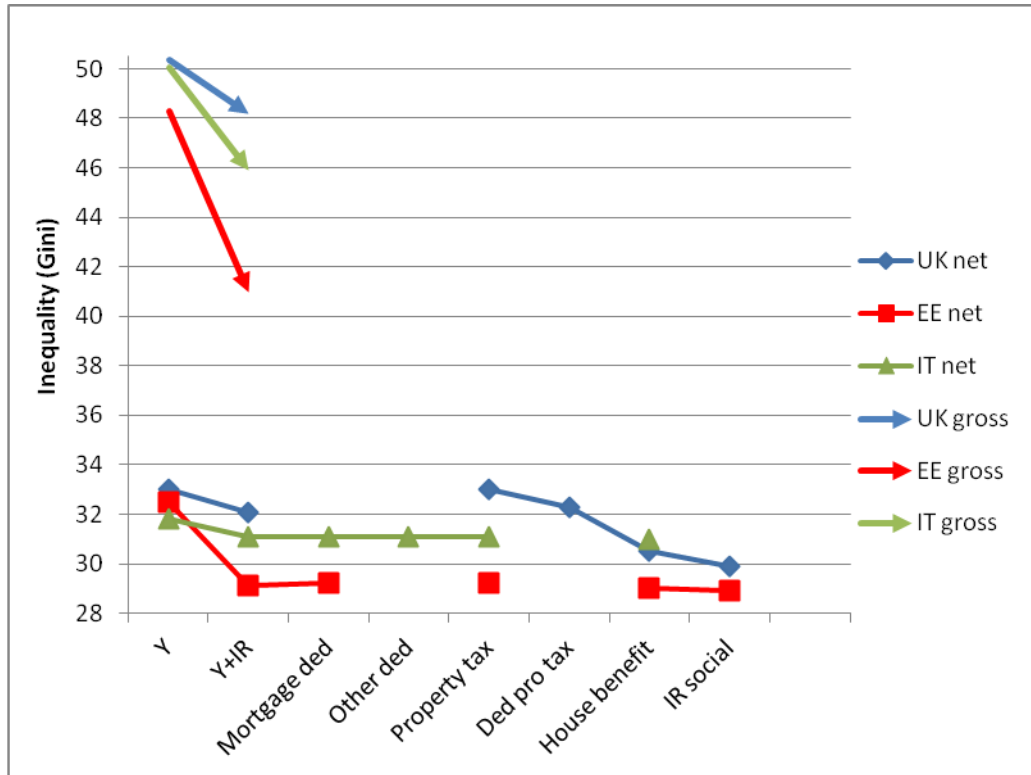
Notes: see Table 3. HSCV btw = between groups Half squared coefficient of variation. HSCV wit = within groups Half squared coefficient of variation Source: authors' analysis based on EUROMOD 3+.

Table 11: Income shares by age of household head, UK

age	grY	grYIRpriv	netY	netYIRpriv	PrTax	dedPrTax	HouseBen	IRsoc	allHP
under 40	36.6	-1	-1.9	-1.9	0.1	0	0.3	0.1	-0.5
40-60	51.5	-0.6	-4.9	-4.7	0.2	-0.1	-0.5	-0.2	-0.9
over 60	11.9	1.6	6.9	6.6	-0.3	0.2	0.2	0	1.5
HSCV btw	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
HSCV wit	0.66	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

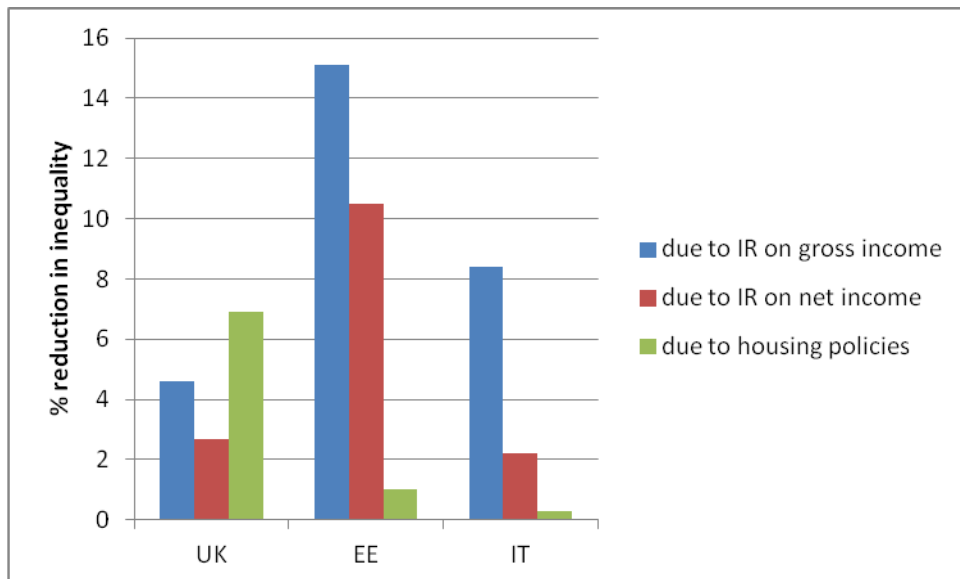
Notes: see Table 3. HSCV btw = between groups Half squared coefficient of variation. HSCV wit = within groups Half squared coefficient of variation. Source: authors' analysis based on EUROMOD 3+.

Figure 1 - Inequality and housing-related policies



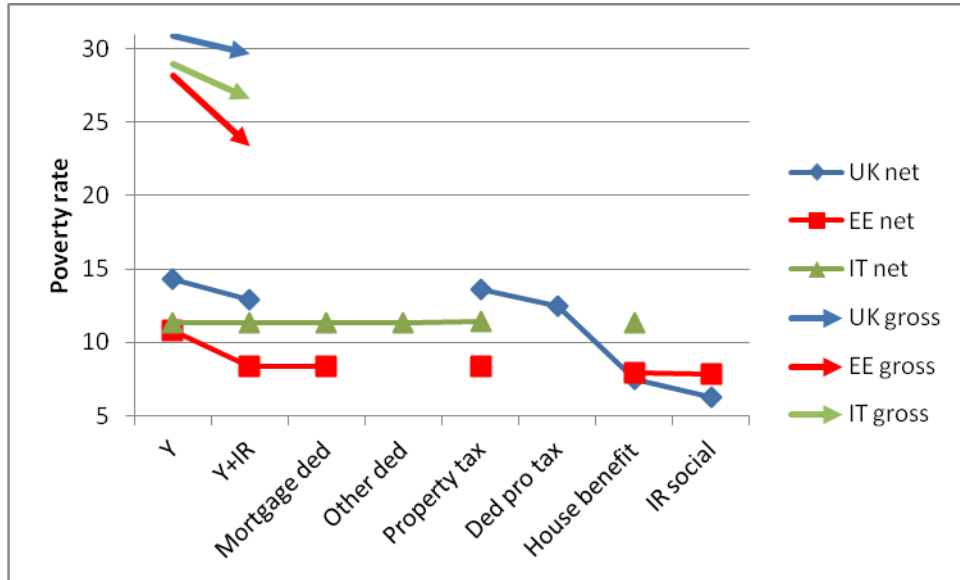
Notes: *Country_xx* gross (line with arrow) = change in gross income inequality due to the inclusion of imputed rent in the concept of economic well-being. Source: authors' analysis based on EUROMOD 3+.

Figure 2 - Reduction in inequality due to housing policies and imputed rent, in %



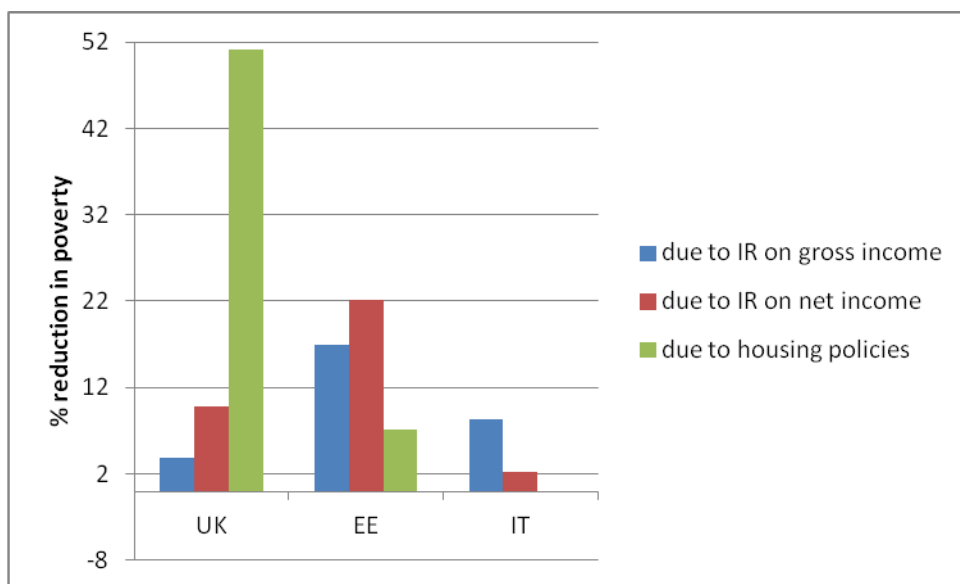
Source: authors' analysis based on EUROMOD 3+.

Figure 3 – Relative poverty and housing related policies



Notes: Country_xx gross (line with arrow) = change in gross income poverty rate due to the inclusion of imputed rent in the concept of economic well-being. Source: authors' analysis based on EUROMOD 3+.

Figure 4 - Reduction in relative poverty due to housing policies and imputed rent, in %



Source: authors' analysis based on EUROMOD 3+.