Taxing home ownership:

distributional effects of including net imputed rent in taxable income

Francesco Figari¹,², Alari Paulus¹, Holly Sutherland¹,
Panos Tsakloglou², Gerlinde Verbist³*, and Francesca Zantomio¹,⁴

¹ Institute for Social and Economic Research, University of Essex; ² Athens University of Economics and Business and IZA; ³ Centre for Social Policy Herman Deleeck, University of Antwerp; ⁴ Department of Economics, Ca’ Foscari University of Venice; ⁵ Department of Economics, University of Insubria

*Corresponding author. Tel: ++32.3.265.55.53. E-mail address: gerlinde.verbist@uantwerpen.be. Gerlinde Verbist, Centre for Social Policy Herman Deleeck, University of Antwerp, Sint-Jacobstraat 2, B-2000 Antwerp, Belgium.

Abstract

Imputed rental income of homeowners is tax exempt in most countries, despite the long-standing arguments recommending its inclusion in the tax base, on both equity and efficiency grounds. The current fiscal crisis revived interest in this form of taxation. The paper investigates the fiscal and distributional consequences of including homeowners’ imputed rent, net of mortgage interest and maintenance costs, in taxable income in the same way as any cash income source that extends consumption opportunities. Three scenarios are analysed in six European countries: in the first imputed rent is included in the taxable income of homeowners, while at the same time existing mortgage interest tax relief schemes and taxation of cadastral incomes are abolished. In two further revenue-neutral scenarios, the additional tax revenue raised through the taxation of imputed rent is redistributed to taxpayers, either through a tax rate reduction or a tax exemption increase. Results show how including net imputed rent in the tax base might affect inequality in each of the countries considered. Housing taxation appears to be a promising avenue for raising additional revenues, or lightening taxation of labour, with no inequality-increasing side-effects.

Keywords

Housing taxation; imputed rent; income distribution; inequality; microsimulation

JEL-codes

D31, H23, I31, I32
Acknowledgments

This research was carried out as part of the research project "Accurate Income Measurement for the Assessment of Public Policies (AIM-AP) which was funded by the European Commission Framework Programme 6 (Project no. 028412). We are indebted to all past and current members of the EUROMOD consortium and of the AIM-AP project, to participants to the final AIM-AP meeting (University of Essex) and the 4th ECINEQ conference (Catania) for helpful comments. We want to dedicate this paper to the memory of our deceased colleague Joachim Frick, who paved the way for this paper with his work on imputed rent; his inspiring comments and sharp mind are greatly missed. The views expressed in this paper, as well as any errors, are the responsibilities of the authors and do not implicate the institutions to which they are affiliated. In particular, this applies to the interpretation of model results and any errors in its use. The analysis in this paper is based on the public use version of the German Socio Economic Panel Study (GSOEP) made available by the German Institute for Economic Research (DIW), Berlin; the Greek Household Budget Survey (HBS) made available by the National Statistical Service of Greece; the Belgian component of the EU Statistics in Incomes and Living Conditions (EU-SILC) made available by Eurostat; the Italian version of the EU Statistics in Incomes and Living Conditions (IT-SILC) made available by Istat; the Socio-Economic Panel Survey (SEP) made available by Statistics Netherlands through the mediation of the Netherlands Organisation for Scientific Research - Scientific Statistical Agency; and the Family Resources Survey (FRS), made available by the UK Department of Work and Pensions (DWP) through the Data Archive. Material from the FRS is Crown Copyright and is used by permission. Data providers do not bear any responsibility for the analysis or interpretation of the data reported here.
1 Introduction

Most countries’ tax systems entail a favourable tax treatment of home ownership, compared to rental-occupied housing. The tax-exemption of imputed rental income (and other provisions such as deductions allowed for mortgage interest repayments and other homeowners’ expenses) lower the cost of housing services of homeowners, relative to those of renters. Such lack of neutrality in taxation in terms of horizontal equity and its consequences for a wide range of economic outcomes, most notably in the housing and capital markets, have long been recognized in the economic literature (Aaron, 1970; Rosen, 1979; Poterba, 1992 Turnovsky and Okuyama, 1994). In addition to neutrality and efficiency arguments, distributional reasons to tax homeowners’ imputed rental income have been put forward, for example that tax exemptions tend to favour higher income taxpayers, as the advantage depends on the homeowner’s marginal tax rate. Arguments in favour of taxation of net imputed rent are quite old in Economics as well as Finance and Political Science (see, for example, Marsh, 1943; Goode, 1960; Musgrave, 1967; Vickrey, 1993).1 In recent years, the financial crisis has revived interest towards housing taxation, as concerns have been raised about the role played by housing tax treatment in the US housing bubble that triggered the crisis (IMF, 2009; Glaeser, 2010; Ceriani et al. 2011). At the same time, housing taxation is in the spotlight in Europe as one of the few practicable ways of raising tax revenues while lowering the tax wedge on labour income (European Commission, 2012; Lloyd, 2009; Mirrlees et al., 2011, Pellegrino et al., 2012). Although housing taxation is generally advocated on efficiency grounds, the distributional implications are often neglected in a cross country perspective.

The aim of this paper is to fill this gap and to investigate how removing the tax provisions favouring homeownership, i.e. including imputed rent in the personal income tax base, while abolishing mortgage interest payment deductions, would affect the short run distribution of income and work incentives. We consider six European countries - Belgium, Germany, Greece, Italy, the Netherlands and the United Kingdom.

Even in the (hypothetical) absence of income taxation, accounting for the income value of home ownership in distributional analyses is, from a theoretical viewpoint, superior to analyses that only look at cash disposable income (Atkinson and Bourguignon, 2000; Canberra Group, 2001; Aaberge et al., 2010). Empirical studies have shown that income inequality declines when a value for imputed rent is included

1 However, a few authors argue in favour of keeping net imputed rent untaxed; see, for example, Bourassa and Grigsby (2000), on the grounds of the administrative infeasibility of accurate net imputed rent taxation and of the chance it might in fact result in a wealth tax.
in the income concept (see e.g. Lerman and Lerman, 1986; Smeeding et al., 1993; Meulemans and Cantillon, 1993; Yates, 1994; Buckley and Gurenko, 1997; Kiel and Zabel, 1999; Marquier, 2003; Frick and Grabka, 2003; Gasparini and Escudero, 2004; Saunders and Siminski, 2005; Frick et al., 2007, Frick et al., 2010; for opposing evidence, see Onrubia et al., 2009 and, to a lesser extent, Garner and Short, 2009). The next section elaborates on the arguments to include imputed rent in the income concept. It then describes how imputed rent was estimated for a representative sample of households in each country and shows how its inclusion affects homeowners’ equivalised disposable income.

If income is accepted as an indicator of tax units’ ability to contribute, taxation of imputed rent appears the logical consequence. From a theoretical viewpoint, following Haig (1921) and Simons (1938), an appropriate income tax base should reflect both monetary and non-monetary consumption opportunities. Imputed rent enhances homeowners’ consumption ability because they benefit from housing services they would otherwise need to pay for, thus depleting cash resources. Imputed rent can, therefore, be regarded as a form of income; treating it differently from other types of income in defining the tax base may be undesirable both on equity and on efficiency grounds. This is discussed in Section 3, together with a brief overview of housing taxation policies in the countries included in our analysis.

Building on this ground and using the multi-country tax benefit model EUROMOD, we include imputed rent, net of mortgage interest payments and maintenance and owner occupier costs, in the taxable income in each country. At the same time, special tax treatments of incomes or expenses related to the main residence are removed, as otherwise this would result in double taxation or double tax concession (i.e. taxation of cadastral income and mortgage interest tax relief). The tax-benefit model EUROMOD and the simulations of alternative tax policy options are presented in section 4. We propose three scenarios. The first one entails the taxation of imputed rent in a similar way as cash income and is non-revenue neutral. Then, we consider two further scenarios in which the corresponding additional revenues are returned to taxpayers in revenue-neutral reforms.

Section 5 provides the empirical results. First, we analyse the likely short run distributional effects of our three scenarios, and discuss how these might change in the longer run, through their feedback effect in the housing market. Marginal effective tax rates are also presented to give an insight into the work incentives implied by each scenario. Naturally, the results we obtain are affected by differences in countries’ overall tax provisions, and by both the characteristics of the housing market and the joint distribution of housing tenure and household income, which differ considerably for the six countries studied here. Section 6 concludes.
2 Including imputed rent in the income concept

Both country specific and cross-country distributional analyses typically rely on households’ disposable cash income as a measure of living standards. However, there are at least two reasons why including imputed rent - as any other sort of non cash component - in the underlying income concept would seem more appropriate. First, home owners enjoy housing services they would otherwise need to pay for, thus depleting cash resources. One should, therefore, acknowledge how their consumption opportunities might differ from those of private renters bearing higher housing costs for living in comparable properties. In this respect, including imputed rent in the income concept better reflects homeowners’ enhanced command over resources, when compared to renters.

Second, the inclusion of imputed rents allows for more coherent comparisons over time, for example in times of changing home ownership or housing costs patterns (Frick et al., 2010). International comparisons might also yield biased results under a cash only income concept, when the housing tenure structure varies substantially across countries. As illustrated in Graph 1, there is a striking difference in the percentage of home owners across the six European countries studied here that cash income measures fail to reflect, resulting in possibly biased judgements on relative living standards. In Belgium, Greece, Italy, the Netherlands and the United Kingdom the majority of the population lives in owned accommodation, while in Germany most of the population lives in rented dwellings. In Italy and, particularly, in Greece, the majority of the population lives in residences owned outright, while in the Netherlands and the United Kingdom most of the homeowners still have mortgage loans outstanding. Graph 1 also presents tenure status across income quintiles (Q1: poorest, ... Q5: richest), with population members ranked according to their equivalised disposable household cash income.

---

2 The European Commission proposes the following definition of imputed rent: “The imputed rent refers to the value that shall be imputed for all households that do not report paying full rent, either because they are owner-occupiers or they live in accommodation rented at a lower price than the market price, or because the accommodation is rent-free” (EU Commission Regulation N°1980/2003). Hence, three groups of potential beneficiaries of imputed rent can be identified, namely owner-occupiers, rent-free tenants and tenants with below-market rent; this last group can include those who live in social housing or those who benefit from rent reduction by their private landlord (e.g. relatives, employer). Here, the focus is on imputed rent for home-owners. For an analysis of the distributional effects of public benefits in kind, including public housing, in five of the countries examined here, see Paulus et al. (2010), as well as OECD (2011) for a broader international comparison.
Graph 1: Distribution of the population according to housing tenure

In all countries the higher the quintile the higher the share of the population living in accommodation owned on a mortgage and the lower the share of those living in rented housing. In most countries the share of those living in property owned outright is relatively stable across quintiles.

The method used to estimate the value of imputed rent requires careful consideration. Recent cross-country empirical analyses (Frick et al. 2010, Frick and Grabka 2003 and Frick et al. 2007) propose three methods: the opportunity cost approach, the capital market approach and the self-assessment approach.

The opportunity cost approach (or “rental equivalence method”) estimates the opportunity cost of housing in a non-subsidised rental market. This is often done through a hedonic regression estimation using a two-step procedure. In the first step a regression model is estimated with rent as the dependent variable (normalized for the size of residence, if possible) based on the population of tenants in the private market; the covariates may refer to the characteristics of the dwelling, household income, etc. This procedure may be further refined by correcting for selection bias into the owner status (e.g. by applying a Heckman selection correction). In the second step the resulting coefficients are applied to otherwise similar owner-occupiers. An alternative to the regression-based approach is to allocate accommodations to mutually exclusive strata, based on their characteristics, and to impute the value of the average rent
paid by market tenants to other non market rented accommodations belonging to the same stratum; these data can come from the same dataset or from external rental statistics. The *capital market approach* (or “user cost method”) focuses on the alternative use of capital on the capital market. It starts from the trade-off between becoming owner of a dwelling and investing these resources into financial assets that (should) generate equal risk-adjusted real income flows through interest and dividends. Saunders *et al.* (1992) propose to equate the implicit rate of return on housing equity to a relatively safe private market rate of return on an equal value of investment (such as a long-term government bond). A drawback of this approach is that it is based on the homeowner’s subjective estimation of the current market value, which possibly suffers from distortions (which may be particularly a problem among long-time homeowners) and, further, this method may be sensitive to the selection of the interest rate. The *self-assessment approach* is based on the assessment of respondents of the rental value of their home. The amount answered on the self-assessment question is taken to be the value of the imputed rent (which of course can also suffer from distortions due to subjective estimates).

In all three approaches, relevant costs need to be deducted in order to obtain the required *net* imputed rent. Relevant costs include operating and maintenance (excluding heating) costs. One also needs to consider costs linked to ownership such as mortgage interest payments and property taxes. In particular, the deduction of interest payments is important in reducing the income advantage derived from owner-occupied housing. As interest payments are typically a heavier burden for younger households, older homeowners tend to benefit more from net imputed rent (see e.g. Frick and Grabka, 2003).

We use the estimates of net imputed rent which were carried out in the framework of the AIM-AP project. Here we only provide a brief overview of the methods used and the underlying datasets (see Table 1). Following Frick *et al.* (2010), for almost all countries, the opportunity cost approach was the preferred option, using a correction for selection bias in three countries (Belgium, Germany and Greece). Given the very small private rental market in the Netherlands, the opportunity cost approach could not be used for this country and, hence, the capital market approach was applied.

---

1 Detailed information about the estimation of net imputed rent for each country is available at [http://www.iser.essex.ac.uk/research/euromod/research-and-policy-analysis-using-euromod/aim-ap/deliverables-publications](http://www.iser.essex.ac.uk/research/euromod/research-and-policy-analysis-using-euromod/aim-ap/deliverables-publications)

2 In the case of Italy and the United Kingdom, the Heckman correction term was not significant. In Belgium, Germany and Greece, a set of characteristics have been used for the exclusion restrictions in the Heckman selection, notably education level and migrant background of the head of the household.

3 A comparison of the implementation of the opportunity cost approach and the capital market approach in Germany (Frick *et al.* 2007) and in five European countries (Frick *et al.* 2010) indicates that the choice of method for estimating imputed rent does not substantially affect the distributive outcomes. Consequently, we do not expect that using a different estimation method for the Netherlands will significantly affect distributional comparisons across these countries.
Table 1: Data sources and methods used to estimate imputed rents

<table>
<thead>
<tr>
<th>Dataset - year</th>
<th>BE</th>
<th>DE</th>
<th>GR</th>
<th>IT</th>
<th>NL</th>
<th>UK</th>
</tr>
</thead>
</table>

Method to estimate IR

<table>
<thead>
<tr>
<th></th>
<th>OC-R (H)</th>
<th>OC-R (H)</th>
<th>OC-R (H)</th>
<th>OC-R</th>
<th>CM</th>
<th>OC-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (individuals)</td>
<td>12,971</td>
<td>16,108</td>
<td>17,386</td>
<td>60,734</td>
<td>10,344</td>
<td>67,123</td>
</tr>
<tr>
<td>n (households)</td>
<td>5,275</td>
<td>11,194</td>
<td>6,555</td>
<td>24,204</td>
<td>4,329</td>
<td>28,860</td>
</tr>
<tr>
<td>N (individuals in millions)</td>
<td>4.4</td>
<td>38.7</td>
<td>10.9</td>
<td>57.1</td>
<td>15.5</td>
<td>58.5</td>
</tr>
<tr>
<td>N (households in millions)</td>
<td>4.4</td>
<td>38.7</td>
<td>4.0</td>
<td>23.2</td>
<td>6.9</td>
<td>25.2</td>
</tr>
</tbody>
</table>

Notes: Method to estimate Imputed Rent (IR): OC-R = Opportunity Cost Approach, regression based including Heckman selection model (H) or not; CM = Capital Market Approach.

Table 2 shows how home owners’ equivalised disposable income of the current year varies once net imputed rent is included. The value of living in owner-occupied housing appears to be substantial: on average, it ranges from 7% (Belgium) to 13% (Greece) of disposable cash income. The advantage is more important for outright owners than for those on a mortgage as the net gain (in absolute terms) is smaller for the latter group due to interest payments. Furthermore, current disposable income is likely to differ between the two groups of owners as people with a mortgage are typically in the prime working age and at the peak of their current earnings, while a greater proportion of outright owners have retired and hence have lower current income. This is confirmed by Graph 1 showing outright owners spread relatively evenly across the income distribution while a larger proportion of those with a mortgage can be found in the upper income quintiles. Hence, even if imputed rent would be similar in absolute terms, it is likely to be larger for outright owners relative to their cash income. For the small group of outright owners in the Netherlands net imputed rent amounts to 20% of disposable income. In our analysis of the short run distributive effects of different housing taxation policies, disposable income extended with net imputed rent is further referred to as ‘extended income’.

Table 2: Change in equivalent disposable income (in %) due to inclusion of net imputed rent

<table>
<thead>
<tr>
<th></th>
<th>BE</th>
<th>DE</th>
<th>GR</th>
<th>IT</th>
<th>NL</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>All owners</td>
<td>7%</td>
<td>10%</td>
<td>13%</td>
<td>11%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>- Owner outright</td>
<td>9%</td>
<td>16%</td>
<td>15%</td>
<td>11%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td>- Owner on mortgage</td>
<td>6%</td>
<td>4%</td>
<td>8%</td>
<td>10%</td>
<td>7%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Source: Own calculations using EUROMOD version D25.
3 Housing taxation: principles and practices in six European countries

The treatment of housing by the tax and benefit system takes numerous forms and varies considerably across countries. In most countries the imputed rent enjoyed by owner-occupied households is exempt from income taxation; in the few countries where it is subject to income tax (Andrews et al., 2011), the corresponding notional rents are usually substantially lower than private market rents. In many countries there are also mortgage interest tax relief policies. Regarding public support to rented housing, in some countries part of the rent paid by market renters is exempt from taxation, while in others housing is provided at below market rates to particular segments of the population (in the forms of social renting or rent subsidies). Moreover, there are taxes associated with the transfer of dwellings (usually in the form of stamp duties) as well as property taxes.

A common trait, across the different country-specific housing taxation practices, is that owner-occupied housing is taxed less heavily than rent-occupied housing as well as other forms of capital investment (Andrews et al., 2011). Partly as a result of existing policies, home ownership rates have risen almost steadily in almost all OECD countries since the mid 1980s (Andrews et al., 2011). The main argument usually put in favour of promoting home ownership is that it creates positive externalities because home owners tend to take more interest in the community than renters (Di Pasquale and Glaeser, 1999), though, in practice, the strength of political economy arguments highlighting how voting patterns may be influenced by policies affecting home ownership should not be underestimated (Ball, 1983). The latter may explain the difficulties encountered by a number of governments in their efforts to withdraw policies favouring home ownership vis-à-vis other forms of housing tenure (Wood, 1990; Arnold et al., 2011).

On the other hand, promoting home-ownership may displace other forms of investment (Turnovsky and Okuyama, 1994); restrict residential and, hence, labour market mobility (Bover et al., 1989; Cameron and Muellbauer, 1998; Boeri and Terrell, 2002) as well as increase house price volatility leading to macroeconomic instability (Catte et al., 2004). But even if one believes that home ownership is beneficial and should be promoted for the society, the question remains of why it should be left to the tax system to do so: the asymmetric tax treatment of homeowners and renters results in both inequity and inefficiency.

According to the Haig-Simons tax base definition, any income that increases individuals’ ability to consume, while leaving unaffected their original capital stock, should be included in the income tax base. Vertical equity principles call for imputed rent taxation: under progressive taxation, provisions such as imputed rent exemption and mortgage interest relief benefit disproportionally higher income taxpayers,
because they face higher marginal tax rates. Moreover, including imputed rent in taxable income as any other income source (i.e. considering the house as an investment good) better reflects an individual’s actual capacity to consume and guarantees that horizontal equity principles are respected: homeowners and renters endowed with the same ability to consume bear the same taxation burden. The principle of horizontal equity refers to the equal treatment of equals (Feldstein, 1976; Plotnick, 1982), and here we define equals on the basis of gross extended income (i.e. cash income plus imputed rent), which means that in a horizontally equitable system homeowners and renters should face the same tax liabilities other things being equal. Table 3 shows the average tax rate for homeowners, compared to that of a set of simulated renters that differ from these homeowners only in terms of their tenure status, i.e. they are identical in terms of household composition, extended income, accommodation characteristics. There is indeed a considerable degree of horizontal inequity between homeowners and renters in the current tax systems: in our six countries, homeowners clearly pay less taxes ranging from about 1 percentage point in the United Kingdom up to about 3 percentage points of gross extended income in the Netherlands, Belgium and Italy.

Table 3: Average tax rate for homeowners and tenants, as a share of gross extended income

<table>
<thead>
<tr>
<th></th>
<th>Homeowners</th>
<th>Tenants</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>16.8</td>
<td>19.3</td>
</tr>
<tr>
<td>DE</td>
<td>14.6</td>
<td>15.5</td>
</tr>
<tr>
<td>GR</td>
<td>3.9</td>
<td>5.7</td>
</tr>
<tr>
<td>IT</td>
<td>13.9</td>
<td>16.5</td>
</tr>
<tr>
<td>NL</td>
<td>8.6</td>
<td>12.2</td>
</tr>
<tr>
<td>UK</td>
<td>13.0</td>
<td>14.1</td>
</tr>
</tbody>
</table>

Notes: Homeowners in the dataset are compared with a simulated set of otherwise identical renters. Source: Own calculations using EUROMOD version D25.

On efficiency grounds, non neutral tax provisions favouring homeownership introduce distortions in resource allocations, imposing a deadweight loss to the society (Skinner, 1996); moreover, the welfare loss entailed by income taxation is further increased by such tax base reductions. A number of theoretical as well as empirical studies have pointed out that several of these policies lead to capital market distortions that are detrimental to economic growth (such as excessive investment in housing) as well as to undesirable distributional outcomes (Kneller et al., 1999; Johansson et al., 2008; Arnold et al., 2011).

Although, as Yates (1994) points out, since in many countries the elderly are overrepresented among both homeowners and the poor, the results of imputed rent taxation may not necessarily be progressive.
In the following sections, we use micro-simulation techniques to study the short run distributional effects of taxing imputed rent net of maintenance and other owner occupier costs and mortgage interest payments, and removing mortgage interest tax reliefs, in six European countries. As shown in Table 4, in four of the countries studied here, imputed rent is in principle taxed, though with important qualifications: in Belgium and Italy cadastral income is part of taxable income but can be (almost) entirely deducted; in Greece only part of the imputed rent of larger dwellings is taxed, affecting relatively few households; in the Netherlands a (small) fraction of the market value of the dwelling is included in taxable income. Mortgage interest tax relief exists in four of the six countries included in our analysis.

Table 4: Housing taxation policies for principal dwelling of homeowners for six European countries

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxation of imputed rent</td>
<td>Cadastral income included in taxable income but (almost) fully deductible.</td>
<td>No</td>
<td>Yes on principal dwellings larger than 200 m²</td>
<td>Cadastral income included in taxable income, but fully deductible</td>
<td>Yes. Imputed rent up to 0.55% of market value of the dwelling.</td>
<td>No</td>
</tr>
<tr>
<td>Mortgage interest tax relief</td>
<td>Yes. Fully deductible for loans taken up before 2005.</td>
<td>No</td>
<td>Yes. Tax allowance for loans taken up before 2003. Tax credit of 20% of annual interest for loans after 2002.</td>
<td>Yes. Tax credit equal to 19% with maximum of €760.</td>
<td>Yes. Fully deductible.</td>
<td>No</td>
</tr>
</tbody>
</table>


4 Methodology and simulations

4.1 EUROMOD: a multi-country tax benefit model

In order to assess the impact of alternative tax policy options we simulate counterfactual scenarios by using a fiscal microsimulation approach which allows us to estimate household incomes under different tax options holding everything else constant and therefore avoiding endogeneity problems (Bourguignon and Spadaro, 2006).

The policy reform simulations are performed on the income survey data reported in Table 1 using EUROMOD, the multi-country European wide tax-benefit microsimulation model. EUROMOD simulates
tax liabilities (direct taxes and social insurance contributions) and cash benefit entitlements for the household populations of EU Member States in a comparable way across countries on the basis of the tax-benefit rules in place and information available in the underlying datasets. The components of the tax-benefit systems which are not simulated due to the lack of information on previous employment and contribution history in the cross-sectional survey data used as input of EUROMOD (e.g. contributory pensions), as well as market income, are taken directly from the data. EUROMOD is a static model in the sense that the arithmetic simulation of taxes and benefits abstract from potential behavioural reactions of individuals. As such, EUROMOD is of value in terms of assessing the first order effects of tax-benefit policies and in understanding how tax-benefit policy reforms may affect income distribution, work incentives and government budgets in the short term. For further information, see Sutherland (2007).

The tax-benefit systems simulated in this paper refer to 2001 for Germany and the Netherlands, 2003 for Belgium, Italy and the United Kingdom, and 2004 for Greece. The reference time period for income data matches the policy year with the only exception of the Netherlands for which monetary values have been updated (from 2000 to 2001) according to the appropriate price and income indices. The simulations of these policy systems have been cross-checked with administrative statistics and tested through a number of other applications (e.g. Bargain, 2007).

4.2 Alternative policy simulations

According to the Haig-Simons tax base definition, the imputed rent should be taxed as capital investment and included in the tax base of the personal income tax. Alternatively, in a dual income tax system, it would be taxed separately. We follow the first approach in order to provide an upper bound of the likely distributional effects. The first simulation includes net imputed rent in the personal income tax base, irrespective of budget neutrality (IR1). Next, two budget neutral scenarios are discussed (IR2 and IR3) which, in effect, seek to shift part of the tax burden from cash income to imputed rent.

---

7 The results have been documented in EUROMOD Country Reports, available at https://www.iser.essex.ac.uk/euromod/resources-for-euromod-users/country-reports/legacy
8 Following the economic literature (Mirrlees et al. 2011) and the main options discussed in the policy debate (European Commission, 2012) we propose taxing the owner-occupied housing as capital investment. We do not modify existing property taxes because in the countries considered in the analysis they are regarded as taxes with different purposes and based on different concepts of tax base. For example, in Italy the Local Property Tax (ICI) is mainly considered as a charge paid for the provision of local public services (OECD, 2012). In the UK, the Council Tax combines features of a property tax with other functions. When combined with the specific benefit designed to provide a rebate for low income households, it is in fact a hybrid of a poll tax, household tax and income tax as well as a property tax (Hills and Sutherland, 1991). Moreover, in most of the countries considered in this paper, property taxes represent only a very small share of taxes (see e.g. Andrews et al. 2011 and OECD, 2009).
**Net imputed rent included in the taxable income, no revenue neutrality (IR1)**

First, we use EUROMOD to simulate a scenario in which the estimated net imputed rent is included in the taxable income definition for home owners. As a consequence, the net imputed rent is taxed at least at the same marginal tax rate that individuals face under the current income tax system.

In order to make the simulation coherent across countries, in this scenario we avoid any double taxation and double tax expenditures related to imputed rent and house purchasing costs. First, we exclude from the tax base any existing amount of cadastral income. Second, we abolish any existing mortgage interest tax reliefs (present in all countries but Germany and the United Kingdom, see Table 4) because the deduction of mortgage costs is part of the net imputed rent calculation. This scenario removes the horizontal inequities between homeowners and renters and also enhances vertical equity.

The treatment of housing costs by other parts of the tax-benefit system (e.g. the coverage of mortgage costs by some social assistance benefits) has not been amended as our focus here is on the inclusion of income from housing, net of costs, in the base of personal income tax.

**Revenue neutrality through a tax rate reduction (IR2) and a tax exemption increase (IR3)**

We also simulate two revenue neutral scenarios in which the additional tax revenue raised from home owners through the taxation of imputed rent is returned to all income taxpayers, irrespective of their tenure status. This will shift the income tax burden from cash income (mainly labour income) to imputed rent and from tenants to owners. We follow two different approaches to guarantee revenue neutrality, which resemble realistic policy alternatives such as a proportional tax rate reduction and an increase in the personal exemption. Under the first approach (IR2), taxpayers enjoy a cut in all tax rates. Operationally, this is implemented by a proportional reduction in their tax liability. This means that the extra tax revenue raised is given back as a tax rebate proportional to the (pre-rebate) tax liability when including imputed rents. Thus, it is only given to those with positive personal income tax liability after taxing imputed rents (IR1). Under the second approach (IR3), taxpayers enjoy an increase in the tax exemption. This corresponds to a non-refundable lump sum tax credit assigned to all taxpayers (again, all those with

---

9 Due to lack of information on the individuals owning the accommodation, the whole amount of the imputed rent has been allocated to the person with the highest taxable income. This means that imputed rent is taxed at the highest marginal rate, an option that could be imposed by the tax authorities, especially if they want to maximize tax receipts. Again, the results presented here should be interpreted as showing the upper bound of the likely distributional effects. Including imputed rent in the tax base of the person with the lower taxable income would generate smaller impacts than those presented here.

10 Using EUROMOD for five countries (including Greece, Italy and the Netherlands), Matsaganis and Flevotomou (2007a) found that mortgage interest tax relief is disproportionately captured by higher income groups and is, hence, a regressive policy. This result is in line with the results of similar studies for other countries (see Andrews and Caldera Sánchez, 2011 and the references cited there).
positive income tax after including imputed rents). This means that the extra tax revenue raised is given back as an equal tax credit to all taxpayers (resulting negative taxes have been set to 0). In the case of Germany, where husband and wife are taxed jointly, the rebate is given in proportion to each spouse’s share of the tax base under IR2. Under IR3, both husband and wife receive the tax credit, if each one’s income adds to the joint tax base.

Revenue neutrality is imposed in terms of government budget (i.e. the net effect of both income tax and cash benefits). This approach allows social assistance schemes to at least partly compensate higher taxes, in those counties where means tests are based on net income.

The paper focuses on the first round fiscal and distributional effect of the tax reforms. We also provide an indication of work incentives by presenting marginal effective tax rates. In the medium and longer run, other effects might take place in the labour, housing, or financial markets. While an analysis of these is undoubtedly beyond the scope of the paper, feedback effects in the housing market, and their likely distributional effect will be shortly discussed based on existing literature.

5 Distributional and fiscal effects of including imputed rent in taxable income

5.1 Short-run distributive and fiscal effects

Table 5 reports the effects of taxing net imputed rent while replacing all special tax treatments of incomes and expenses related to home ownership (IR1) on three aggregates: the taxable income, the income tax revenues collected by the government and the extended disposable income of the population (that is, disposable income after the inclusion of imputed rent in the income concept). Taxable income increases considerably when it includes imputed rent: the change is between 5% (Germany) and 8% (Greece) except in the Netherlands where the taxable income increase only 2% as part of the imputed rent is already taxed. Income tax revenues rise also substantially in all countries under examination.\textsuperscript{11} The proportional changes are larger where the mortgage interest tax relief is very important (the Netherlands: +27%\textsuperscript{12}) or the income taxes collected are relatively low (Greece: +24%). At the other extreme, the proportional increase in income tax is smaller in the two countries without mortgage interest tax relief,

\textsuperscript{11} It is likely that an increase in income tax revenue would be offset to some extent by a decrease in consumption tax revenues (which are not modelled here). This matters presumably less for IR2 and IR3 scenarios which are revenue-neutral (in terms of direct taxes and cash benefits).

\textsuperscript{12} A recent study for the Netherlands estimates indeed that the value of mortgage interest tax relief amounts to around a fifth of personal income tax receipts (see Studiecommissie Belastingstelsel, 2010).
namely Germany (+6%) and the United Kingdom (+9%). Moreover, many population members in Germany live in market rented accommodation and do not enjoy imputed rent, whereas in the United Kingdom tax rates are relatively low and a number of older beneficiaries of net imputed rent are below the tax threshold.

### Table 5: Fiscal effects of including imputed rent in taxable income (IR1)

<table>
<thead>
<tr>
<th></th>
<th>Proportional change in</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Taxable Income</td>
<td>Personal Income</td>
<td>Extended disposable Income</td>
</tr>
<tr>
<td>BE</td>
<td>6.4%</td>
<td>13.9%</td>
<td>-3.4%</td>
</tr>
<tr>
<td>DE</td>
<td>4.9%</td>
<td>5.8%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>GR</td>
<td>7.8%</td>
<td>24.2%</td>
<td>-2.3%</td>
</tr>
<tr>
<td>IT</td>
<td>6.7%</td>
<td>13.2%</td>
<td>-2.9%</td>
</tr>
<tr>
<td>NL</td>
<td>2.3%</td>
<td>27.1%</td>
<td>-4.2%</td>
</tr>
<tr>
<td>UK</td>
<td>7.0%</td>
<td>9.5%</td>
<td>-1.6%</td>
</tr>
</tbody>
</table>

Notes: Net imputed rent included in taxable income, no revenue neutrality (IR1). Source: Own calculations using EUROMOD version D25.

Cross-country differences in the reduction in extended disposable income are remarkable. The change in extended disposable income is relatively small in the two countries without mortgage interest tax relief, Germany (-1.1%) and the United Kingdom (-1.6%). In contrast, the change in extended disposable income is considerable in the Netherlands (-4.2%) where mortgage interest tax relief is very important (see also Matsaganis and Flevotomou, 2007a); Belgium (-3.4%) and Italy (-2.9%) where home ownership is widespread. Home ownership is also widespread in Greece, but the change in extended disposable income is smaller (-2.3%) since many of the homeowners have low incomes and remain under the (relatively high) tax threshold even after the inclusion of imputed rent in the concept of taxable income.

Graph 2 shows the average additional amount (expressed in equivalized PPP euros) that homeowners have to pay in taxes under scenario IR1, by quintile of equivalent disposable cash income. This additional tax liability corresponds to the removal of horizontal inequity between homeowners and tenants.\(^{13}\) Horizontal inequities, expressed in absolute terms, appear to be monotonically increasing in income in all countries. The tax bonus under current policies that homeowners enjoy, compared to otherwise identical tenants (i.e. renters that differ from these homeowners only in terms of their tenure status), ranges from the equivalent of about 20 to 40 PPP euros per month in the bottom income quintile to about 75 PPP euros per month in the top income quintile in Italy and Greece, and to about 100 PPP euros per month in Belgium, Denmark, the Netherlands and the UK.

\(^{13}\) The removal of horizontal inequity means that homeowners are now taxed at the same rate as the simulated otherwise identical tenants (which corresponds to removing the difference in the average tax rates of ‘Homeowners’ and ‘Tenants’ presented in Table 3).
Graph 2: Home owners’ increase in tax liability (IR 1) that removes horizontal inequity

Notes: Q1 – Q5: household equivalised disposable cash income quintile groups. Source: Own calculations using EUROMOD version D25.

The figures reported in Table 5 – particularly those showing the increase in tax revenue in the second column - suggest that it is rather unrealistic to expect that imputed rent will be taxed without any significant accompanying reduction in taxes. Therefore, we also consider two revenue-neutral policy alternatives. In the first scenario, revenue neutrality is achieved through a tax rate reduction for all taxpayers (IR2). In the second scenario, neutrality is achieved through a tax exemption increase for everybody (IR3). Naturally, these policies are likely to have very different distributional effects, since imputed rent is likely to be more equally distributed than tax liabilities. Note that these revenue neutral scenarios do not change horizontal equity compared to scenario IR1, as taxes are reduced in both IR2 and IR3 in the same way for all tax payers (i.e. homeowners and tenants alike).
A first indication of the direction of the vertical equity effects is provided in Graph 3, which shows the share of gainers and losers per quintile as we move from the baseline distribution of extended disposable income (i.e. including net imputed rent) to the distribution of extended disposable income resulting from the three tax reform scenarios. As can be expected, the first scenario (IR1) results almost exclusively in losers\textsuperscript{14} (Graph 3a), ranging from 18% of all households (Germany, with the lowest share of imputed rent beneficiaries) to 56% (Belgium). In all countries, the share of losers increases with income level (apart from the top quintile in the UK). In Belgium, Greece and the Netherlands, the share of losers is higher than 70% in the top quintile.

\textsuperscript{14} The few gainers observed in some countries are those who benefit from the replacement of the existing tax instruments with the inclusion of the net imputed rent in the taxable income.
Graph 3: Share of gainers and losers per quintile when imputed rent is treated as taxable income

(a) IR1: no revenue neutrality

(b) IR2: revenue neutrality through a tax rate reduction

(c) IR3: revenue neutrality through a tax exemption increase

Notes: Gainers and losers defined as households with a percentage variation in extended disposable income equal to ±1%. Quintile groups defined on the basis of household equivalised disposable cash income. Source: Own calculations using EUROMOD version D25.
The budgetary neutral scenario IR2 offers a completely different picture (Graph 3b): in Belgium and Italy, losers are more prominent at the lower end of the income distribution, while in Germany, Greece and the Netherlands, the share of losers is higher in the upper end of the income distribution. With respect to the share of gainers, a similar pattern emerges for all countries: their share increases with income level. In the top quintile, the share of gainers ranges from 40% (Greece) to 60% (Belgium).

When revenue neutrality is achieved through a tax exemption increase (budgetary neutral scenario IR3, Graph 3c), the share of losers increases with income in all countries, although less so in the UK. The pattern of gainer is more mixed: in most countries the bottom quintile has relatively few gainers (or losers), since in many countries a considerable proportion of their members have incomes too low to pay personal income taxes. In most countries, gainers are concentrated in the middle of the income distribution. Only in the Netherlands we find a declining share of gainers when climbing up the income ladder, while an increasing but less pronounced pattern can be observed in Greece.

Another perspective is offered in Graph 4 which reports proportional changes in average extended disposable income per quintile. Graph 4a reports changes in extended disposable income when there is no revenue neutrality (i.e. IR1). In all countries, this policy results in larger reductions of income for higher income groups (except for the top two quintiles in the UK and the top quintile in Italy). This pattern is most pronounced in Belgium, the Netherlands and Greece.

Graph 4b reports the corresponding changes when revenue neutrality is achieved through a tax rate reduction for all taxpayers (IR2). In general, extended income increases most strongly (around 1% for most countries) in the top quintile, while it declines in the three or four bottom quintiles. In Germany, the changes are not very pronounced.

Graph 4c presents the corresponding changes when revenue neutrality results from a tax exemption increase for everybody (IR3). The changes are much smaller than those reported in Graph 4b for all countries except the Netherlands where lower income groups gain and higher income groups lose, quite substantially. The extended income of the top quintile declines in all countries (the effect is very small in Greece). In general the middle quintiles gain the most and the effects are very small in the bottom quintile.
Graph 4: Change in average household disposable extended income per quintile when imputed rent is treated as taxable income

(a) IR1: no revenue neutrality

(b) IR2: revenue neutrality through a tax rate reduction

(c) IR3: revenue neutrality through a tax exemption increase

Notes: Quintile groups defined on the basis of household equivalised disposable cash income. Source: Own calculations using EUROMOD version D25.
Table 6 reports changes from the baseline (distribution of extended disposable income) in three inequality indices – Gini, Atkinson(0.5) and Atkinson(1) – for the three aforementioned scenarios. In comparison with other indices of inequality, the Gini index is relatively more sensitive to changes in the middle of the distribution, while the Atkinson(0.5) and Atkinson(1) indices are relatively more sensitive to changes close to the top and bottom of the distribution, respectively (Cowell, 2000; Lambert, 2001). Naturally, the short run distributional outcomes depend on the combination of a number of factors, such as the share of imputed rent beneficiaries in the population and their location in the distribution of disposable income, the progressivity of income taxation and the treatment of mortgage interest payments in the current tax system.

According to the results reported in Table 6, the inclusion of imputed rent in the concept of taxable income (IR1) results in inequality declining in all countries under examination (in comparison with the level of inequality in the baseline distribution of extended income). The effect is strongest in the Netherlands and smallest in the United Kingdom. This is not surprising given the progressivity of the tax schedules in these countries and the regressive pattern of mortgage interest tax relief in the countries where it exists.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Net imputed rent in taxable income, no revenue neutrality (IR1)</th>
<th>Revenue neutrality through a tax rate reduction (IR2)</th>
<th>Revenue neutrality through a tax exemption increase (IR3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BE</strong></td>
<td>Gini</td>
<td>0.227</td>
<td>-2.1%</td>
<td>2.9%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (0.5)</td>
<td>0.045</td>
<td>-3.5%</td>
<td>6.3%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (1)</td>
<td>0.092</td>
<td>-3.7%</td>
<td>5.8%</td>
</tr>
<tr>
<td><strong>DE</strong></td>
<td>Gini</td>
<td>0.270</td>
<td>-1.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (0.5)</td>
<td>0.059</td>
<td>-2.5%</td>
<td>0.1%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (1)</td>
<td>0.114</td>
<td>-2.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>GR</strong></td>
<td>Gini</td>
<td>0.304</td>
<td>-1.6%</td>
<td>1.4%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (0.5)</td>
<td>0.078</td>
<td>-2.8%</td>
<td>3.3%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (1)</td>
<td>0.150</td>
<td>-2.8%</td>
<td>2.4%</td>
</tr>
<tr>
<td><strong>IT</strong></td>
<td>Gini</td>
<td>0.301</td>
<td>-1.2%</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (0.5)</td>
<td>0.079</td>
<td>-2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (1)</td>
<td>0.147</td>
<td>-2.6%</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>NL</strong></td>
<td>Gini</td>
<td>0.248</td>
<td>-2.6%</td>
<td>2.6%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (0.5)</td>
<td>0.051</td>
<td>-4.8%</td>
<td>5.5%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (1)</td>
<td>0.100</td>
<td>-5.0%</td>
<td>4.4%</td>
</tr>
<tr>
<td><strong>UK</strong></td>
<td>Gini</td>
<td>0.307</td>
<td>-0.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (0.5)</td>
<td>0.077</td>
<td>-1.1%</td>
<td>2.0%</td>
</tr>
<tr>
<td></td>
<td>Atkinson (1)</td>
<td>0.143</td>
<td>-1.2%</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

Notes: Baseline refers to the distribution of extended equivalised disposable income. Source: Own calculations using EUROMOD version D25.
In contrast, when we introduce revenue neutrality through a tax rate reduction (IR2) inequality rises as the benefits accrue mainly to population members belonging to the top quintile (see Graph 3b). Since in this scenario most of the changes take place close to the top of the distribution, it is not surprising to observe that the largest increases are recorded when Atkinson(0.5) is used as index of inequality. Again, the largest effects are observed in Belgium and the Netherlands, while the smallest ones in Germany, where the value of the inequality indices barely change as a result of the policy reform. For Belgium and the Netherlands, this relates to the strong progressivity of the tax system, which in Belgium is partly due to refundable tax credits for low incomes. When revenue neutrality is achieved through a tax exemption increase (IR3), inequality declines irrespective of the index used. The decline is largest in the Netherlands (around -8.5% according to the two Atkinson indices) and smallest in the United Kingdom (around -1%).

5.2 Beyond short-run distributive effects

These short run distributional effects are only part of the story, as we can expect that the taxation of imputed rents and the removal of mortgage interest tax reliefs might also affect the housing market and induce residential mobility. It is likely that the proposed scenarios will change both the owner occupied housing and rental market equilibria. On the one hand, the relative user cost of renting compared to home ownership will be affected, while on the other hand, these policies might also impact on housing prices in the longer run.

First, the taxation of imputed rent and the removal of mortgage interest tax reliefs increase the user cost of home ownership, while decreasing the relative cost of renting and making it a relatively more attractive tenure option. This is indeed the case under the first scenario, but even more so in the second and third, where the additional tax revenues are returned to taxpayers through tax reductions that result in a (further) redistribution from homeowners towards renters. In terms of residential mobility, we expect this to result in households shifting towards the rental market, at least in a first stage. However, the increased attractiveness of renting might in the longer run determine an increase in rental market prices, thus reducing the attractiveness of this option. As renters are more often found in the lower parts of the income distribution, increases in rental prices may mitigate to some extent the short run distributive effects described in the previous section. In the absence of rent regulation, especially the poorest households, who exhibit more price elastic behaviour, could indeed be adversely affected by the increase in rental market prices, even more so if the supply of rental housing was inelastic. In this case the inequality-reducing effect of removing the housing favourable tax treatment could then be lower in the longer run,
calling for policy attention and possibly for intervention (e.g. in the form of social housing or regulation) aimed at protecting the most fragile categories. If, however, the supply of rental housing was elastic, higher rental prices may result in an increase in the supply of rental housing, and this would in turn have an impact on prices, possibly limiting the adverse distributional effects.

Second, we might also expect to observe changes in the asset price of housing in the longer term. Previous research has pointed out that the favourable tax treatment of homeownership tends to encourage excessive leverage and is capitalized into house prices, especially when housing supply is inelastic (Andrews et al., 2011; Harris, 2010). The supply of housing in the European countries we consider is indeed known to be quite inelastic (for example, with respect to the US), because of high population densities, strict spatial planning and/or lower efficiency in the land-use regulation system (Green et al., 2005; Andrews et al., 2011). This means that the tax advantages, intended to make home acquisition more affordable, are to a large extent beneficial to sellers and far less to buyers. Thus, we may expect the removal of this preferential tax treatment to contribute in moderating (or even reducing) house prices in the longer run. Whether this will lead to changes in households’ tenure status is hard to assess, as it depends on the magnitude of this price effect, as well as on the elasticities in both the ownership and rental markets. Overall, the ownership rate could even increase, and in fact previous works have come to contrasting conclusions on the matter (Rosen and Rosen, 1980, Berkovec and Fullerton, 1992; Gervais, 2002; Chambers et al. 2009). The distributional outcomes of these possible changes are very difficult to gauge. Moreover, the tax policy changes could affect not only prices and tenure status, but also the quality of housing: previous literature has also shown how removing favourable housing tax treatment could result in reductions in the size of owned houses, rather than in changes of tenure status (see Glaeser and Shapiro, 2003). A thorough analysis of the overall long term distributional consequences of the policy changes we have simulated would require a general equilibrium approach, and a thorough assessment of which assumptions would best represent each country specific setting, and as such remains beyond the scope of this work.

Beside the housing and rental markets, as our tax reforms change disposable income, there might also be effects on work incentives. Therefore, we investigate the impact of housing taxation on marginal effective tax rates (METRs), that are indicative of the marginal tax burden on labour income. The METR is defined as:

\[ METR = 1 - \frac{Y_j}{d_i} \]

where \( d_i \) is the earnings increment for individual \( i \) and \( Y_j \) is the disposable income of household \( j \) to which this individual belongs. We follow the standard practice in the literature (Immervoll and Sutherland,
2005) which considers the effective tax rate in terms of direct taxes (and cash benefits) as these have a direct impact on disposable income.\textsuperscript{15} The METR is calculated for each working age individual with earnings in turn, taking into account any change in household income after a marginal increase\textsuperscript{16} in individual’s gross earnings. Table 7 presents average METRs by income quintiles for each scenario.

When imputed rent is taxed and mortgage interest relief abolished without compensating measures (IR1), the average METR increases in all quintiles. This is due to the progressivity of the systems: the tax base is increased by the inclusion of imputed rent and the removal of mortgage interest relief.

When revenue neutrality is achieved through a tax rate reduction (IR2), the average METR decreases in comparison with scenario IR1, with higher reductions in the top quintiles. In all countries, the average METR in the top quintile shifts below its baseline value, while the opposite is observed in the bottom of the distribution, except in the Netherlands.

\textsuperscript{15} In principle, the METR could also include consumption taxes though their effect would depend on assumptions regarding marginal propensity to consume. For example, if additional net income is assumed to be fully consumed by all population groups then the inclusion of consumption taxes in the METR would have a little effect on relative differences between the scenarios.

\textsuperscript{16} The increase is 3\%, corresponding approximately to an additional hour of full time work per week.
### Table 7: Mean METRs, by quintile groups of equivalised disposable income

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Net imputed rent in taxable income, no revenue neutrality (IR1)</th>
<th>Revenue neutrality through a tax rate reduction (IR2)</th>
<th>Revenue neutrality through a tax exemption increase (IR3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BE</strong></td>
<td>Bottom quintile</td>
<td>46.6</td>
<td>49.8</td>
<td>47.3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>56.5</td>
<td>59.1</td>
<td>55.1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>54.9</td>
<td>56.2</td>
<td>51.6</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>53.3</td>
<td>54.0</td>
<td>49.5</td>
</tr>
<tr>
<td></td>
<td>Top quintile</td>
<td>54.0</td>
<td>54.3</td>
<td>49.6</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>53.9</td>
<td>55.0</td>
<td>50.5</td>
</tr>
<tr>
<td><strong>DE</strong></td>
<td>Bottom quintile</td>
<td>39.9</td>
<td>41.0</td>
<td>40.5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>43.7</td>
<td>44.2</td>
<td>43.0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>44.5</td>
<td>45.0</td>
<td>43.5</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>45.3</td>
<td>45.8</td>
<td>44.1</td>
</tr>
<tr>
<td></td>
<td>Top quintile</td>
<td>47.6</td>
<td>48.0</td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>44.9</td>
<td>45.4</td>
<td>43.9</td>
</tr>
<tr>
<td><strong>GR</strong></td>
<td>Bottom quintile</td>
<td>6.8</td>
<td>8.5</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>14.1</td>
<td>16.8</td>
<td>15.4</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>18.7</td>
<td>21.5</td>
<td>19.3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>24.9</td>
<td>27.2</td>
<td>24.1</td>
</tr>
<tr>
<td></td>
<td>Top quintile</td>
<td>34.2</td>
<td>35.4</td>
<td>30.4</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>22.8</td>
<td>24.8</td>
<td>21.9</td>
</tr>
<tr>
<td><strong>IT</strong></td>
<td>Bottom quintile</td>
<td>25.2</td>
<td>26.7</td>
<td>25.1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>35.0</td>
<td>35.8</td>
<td>33.1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>36.7</td>
<td>37.5</td>
<td>34.5</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>38.8</td>
<td>39.3</td>
<td>36.0</td>
</tr>
<tr>
<td></td>
<td>Top quintile</td>
<td>42.0</td>
<td>42.4</td>
<td>38.7</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>37.0</td>
<td>37.7</td>
<td>34.6</td>
</tr>
<tr>
<td><strong>NL</strong></td>
<td>Bottom quintile</td>
<td>39.5</td>
<td>40.7</td>
<td>38.9</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>37.7</td>
<td>38.1</td>
<td>34.5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>34.7</td>
<td>35.4</td>
<td>31.3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>37.6</td>
<td>38.5</td>
<td>32.8</td>
</tr>
<tr>
<td></td>
<td>Top quintile</td>
<td>40.4</td>
<td>41.5</td>
<td>33.4</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>38.0</td>
<td>38.9</td>
<td>33.6</td>
</tr>
<tr>
<td><strong>UK</strong></td>
<td>Bottom quintile</td>
<td>54.3</td>
<td>56.2</td>
<td>55.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>51.1</td>
<td>51.6</td>
<td>50.1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>34.5</td>
<td>34.7</td>
<td>33.2</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>31.8</td>
<td>32.1</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td>Top quintile</td>
<td>33.8</td>
<td>34.4</td>
<td>32.4</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>36.6</td>
<td>37.1</td>
<td>35.3</td>
</tr>
</tbody>
</table>

Note: Marginal effective tax rates (METRs) are calculated for each working age individual (18-64 included) with positive earnings. Quintile groups defined on the basis of household equivalised disposable cash income. Source: Own calculations using EUROMOD version D25.

Taxation of IR combined with a tax exemption increase (IR3) lowers the average METR relative to the baseline (except in the Netherlands), but does so to a lesser extent than under scenario IR2 and the pattern over the income distribution generally reverses. Relative to the baseline, METRs are generally lower in
the bottom quintile while the same or higher at the top of the income distribution. Exceptions are the Netherlands, where METRs increase in the bottom quintile, and Greece where, as in scenario IR2, they fall most for households with high incomes. While in the Netherlands IR3 appears to involve a trade-off between inequality reduction and higher marginal rates, especially for those with high incomes, there are instances in most of the countries of reductions in the marginal tax burden on labour incomes, especially for low income individuals, potentially reinforcing the day-after favorable distributional impact of housing taxation.

6 Conclusions

Identifying policy measures able to improve fiscal balances, with no detrimental effects on income inequality and labour market incentives, is particularly valuable in times of economic downturn and fiscal crisis. In a number of countries, tax reforms removing provisions favouring homeownership have been implemented under similar circumstances in the past; for example after the recession of the early 1990s, when some EU countries reduced deductibility of mortgage interest expenses. Currently, austerity measures adopted in several European countries consider housing taxation as a key ingredient in the corresponding rescue packages (Avram et al. 2013).

Homeowners’ living standards are higher than those of otherwise similar households, renting comparable accommodation in the private markets, as homeowners do not need to pay for the housing services provided by their accommodation. The value of the net imputed rent they benefit from represents, on average, a non-trivial proportion of their cash income which is typically used as a basis for personal income taxation. Nevertheless, although it has been widely recognised that net imputed rent should be regarded as non-cash income enhancing consumption opportunities, and that both equity and efficiency arguments recommend its taxation, in most countries it is still tax-exempt.

When considering the option of taxing imputed rent, one concern is that income inequality might be adversely affected. While consensus on the regressive nature of mortgage interest relief schemes has been reached, there is a concern that imputed rent taxation may not necessarily be progressive; for example, in countries where older people have lower cash incomes than the rest of population.

This paper has investigated the fiscal and distributional consequences of taxing net imputed rent in six European countries (Belgium, Germany, Greece, Italy, the Netherlands and United Kingdom), which vary regarding their housing market characteristics and their joint distribution of housing tenure and cash disposable income. The value of net imputed rent was estimated from nationally representative survey
data and the multi-country tax benefit model EUROMOD was used to conduct tax incidence analysis exploring three scenarios.

First, we considered a non revenue-neutral scenario, where net imputed rent was included in the tax base, while housing related tax expenditures (mainly mortgage interest tax relief) and the existing taxation of cadastral income were abolished, with the aim of conducting an absolute tax incidence analysis. A positive outcome of this scenario is that horizontal inequities between homeowners and tenants are removed, thus making the tax system more horizontally equitable. Moreover, the results provide evidence of a small inequality-reducing effect of net imputed rent taxation, which is strongest in the Netherlands and weakest in the United Kingdom, but consistent across countries. At the same time, our estimations show a non-trivial increase in personal income tax revenues, ranging from about five per cent in Germany (where a large proportion of the population lives in rented accommodations) to almost thirty per cent in the Netherlands (due to the abolition of mortgage interest tax relief).

While additional fiscal revenues, raised without increasing income inequality, are of great interest to several European countries currently facing severe fiscal imbalances, other countries might be more interested in tax reforms capable of shifting the burden away from labour. Results obtained regarding the differential tax incidence analysis of the revenue neutral scenarios have shown how housing taxation could offer a promising avenue in this respect. The way in which the additional tax revenues are returned to taxpayers - through a tax rate reduction for all taxpayers or through a tax exemption increase - turns out to affect crucially the distributional assessment of net imputed rent taxation. Net imputed rent taxation and the removal of mortgage interest tax relief appear to be pro-rich when accompanied by a tax rate reduction; while a tax exemption increase reduces inequality, with gainers mostly situated in the middle of the income distribution. Marginal effective tax rates on earned income in general increase when imputed rent is taxed, but this effect is largely counteracted in the budget-neutral scenarios. While the tax rate reduction reduced the marginal burden of tax on labour incomes on average by more than the tax exemption increase, the largest reductions were for people in high income households. The tax exemption increase scenario led to a decrease in METRs for people with low household incomes in all countries but the Netherlands, indicating that such a shift in tax burden from labour income to housing might lead to increased work incentives for these individuals.

Taxing imputed rent may not only affect work incentives, but it can also impact on incentives in other domains most notably on the housing market. Taking account of these effects in our simulations is currently not feasible, but evidence suggests that a positive housing demand shock in countries with more generous mortgage interests tax relief typically translates into higher housing prices than in countries without such relief (Andrews et al., 2011). Based on previous literature, we might then expect that the
reforms such as those simulated in this paper may in the longer run impact on the housing market and induce residential mobility. On the one hand, our scenarios are likely to change the relative user cost for renters compared to homeowners, thus likely leading to new owner occupied housing and rental market equilibria. On the other hand, in the longer run also equilibrium prices in both the owner occupied housing and rental markets might be affected, possibly impacting home tenure decisions. However, these effects, as well as potential impacts on the capital market, are beyond the scope of this paper.

From a practical point of view, the taxation of net imputed rents would entail several administrative challenges. One would concern the accurate measurement of net imputed rents in practice. Moreover, short term liquidity constraints\(^{17}\) for homeowners and political economy considerations\(^{18}\) certainly represent a challenge to implementing net imputed rent taxation. Still, the paper has shown that housing taxation appears to be a promising avenue for raising additional revenues, or reducing the taxation of labour, with no adverse inequality side-effects to be envisaged. Our results provide useful insights on the likely fiscal and distributional consequences of following such a route towards a fairer and more neutral definition of the income tax base. Also, they show how cross-county variation in housing market characteristics, marginal income tax rates and cash income distributions across tenure types are likely to play major roles in shaping the fiscal and distributional effects of housing taxation reforms.

References


\(^{17}\) It is worth referring here to the Danish system, which allows people in specified circumstances to roll up liabilities (with interest) either until the property is sold or until death, in order to alleviate such cash-flow problems (Mirrlees et al., 2011).

\(^{18}\) The abolition of mortgage interest relief might for instance be regarded as an unpopular measure as it would likely alienate young, educated middle-class voters (see e.g. Matsaganis and Flevotomou, 2007b).


