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Removing Homeownership Bias in Taxation: The Distributional Effects of Including Net Imputed Rent in Taxable Income*

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Abstract

The income tax systems of most countries entail a favourable treatment of homeownership, compared to rental-occupied housing. Such 'homeownership bias' and its consequences for a wide range of economic outcomes have long been recognised in the economic literature. Although a removal of the homeownership bias is generally advocated on efficiency grounds, its distributional implications are often neglected, especially in a cross-country perspective. In this paper, we aim to fill this gap by investigating the first-order effects, in terms of distribution of income and work incentives, of removing the income tax provisions favouring homeownership. We consider six European countries – Belgium, Germany, Greece, Italy, the Netherlands and the UK – that exhibit important variation in terms of income tax treatment of homeowners. Using the multi-country tax benefit model EUROMOD, we analyse the distributional consequences of including net imputed rent in the taxable income definition that applies in each country, together with the removal of existing special tax treatments of incomes or expenses related to the main residence; thus, we provide a measure of the homeownership bias. We implement three tax policy scenarios. 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 the two further revenue-neutral scenarios, the additional tax revenue raised through the taxation of imputed rent is redistributed to taxpayers, through either a tax rate reduction or a tax exemption increase. The 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.

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.

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Policy points

- In most countries, income tax systems treat implicit returns to homeownership favourably compared to income generated from rental-occupied housing, thus creating a 'homeownership bias'.
- The economic literature presents arguments related not only to neutrality but also to equity and efficiency to remove this favourable treatment of homeowners.
- Reforms in housing taxation that correct the homeownership bias can be a practicable way for governments to raise tax revenues without adverse effects on income inequality and work incentives.
- Distributive and work incentive outcomes of a revenue-neutral housing tax reform crucially depend on how tax revenues are returned to tax payers.

I. Introduction

The income tax systems of most countries treat homeownership favourably, compared to rental-occupied housing. This favourable treatment stems from different types of tax provisions, first and foremost of which is the income tax exemption of homeowners' implicit return on the asset value of their residence. Both homeowners and renters consume housing services; however, homeowners do not deplete cash resources for these services, as renters do. In this respect, homeownership yields a return on investment (i.e. figurative rental income). Rather than being taxed as any other form of investment, figurative rental income is generally exempt from income taxation, thus causing a bias towards homeowners and creating distortions in investment decisions. Additional income tax provisions favouring homeownership include tax reliefs linked to the cost of home ownership, such as tax credits or deductions allowed on mortgage interest payments, and the exemption of capital gains.

Such 'homeownership bias' and its consequences for a wide range of economic outcomes, most notably in the housing and capital markets, have long been recognised in the economic literature by, for example, Aaron (1970), Rosen (1979), Poterba (1992) and Turnovsky and Okuyama (1994). Arguments in favour of correcting this bias (e.g. through taxation of net imputed rent) are indeed quite old in economics as well as finance and political science; see, for example, Marsh (1943), Goode (1960), Musgrave (1967) and Vickrey (1993).[1] In addition to neutrality and efficiency arguments, distributional reasons for removing the homeownership bias have been put forward, such as horizontal equity between homeowners and

[1]However, a few authors argue in favour of keeping net imputed rent untaxed (e.g. Bourassa and Grigsby, 2000), on the grounds of the administrative infeasibility of accurate net imputed rent taxation and the chance that it might, in fact, result in a wealth tax.

renters,[2] and the fact that tax reliefs generally tend to favour higher income taxpayers, as the advantage depends on the homeowner's marginal tax rate.

The financial crisis in the late 2000s has revived interest in housing taxation. The homeownership bias embedded in the US tax system is deemed responsible for fostering the housing bubble that triggered the crisis; see, for example, IMF (2009), Glaeser (2010) and Ceriani et al. (2011). At the same time, housing taxation has been in the spotlight in Europe as one of the few practicable ways of raising tax revenues while entailing less harmful consequences for efficiency and growth when compared to other forms of taxation. The possibility of shifting the income tax burden away from labour to an immovable tax base has made housing taxation a focus of several recent policy recommendations to European Union (EU) countries; see, for example, Mirrlees et al. (2011), European Commission (2012, 2013) and Lloyd (2012). Although a removal of tax provisions favouring homeownership is generally advocated on efficiency grounds, its distributional implications are often neglected, especially in Europe, and in a cross-country perspective[3] – with the exception of Matsaganis and Flevotomou (2007a), who quantify the distributional impact of mortgage interest tax relief in five European countries. When considering the effects of potential tax reforms aimed at reducing the homeownership bias, one concern is that income inequality might be adversely affected, for example, in countries where older people, who are often overrepresented among homeowners, live on lower cash incomes than the rest of the population; see, for example, Yates (1994).

The aim of this paper is to contribute to this literature by investigating the first-order effects, in terms of distribution of income and work incentives, of addressing the homeownership bias in income taxation in a comparative setting. While the more general issue concerning the appropriate taxation of housing (e.g. as both an investment and a consumption good, in a single-period versus a multi-period framework, etc.) remains a highly contentious topic[4] (Mirrlees et al., 2011), and as such is beyond the scope of this work, in what follows we focus on income taxation in a single-period framework, and we adopt the investment perspective to housing. Owner-occupied housing is regarded as an

[2]Under imputed rent exemption, horizontal equity between owner occupiers and tenants would be achieved if tenants were also allowed a deduction on the rent paid; however, this is in practice generally not the case.

[3]National studies include: Hills (1991), who estimates the distributional effects of subsidies to public sector tenants and tax concessions to owner occupiers in the UK; Clark and Leicester (2004), who consider the effect of abolishing mortgage interest tax relief on income inequality, also in the UK; and Anderson and Gosh Roy (2001), who analyse the distributional impact of the removal of mortgage interest and local property tax deductibility in the US.

[4]As discussed in Mirrlees et al. (2011), besides representing a form of investment, housing could also be regarded as a durable consumption good. This second perspective would call for a residence-based form of taxation levied on occupiers, irrespective of whether homeowners or renters, which would neither correct nor worsen the homeownership bias in income taxation.

asset that yields a return (i.e. imputed rental income), which is included in the income tax base. We consider six European countries – Belgium, Germany, Greece, Italy, the Netherlands and the UK – as a cross-country perspective provides a stronger basis for generalising the results. Naturally, the first-order effects 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 existing baseline tax system. The countries considered in our analysis differ greatly in these respects and are chosen for this reason. Moreover, estimates of imputed rent that have been calculated precisely with the aim of international comparison are available for these countries (Frick et al., 2010).

Given this diversity in institutional and contextual settings, our analysis can provide insights into the likely implications of changes across a variety of policy environments. Using the multi-country tax benefit model EUROMOD, we assess the distributional consequences of including imputed rent in the taxable income definition applying in each country. Imputed rent is considered net of the main costs of homeownership such as the payment of mortgage interest. Taxation of net imputed rent in our policy simulations is accompanied by the removal of existing special tax treatments of incomes or expenses related to the main residence to avoid the chance of double taxation or double tax concession. We implement three tax policy scenarios. In the first, non-revenue-neutral scenario, we add net imputed rent to cash income components in the personal income tax bases. The results provide evidence of a small inequality-reducing effect of net imputed rent taxation, consistent across countries. We then consider two further scenarios in which the additional revenues arising from net imputed rent taxation are returned to taxpayers through revenue-neutral reforms. In our simulations, net imputed rent taxation appears to be pro-rich when accompanied by a tax rate reduction; while an increase in a tax exemption reduces inequality, with gainers mostly situated in the middle of the income distribution. Work incentives, in general, decrease when imputed rent is taxed due to the progressivity of the tax systems, but this effect is largely counteracted in the budget-neutral scenarios.

The remainder of the paper is organised as follows. In Section II, we discuss the economic principles underpinning the inclusion of net imputed rent in the definition of taxable income. In Section III, we present the microsimulation model, the net imputed rent measure and the details for the alternative tax policy simulations. In Section IV, we provide the empirical results, showing the likely first-order distributional effects of our three scenarios, and we discuss how these might be affected by price and behavioural adjustments, through their feedback effect in the housing market, and by changes in work incentives due to the shift of taxation from labour income to property. We conclude in Section V.

II. The homeownership bias in income taxation

The economic rationale for the taxation of net imputed rent together with other incomes relates to the 'comprehensive income taxation' view that an appropriate income tax base should reflect all those resources that contribute to enhancing an individual's consumption possibilities (Haig, 1921; Simons, 1938), taken as a measure of 'ability to pay'. Any non-monetary income that increases consumption possibilities, while leaving unaffected the original capital stock, should therefore be reflected in taxable income. An example is imputed rent (net of mortgage interest payments and other owner-occupier costs), which enhances homeowners' consumption possibilities because they benefit from housing services they would otherwise need to pay for, thus depleting cash resources. In this sense, net imputed rent is regarded as part of the net return on the housing investment and, as such, neutrality and efficiency principles recommend that it is taxed in an equivalent way to other forms of returns from investment (Mirrlees et al., 2011) to avoid creating distortions in the allocation of capital, imposing a deadweight loss to society (Skinner, 1996). The inclusion of net imputed rent in taxable income, so that homeowners and renters endowed with the same (or higher) consumption possibilities bear the same (or higher) taxation burden, is one approach to making sure that horizontal and vertical equity principles are respected.

When considering the actual housing taxation policies found in western economies, a sharp disconnect between principles and practice is observed. Although the tax treatment of housing takes numerous forms and varies considerably across countries, in most cases the imputed rent enjoyed by owner-occupied households is exempt from income taxation; in the few countries where it is subject to income tax, the corresponding notional rents are usually substantially lower than private market rents (Andrews, Caldera Sánchez and Johansson, 2011). Such provisions result in a favourable tax treatment for homeowners, who see a return on investment largely untaxed. The favourable treatment they enjoy is also reinforced by the fact that in many countries there are mortgage interest tax relief policies, although more recently several countries are moving towards phasing out such measures. Clearly, the homeownership bias inherent in income taxation represents a common trait across different country-specific housing taxation practices[5] and helps to explain why homeownership rates have risen quite steadily in nearly all OECD countries since the mid-1980s (Andrews, Caldera Sánchez and Johansson, 2011).

[5]In several countries, property taxes are levied on owned-occupied housing, potentially compensating for the homeownership bias inherent in income taxation. However, property taxes might embody wealth taxation being imposed on top of income taxation and, as such, could be regarded as a complement rather than a substitute to housing income taxation. Besides, as the revenues collected from recurrent property taxation represent a small portion of tax revenues, generally property taxes do not fully compensate the bias inherent in income taxation.

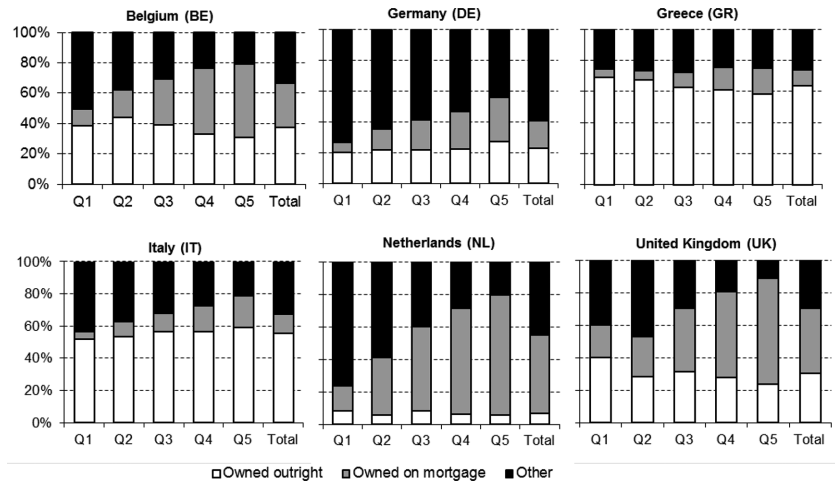
The main argument usually put in favour of promoting homeownership is that it creates positive externalities because homeowners tend to take more interest in the community than renters (Di Pasquale and Glaeser, 1999). Moreover, existing tax measures often result from political attempts to influence voters (Ball, 1983) as housing taxation is highly unpopular. Mortgage interest relief has been sustained as benefitting young and educated middle-class voters; see, for example, Matsaganis and Flevotomou (2007b). The latter, together with housing taxation salience (Chetty, Looney and Croft, 2009), may explain the difficulties encountered by a number of governments in their efforts to withdraw policies favouring homeownership over other forms of housing tenure (Wood, 1990; Arnold et al., 2011).

The homeownership bias has non-trivial potential consequences. These include: overinvestment in housing and displacement of other more productive forms of investment (Turnovsky and Okuyama, 1994); restricted residential and, hence, labour market mobility (Bover, Muellbauer and Murphy, 1989; Cameron and Muellbauer, 1998; Boeri and Terrell, 2002); and increased house price volatility, leading to macroeconomic instability (Catte et al., 2004). Last but not least, undesirable distributional outcomes (Kneller, Bleany and Gemmell, 1999; Johansson et al., 2008; Arnold et al., 2011) might arise under progressive tax systems, because provisions such as imputed rent exemption and mortgage interest relief tend to benefit disproportionally higher income taxpayers, who face higher marginal tax rates; see, for example, Anderson and Gosh Roy (2001), Matsaganis and Flevotomou (2007a), Poterba and Sinai (2008) and Andrews and Caldera Sánchez (2011). Nevertheless, as Yates (1994) points out, the results of imputed rent taxation may not necessarily be progressive, as in many countries the elderly are overrepresented among both homeowners and the poor.

As to their housing-related income tax treatments, the six selected countries represent no exception to the homeownership bias pattern found in western economies, even though they present striking differences in their housing market structure, as is evident from Figure 1. In Belgium, Greece, Italy, the Netherlands and the UK, 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 UK most of the homeowners still have mortgage loans outstanding. Figure 1 also shows tenure status across income quintiles (Q1, poorest; . . . ; Q5, richest), with population members ranked according to their equivalised disposable household cash income. 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.

FIGURE 1

Distribution of the population according to housing tenure



Note: Total: total population. Q1–Q5: household equivalised disposable cash income quintile groups.
Source: Own calculations based on EUROMOD version D25.

In none of the six countries is net imputed rent fully taxed, as detailed in Table 1. While entirely exempted in Germany and the UK, cadastral income[6] is part of taxable income in Belgium and Italy but even then it 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 out of the six countries included in our analysis.

Table 2 offers a quantitative picture of the extent to which such policy provisions favour owner occupiers, with respect to same-ability-to-pay tenant occupiers.[7] The favourable treatment is computed as the difference, under existing tax provisions, in the tax burden borne by owner occupiers and that borne by 'otherwise identical' – in terms of ability to pay – tenant occupiers. The set of same-ability-to-pay tenants is constructed so that the two groups present the same distribution of characteristics (e.g. household composition, type of accommodation) relevant to quantify their ability to pay, or command over resources. In the case of tenants, this corresponds to their cash income.

[6]Cadastral income is a notional income from housing whose computation is based on property value registries (often obsolete). The lack of regular updating of property values typically results in cadastral income being significantly lower than the current market values of housing would suggest.

[7]The reported figures have been derived using EUROMOD, which is presented in Section III.

TABLE 1

Housing taxation policies for the principal dwelling of homeowners

	Taxation of imputed rent	Mortgage interest tax relief
BE (2003)	Cadastral income included in taxable income but (almost) fully deductible.	Yes. Fully deductible.
DE (2001)	No.	No.
GR (2004)	Cadastral income of dwellings larger than 200 m^2.	Yes. Tax allowance for loans taken up before 2003. Tax credit of 20% of annual interest for loans after 2002.
IT (2003)	Cadastral income included in taxable income, but fully deductible.	Yes. Tax credit equal to 19% with maximum of €760 per year.
NL (2001)	Imputed rent up to 0.55% of market value of the dwelling included in taxable income.	Yes. Fully deductible.
UK (2003)	No.	No.

Note: The policy reference year (shown in parentheses next to country acronyms) reflects the reference period for subsequent simulations.
Source: EUROMOD Country Reports and Andrews, Caldera Sánchez and Johansson (2011).

TABLE 2

Average tax rate for owner occupiers and tenants with the same ability-to-pay (as a share of gross extended income)

	Owner occupiers (a)	Tenant with the same ability-to-pay (b)	Difference = (b) – (a)
BE	16.8	19.3	2.5
DE	14.6	15.5	0.9
GR	3.9	5.7	1.8
IT	13.9	16.5	2.6
NL	8.6	12.2	3.6
UK	13.0	14.1	1.1

Note: Homeowners in the data set are compared with a simulated set of same-ability-to-pay renters.
Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

In the case of owner occupiers, this is measured by their 'extended income', that is, cash income plus net imputed rent[8] (for the derivation of the imputed rent measure, see Section 3.2), corresponding to their consumption possibility set. Horizontal equity, that is, equal treatment of equals (Feldstein, 1976; Plotnick, 1982), would require levying the same tax on homeowners and

[8]To enhance cross-county comparability – and because, in the calculation of net imputed rent, mortgage interest paid is already subtracted – in this exercise, existing mortgage interest tax reliefs have been abolished to avoid double counting.

renters endowed with the same command over resources.[9] If this were the case, no difference between homeowners and same-ability-to-pay renters would be registered. However, the figures presented in Table 2 show how, under existing tax provisions, a considerable degree of horizontal inequity emerges in these six countries. On average, homeowners clearly pay lower taxes than those renters enjoying the same consumption possibility set, with differences in average tax rates ranging from about 1 percentage point in Germany and the UK, up to about 3 percentage points in the Netherlands, Belgium and Italy. To put it differently: in four out of the six countries, the average tax burden for tenants exceeds that of homeowners by between 6 per cent in Germany and more than 40 per cent in the Netherlands and Greece. While the tax exemption of net imputed rent generates some bias in every country, cross-country heterogeneity in the size of the homeownership bias relates partly to the presence (or otherwise) and importance of the existing mortgage interest tax relief – there is none in Germany and the UK, while it is substantial in the three countries where the homeownership bias is highest.

In what follows, we estimate the first-order distributional effects of addressing the homeownership bias by including net imputed rent in taxable income in these six European countries.

III. Methodology and simulations

1. EUROMOD: a multi-country tax benefit model

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 microdata as detailed in Table 3, 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 because of a lack of information on previous employment and contribution history in the cross-sectional survey

[9] Alternatively, one could think of this as comparing the existing tax treatment of homeowners with what they would pay in taxes as if they were landlords (assuming their imputed rent from owner-occupied housing corresponded to the rental income). For example, Poterba and Sinai (2008) present their analysis in this way.

TABLE 3

Data sources, methods used to estimate imputed rents and policy years used in the simulations

	BE	DE	GR	IT	NL	UK
Data set (year)	EU-SILC (2004)	GSOEP (2002)	HBS (2004/05)	IT-SILC (2004)	SEP (2001)	FRS (2003/04)
Method to estimate IR	OC-R (H)	OC-R (H)	OC-R (H)	OC-R	CM	OC-R
n (individuals)	12,971	16,108	17,386	60,734	10,344	67,123
n (households)	5,275	11,194	6,555	24,204	4,329	28,860
N (individuals in million)	10.4	78.5	10.9	57.1	15.5	58.5
N (households in million)	4.4	38.7	4.0	23.2	6.9	25.2
Policy year	2003	2001	2004	2003	2001	2003
Aggregate tax revenue on income (million €)	32,182	199,073	8,013	133,130	27,583	102,917

Note: Data sets: Statistics on Income and Living Conditions (EU-SILC); German Socio-Economic Panel (GSOEP); Household Budget Survey (HBS); Italian Statistics on Income and Living Conditions (IT-SILC); Socio-Economic Panel (SEP); Family Resources Survey (FRS). Methods to estimate imputed rent (IR): Opportunity Cost Approach (OC-R), regression based including Heckman selection model (H) or not; Capital Market Approach (CM). Aggregate annual tax revenue on income (million €) is expressed as million £ in the UK. Aggregate statistics are in line with OECD Revenue Statistics (OECD, 2006).

data used as input to EUROMOD (e.g. contributory pensions), as well as market incomes, are taken directly from the data. EUROMOD is a static model, in the sense that the arithmetic simulation of taxes and benefits abstracts from the 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 a partial equilibrium. For further information, see Sutherland (2007) and Sutherland and Figari (2013).

The tax-benefit systems simulated in this paper refer to 2001 for Germany and the Netherlands, 2003 for Belgium, Italy and the UK, 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[10] and tested through a number of other applications; see, for example, Bargain (2007), Dolls, Fuest and Peichl (2012) and Bargain, Orsini and Peichl (2014).

2. A measure of net imputed rent

Original data sources for EUROMOD input data do not contain imputed rent values. These have been estimated and added to the EUROMOD input database by Frick et al. (2010). Their cross-country comparable measure of net imputed rent (i.e. the value of living in owner-occupied housing) used here is, to our knowledge, currently the best available set of estimates for international comparative purposes.[11]

The cross-country empirical literature (Frick and Grabka, 2003; Frick, Goebel and Grabka, 2007; Frick et al., 2010; Törmälehto and Sauli, 2013) proposes three methods for the estimation of the value of imputed rent on the basis of microdata: the capital market approach, the self-assessment approach and the opportunity cost approach.

- The capital market approach (or user cost method) considers the alternative uses to which the capital invested in housing could have been put, assuming that the implicit rate of return on housing equity is equivalent to a relatively

[10]The results have been documented in EUROMOD Country Reports, available at https://www.euromod.ac.uk/using-euromod/country-reports.

[11]The EU-SILC database (i.e. EUROMOD input data for some countries), in principle, provides estimates of gross and net imputed rent. However, as Juntto and Reijo (2010) indicate, these suffer from lack of comparability across countries. Törmälehto and Sauli (2013) indicate that there is still considerable lack of transparency in this respect in the most recent waves of SILC.

safe private market rate of return on an equal value of investment (such as a long-term government bond).

- The self-assessment approach is based on the assessment of respondents of the rental value of their home. A disadvantage of this method and the capital market approach is that they are based on a subjective valuation of the homeowners' property.
- The opportunity cost approach (also known as the rental equivalence method) instead seeks to explain the rents paid by existing renters for different quality homes and it uses this model to predict the likely rental value of owner-occupied properties.

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 and the costs linked to ownership, such as mortgage interest payments and property taxes.

We use the estimates of net imputed rent, which were derived in the framework of the AIM-AP project and were presented in Frick et al. (2010), who used the opportunity cost approach to estimate imputed rents in a non-subsidised rental market; see also Frick and Grabka (2003) and Frick, Goebel and Grabka (2007). This is done through a hedonic regression estimation using a two-step procedure. In the first step, Frick et al. (2010) estimated a regression model with rent as the dependent variable (normalised for the size of residence, if possible) based on the population of tenants in the private market. The covariates included characteristics of the dwelling that are indicative of its quality and market value: type and age of accommodation; availability of particular amenities; number of rooms; regional and/or locality dummies.[12] In order to account for the fact that different types of individuals might live in rented or owned houses, this approach includes a correction for selection bias through a Heckman procedure.[13] The resulting coefficients were used to predict gross imputed rent for the set of homeowners. Given the very small unsubsidised private rental market in the Netherlands, the opportunity cost approach could not be used for this country and, hence, the capital market

[12]In the UK, dummy variables for the council tax band are included to capture otherwise unobserved variation in housing values. Council tax band was chosen because, while being a house-level variable and, as such, less subject to the chance of endogeneity bias, it is closely related to the value of the property. In the other countries, where such an indicator was not available, household-level equivalised disposable income was used instead as a proxy for the unobserved quality of the dwelling. Income was not included in the regression for the UK because, once the council tax band was controlled for, its inclusion would not have entailed an increase in explanatory power (as measured by the adjusted R^2), while implying instead an increased scope for endogeneity bias.

[13]In the case of Italy and the UK, the Heckman correction term was not statistically significant. In Belgium, Germany and Greece, a set of characteristics has been used for the exclusion restrictions in the Heckman selection, notably education level and migrant background of the head of the household.

TABLE 4

Change in equivalent disposable income (in per cent) due to inclusion of net imputed rent

	BE	DE	GR	IT	NL	UK
All owners	7%	10%	13%	11%	8%	9%
Owner outright	*9%*	*16%*	*15%*	*11%*	*20%*	*18%*
Owner on mortgage	*6%*	*4%*	*8%*	*10%*	*7%*	*6%*

Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

approach was applied.[14] Information on the data sources, sample sizes and preferred method for the estimation of imputed rent is summarised in Table 3. More detailed information on the estimation of imputed rent for each country is available in Frick et al. (2010).[15]

We use the net imputed rent (i.e. after deducting related expenses) to derive the 'extended income distribution'; that is, the distribution of disposable income augmented by the net imputed rent. Table 4 shows how homeowners' equivalised disposable income would change were net imputed rent to be included in the income concept. The value of living in owner-occupied housing is substantial as, on average, it ranges from 7 per cent (Belgium) to 13 per cent (Greece) of disposable cash income. The advantage is more important for outright owners than for those with a mortgage, as the net gain (in absolute terms) is smaller for the latter group once mortgage interest payments are deducted. Furthermore, current disposable income is likely to differ between the two groups of owners because people with a mortgage are typically in the prime working-age group 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 Figure 1, which shows that outright owners are 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 was similar in absolute terms for outright owners and those on a mortgage, it would be presumably larger relative to their cash income for outright owners. For the small group of outright owners in the Netherlands, net imputed rent amounts to 20 per cent of disposable income.

[14]This was done using an interest rate of 3 per cent, which is the most common rate used in empirical studies based on this approach. A comparison of the implementation of the opportunity cost approach and the capital market approach in Germany (Frick, Goebel and Grabka, 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 would significantly affect the qualitative results of our paper.

[15]See also the AIM-AP project, https://www.iser.essex.ac.uk/research/projects/aim-ap.

3. Alternative policy simulations

According to the Haig–Simons tax base definition, the net imputed rent should be taxed as a return on capital investment and included in the tax base of the personal income tax. Alternatively, it can be taxed separately, as would be the case in a dual income tax system. We follow the first approach in order to provide an upper bound of the likely distributional effects.[16] The first simulation includes net imputed rent in the personal income tax base, irrespective of budget neutrality (IR1). In addition, we analyse two budget neutral scenarios, IR2 and IR3, which, in effect, seek to shift part of the tax burden from cash income to net imputed rent.

a) 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 homeowners.[17] 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. To make the simulations coherent across countries, 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, as the full deduction of mortgage costs is already part of the net imputed rent calculation, we abolish any existing mortgage interest tax reliefs (present in all countries but Germany and the UK; see Table 1). This scenario removes the horizontal inequities between homeowners and renters, as residence occupiers, and also enhances vertical equity since individuals with higher consumption possibilities related to the homeownership bear higher taxation burden relative to the baseline. The treatment of housing costs by other parts of the tax-benefit

[16]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 a return on capital investment. We do not modify existing property taxes because in the countries considered in the analysis, in the early 2000s, they were regarded as taxes with different purposes and were based on different concepts of the tax base. For example, in Italy, the local property tax (ICI) was 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 in the reference period of the paper represented only a very small share of taxes (see, for example, OECD, 2009; Andrews, Caldera Sánchez and Johansson, 2011).

[17]Because of a 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 maximise tax receipts. Hence, the results presented here should be interpreted as showing the upper bound of the likely distributional effects. Naturally, including imputed rent in the tax base of the person with the lowest taxable income would generate smaller effects than those presented here.

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.

b) 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 homeowners 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. Under the first approach (IR2), taxpayers enjoy a uniform cut in all income tax rates. Operationally, this is implemented by a proportional reduction in their income 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 net imputed rents. Thus, it is only given to those with positive personal income tax liability after taxing imputed rents (IR1). Under the second revenue neutral 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 positive income tax after including net 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 they each individually contribute 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 and other income-tested schemes to, at least partly, compensate higher taxes, in those counties where income tests are based on net income.

In this paper, we focus on the first-order fiscal and distributional effect of the tax reforms. We also provide an indication of the effects on work incentives by presenting marginal effective tax rates.[18] 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, are briefly discussed based on the existing literature.

[18]The implications of the changes in returns to savings due to the imputed rent taxation on present and future consumption and work are out of scope of the present paper; it would require a dynamic economic modelling set-up.

IV. Distributional and fiscal effects of including imputed rent in taxable income

1. First-order distributive and fiscal effects

Table 5 reports the effect of taxing net imputed rent while replacing all existing special tax treatments of incomes and expenses related to homeownership (IR1) on three aggregates: the gross taxable income (i.e. taxable income before application of tax allowances and deductions), the income tax revenues collected by the government and the extended disposable income of the population (i.e. disposable income after the inclusion of net imputed rent in the income concept). Gross taxable income increases considerably when it includes net imputed rent: the change is between 5 per cent (Germany) and 8 per cent (Greece) except in the Netherlands, where gross taxable income increases by 2 per cent because part of the imputed rent is already taxed in the existing system. Income tax revenues also rise substantially in all countries under examination. The proportional changes are larger where the existing mortgage interest tax relief is very important (the Netherlands: +27 per cent)[19] or the income taxes currently collected are relatively low (Greece: +24 per cent). At the other extreme, the proportional increase in income tax is smaller in the two countries without an existing mortgage interest tax relief: Germany (+6 per cent) and the UK (+9 per cent). Moreover, the high share of market rented accommodation in Germany results in relatively few enjoying imputed

TABLE 5

Fiscal effects of including imputed rent in gross income (IR1)

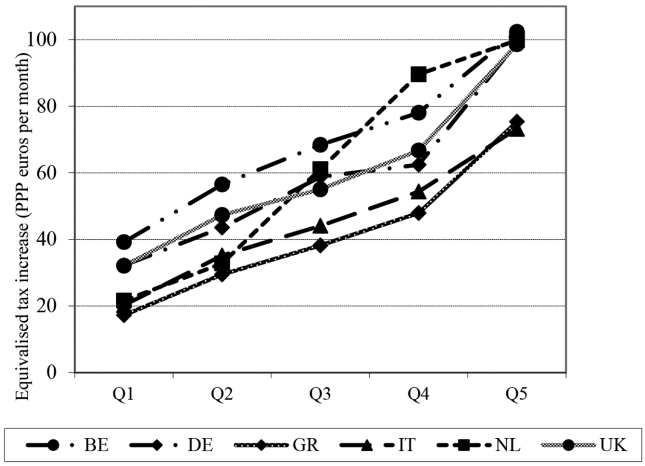
	Proportional change in		
	gross taxable income	*personal income tax revenue*	*extended disposable income*
BE	6.4%	13.9%	–3.4%
DE	4.9%	5.8%	–1.1%
GR	7.8%	24.2%	–2.3%
IT	6.7%	13.2%	–2.9%
NL	2.3%	27.1%	–4.2%
UK	7.0%	9.5%	–1.6%

Note: Net imputed rent included in gross taxable income, no revenue neutrality (IR1). 'Gross taxable income' is taxable income before any deduction.
Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

[19]Indeed, a study for the Netherlands estimates that the value of mortgage interest tax relief amounts to around a fifth of personal income tax receipts (see Studiecommissie Belastingstelsel, 2010).

FIGURE 2

Homeowners' increase in tax liability (IR 1) that removes horizontal inequity



Note: Q1–Q5, household equivalised disposable cash income quintile groups.
Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

rent. In the UK, tax rates are relatively low and a number of older beneficiaries of net imputed rent are below the tax threshold.

Cross-country differences in the reduction of extended disposable income due to taxing net imputed rent are remarkable. The change in extended disposable income is relatively small in the two countries without existing mortgage interest tax relief: Germany (–1.1 per cent) and the UK (–1.6 per cent). In contrast, the change in extended disposable income is considerable in the Netherlands (–4.2 per cent) where the existing mortgage interest tax relief is very important (see also Matsaganis and Flevotomou, 2007a), as well as in Belgium (–3.4 per cent) and Italy (–2.9 per cent) where homeownership is widespread. Homeownership is also widespread in Greece, but the change in extended disposable income is smaller (–2.3 per cent) as many of the homeowners have low incomes and remain under the (relatively high) tax threshold, even after the inclusion of net imputed rent in the concept of taxable income.

Figure 2 shows the average additional amount (expressed in equivalised 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, meaning that homeowners are now taxed at the same rate as the simulated same-ability-to-pay renters (i.e. differing in terms of their tenure

status, but not in terms of consumption possibilities).[20] 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, ranges from the equivalent of about 20–40 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.

The figures reported in Table 5 – particularly those in the second column, showing the increase in tax revenue – 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, as net 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 Figure 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 (Figure 3(a)), ranging from 18 per cent of all households (Germany, with the lowest share of net imputed rent beneficiaries) to 56 per cent (Belgium).[21] In all countries, the share of losers increases with income level (apart from the top quintile in the UK, to a small extent, because of the much higher extended disposable income at the top of the distribution). In Belgium, Greece and the Netherlands, the share of losers is higher than 70 per cent in the top quintile. This pattern follows from the fact that, on the one hand, the share of homeowners (and, hence, net imputed rent beneficiaries) increases with income and, on the other hand, existing tax deductions, such as mortgage interest tax relief, are relatively more beneficial to higher incomes.

The budgetary neutral scenario IR2 offers a completely different picture (Figure 3(b)): in Belgium and Italy, losers are relatively more prominent at the lower end of the income distribution, while in Germany, Greece and the

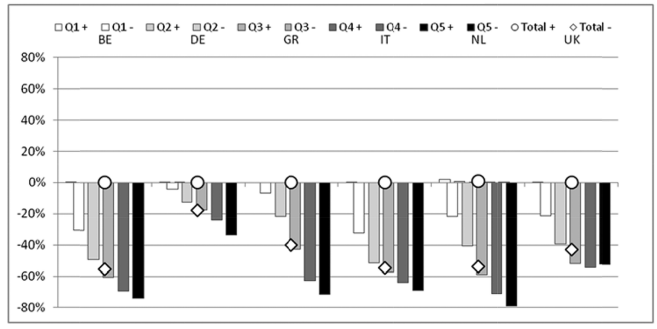
[20]This corresponds to removing the difference in the average tax rates of owner occupiers and tenants with the same ability-to-pay presented in Table 2.

[21]The few gainers observed in some countries benefit from the replacement of the existing tax instruments with the inclusion of the net imputed rent in taxable income.

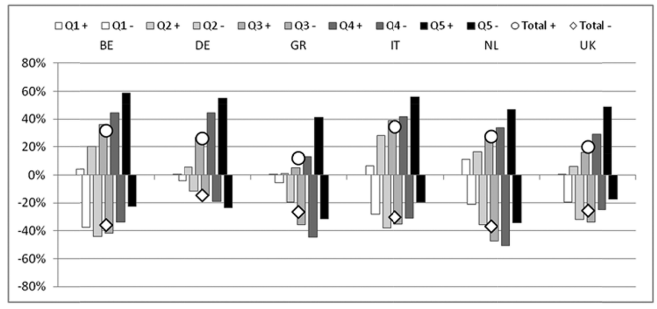
FIGURE 3

Share of gainers and losers per quintile when net imputed rent is treated as taxable income

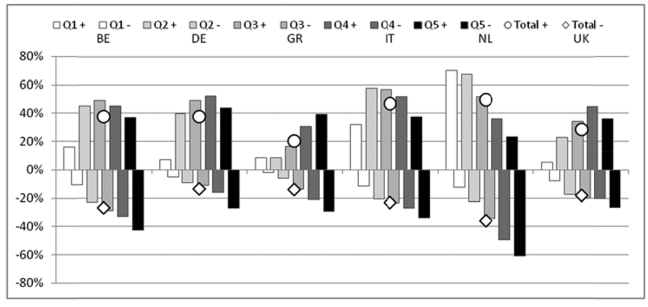
(a) IR1: no revenue neutrality



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



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



Note: Gainers and losers defined as households with a percentage variation in extended disposable income equal to ±1 per cent. Quintile groups defined on the basis of household equivalised disposable cash income.
Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

Netherlands, the share of losers is higher at 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 per cent (Greece) to 60 per cent (Belgium). As tax liabilities are reduced in a proportional way, the tax system becomes relatively less progressive (i.e. it implies a relatively greater advantage higher up the income distribution). Thus, part of the progressive pattern found in IR1 is mitigated by this tax reduction.

When revenue neutrality is achieved through a tax exemption increase (budgetary neutral scenario IR3), the share of losers increases with income in all countries (Figure 3(c)). Contrary to the previous scenario, this should result in a relatively higher advantage for lower incomes compared to higher incomes, as the lump-sum amount represents a higher share of income in relative terms. This is indeed what we observe, though with variation across countries. The pattern of gainers is rather mixed: in most countries, the bottom quintile has relatively few gainers (or losers), as in many countries a considerable proportion of their members have incomes that are too low to pay personal income taxes. In most countries, gainers are concentrated in the middle of the income distribution. Only in the Netherlands do we find a declining share of gainers when moving up the income distribution, while an increasing but less pronounced pattern can be observed in Greece.

Another perspective is offered in Figure 4, which reports proportional changes in average extended disposable income per quintile. Figure 4(a) shows 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.

Figure 4(b) reports the corresponding changes when revenue neutrality is achieved through a tax rate reduction for all taxpayers (i.e. IR2). In general, extended income increases most strongly (around 1 per cent 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.

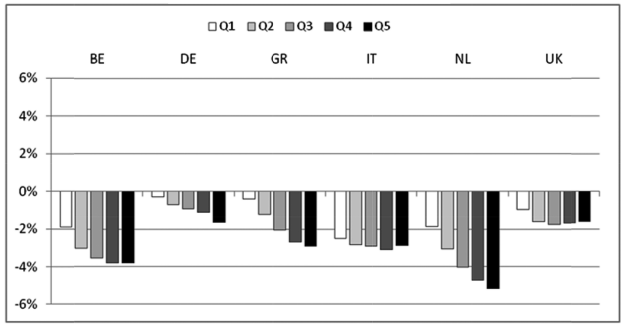
Figure 4(c) presents the corresponding changes when revenue neutrality results from a tax exemption increase for everybody (i.e. IR3). The changes are much smaller than those reported in Figure 4(b) for all countries except the Netherlands where lower income groups gain and higher income groups lose, 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.

Table 6 reports changes from the baseline (distribution of extended disposable income) in three inequality indices – Gini, Atkinson(0.5) and

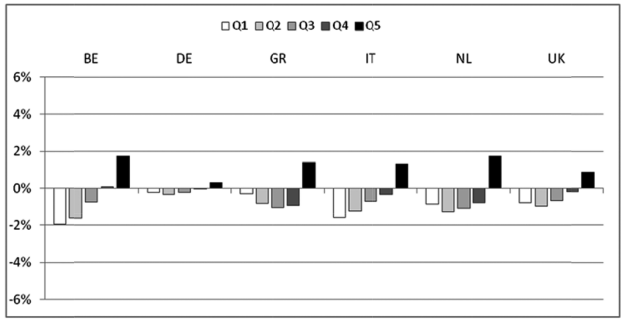
FIGURE 4

Change in average household disposable extended income per quintile when net imputed rent is treated as taxable income

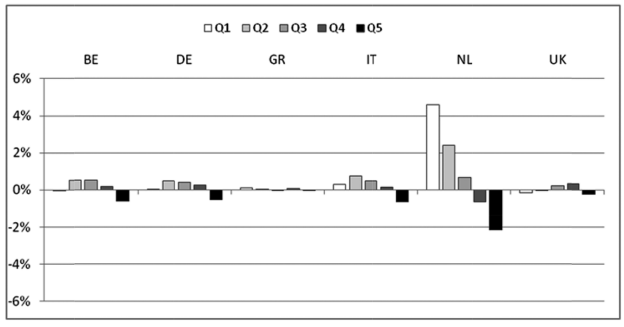
(a) IR1: no revenue neutrality



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



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



Note: Quintile groups defined on the basis of household equivalised disposable cash income.
Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

TABLE 6

Proportional changes in inequality when net imputed rent is treated as taxable income

	Baseline	IR1	IR2	IR3
		Gini		
BE	0.227	–2.1%	2.9%	–1.4%
DE	0.270	–1.3%	0.0%	–1.1%
GR	0.304	–1.6%	1.4%	–0.4%
IT	0.301	–1.2%	1.0%	–1.9%
NL	0.248	–2.6%	2.6%	–4.8%
UK	0.307	–0.6%	0.9%	–0.6%
		Atkinson(0.5)		
BE	0.045	–3.5%	6.3%	–2.3%
DE	0.059	–2.5%	0.1%	–2.2%
GR	0.078	–2.8%	3.3%	–0.8%
IT	0.079	–2.0%	2.0%	–3.1%
NL	0.051	–4.8%	5.5%	–8.6%
UK	0.077	–1.1%	2.0%	–1.1%
		Atkinson(1)		
BE	0.092	–3.7%	5.8%	–2.0%
DE	0.114	–2.4%	0.0%	–1.9%
GR	0.150	–2.8%	2.4%	–0.7%
NL	0.100	–5.0%	4.4%	–8.4%
IT	0.147	–2.6%	1.5%	–3.1%
UK	0.143	–1.2%	1.6%	–1.0%

Note: IR1 is net imputed rent in taxable income, no revenue neutrality; IR2 is revenue neutrality through a tax rate reduction; IR3 is revenue neutrality through a tax exemption increase. Baseline refers to the distribution of extended equivalised disposable income.

Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

Atkinson(1) – for the three aforementioned scenarios.[22] Naturally, the first-order distributional outcomes depend on the combination of a number of factors, such as the share of net 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 baseline tax system.

According to the results reported in Table 6, the countries included in our analysis show different levels of inequality of the distribution of extended income as measured by Gini indices ranging from 0.23 in Belgium to more

[22]These indices are widely used in distributional studies. They satisfy the axioms of symmetry, population independence, income-unit independence and the Dalton–Pigou principle of transfers. 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).

than 0.30 in Greece, Italy and the UK. The inclusion of imputed rent in the concept of taxable income (IR1) results in inequality declining in all countries under examination. The effect is largest in the Netherlands and smallest in the UK. This is expected, 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. In addition, the evidence of Table 5 showed that the proportional changes in disposable income and personal income tax revenue, after including net imputed rent in the concept of resources, are larger in the Netherlands than in the other countries included in our analysis. Also, the evidence of Figure 4(a) implies that the increase in taxes is very unequally distributed across quintiles – the higher the quintile, the higher the proportional decline in disposable income due to taxing net imputed rent. On the contrary, the corresponding aggregate changes for the UK in Table 5 are relatively small and the evidence of Figure 4(a) suggests that the proportional effect of the policy change was very similar in all quintiles apart from the bottom.

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 Figure 3(b)). Because, 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 effects are seen in Germany, where the values of the inequality indices barely change as a result of the policy reform. The latter is consistent with the evidence of Figure 4(b) where, unlike the rest of the countries included in the analysis, in Germany the income share of the various quintiles hardly changes after the policy change. For Belgium and the Netherlands, this relates to the strong progressivity of the tax system, which in Belgium is partly a result of existing refundable tax credits for low incomes. When we impose revenue neutrality through a tax exemption increase (IR3), inequality declines irrespective of the index used. Consistent with the evidence of Figure 4(c), the decline is largest in the Netherlands (around –8.5 per cent according to the two Atkinson indices) where the disposable income of the poorest quintile rises the most; the rise is smallest in Greece (around 0.6 per cent) and the UK (around –1 per cent) where quintile shares hardly move after the policy change.

2. Beyond first-order distributive effects

These first-order distributional effects are only part of the story, as we can expect that the taxation of net imputed rents 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 cost of renting compared to homeownership will

be affected while, on the other hand, these policies might also affect housing prices.

First, the taxation of net imputed rent increases the user cost of homeownership,[23] hence reducing the net gain from homeownership and making renting a more attractive tenure option. In terms of residential mobility, we expect this to result in housing demand shifting towards the rental market, at least in a first stage. However, the increased attractiveness of renting may also lead to an increase in rental market prices, assuming housing supply is slower to react, thus moderating the net income gains for renters and the distributive effects described in the previous section. In the absence of rent regulation, in particular, the poorest households, which 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 is inelastic. In this case, the inequality-reducing effect of removing the favourable tax treatment of homeownership could then be lower after adjustments in market prices, calling for policy attention and possibly for intervention (e.g. in the form of social housing or regulation) aimed at protecting the most vulnerable population groups. If, however, the supply of rental housing is elastic, then higher rental prices may result in an increase in the supply of rental housing. This would, in turn, have an impact on prices, possibly limiting the aforementioned adverse distributional effects.

Second, we might also expect to observe changes in the asset price of housing in the longer term. A number of studies point out that the favourable tax treatment of homeownership tends to encourage excessive leverage and is capitalised into house prices, especially when the supply of housing is inelastic (Harris, 2010; Andrews, Caldera Sánchez and Johansson, 2011). The supply of housing in the European countries that we consider is indeed known to be quite inelastic (e.g. in comparison with the US), because of high population densities, strict spatial planning and/or lower efficiency in the land-use regulation system (Green, Malpezzi and Mayo, 2005; Andrews, Caldera Sánchez and Johansson, 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 beneficial to buyers. Thus, we can expect the removal of preferential tax treatment to contribute to 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 the price effect, as well as on the elasticities in property and rental markets. Assuming inelastic housing supply, the ownership rate is unlikely to increase, although existing studies reach contrasting conclusions; see, for example, Rosen and Rosen (1980), Berkovec and Fullerton (1992), Gervais (2002) and Chambers, Garriga and Schlagenhauf (2009). Moreover, the tax policy changes could affect not only prices and tenure

[23] For example, Poterba and Sinai (2008) provide evidence on this for the US.

status, but also the quality of housing; Glaeser and Shapiro (2003) show that removing favourable housing tax treatment could result in reductions in the size of owned houses, rather than in changes of tenure status. 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 the assumptions that best represent each country-specific setting. As such, it remains beyond the scope of this work.

Besides the housing and rental markets, as our tax reforms change disposable income, there might also be effects on work incentives. Therefore, we investigate the extent to which the taxation of net imputed rent and the shift of taxation from cash income to property implied by the revenue-neutral scenarios can have a first-order effect on work incentives. We present marginal effective tax rates (METRs) that are indicative of the marginal tax burden on labour income. The METR is defined as

$$METR = 1 - \Delta Y_j / d_i$$

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.[24] The METR is calculated in turn for each working-age individual with earnings in the household, taking into account any change in household income after a marginal increase in individual's gross earnings.[25] Table 7 presents average METRs by income quintiles for each scenario.

When net imputed rent is taxed (and existing mortgage interest relief is abolished) without compensating measures (IR1), the average METR increases in all quintiles. This is because of the progressivity of the income tax schedules: the tax base is increased by the inclusion of net imputed rent. 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.

[24]In principle, the METR could also include consumption taxes, though their effect would depend on assumptions regarding the 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 small effect on relative differences between the scenarios. Note that the implications of modified returns to savings due to the imputed rent taxation on consumption and work are out of the scope of the present paper.

[25]The increase is 3 per cent, corresponding approximately to an additional hour of full-time work per week.

TABLE 7

Proportional changes in average METRs, by quintile groups of equivalised disposable income

		Baseline	IR1	IR2	IR3
BE	Bottom quintile	46.6	6.9%	1.5%	–6.4%
	2	56.5	4.6%	–2.5%	–2.1%
	3	54.9	2.4%	–6.0%	–1.5%
	4	53.3	1.3%	–7.1%	–0.4%
	Top quintile	54.0	0.6%	–8.1%	0.4%
	All	53.9	2.0%	–6.3%	–0.9%
DE	Bottom quintile	39.9	2.8%	1.5%	–4.3%
	2	43.7	1.1%	–1.6%	–3.4%
	3	44.5	1.1%	–2.2%	–1.8%
	4	45.3	1.1%	–2.6%	–0.7%
	Top quintile	47.6	0.8%	–3.8%	0.2%
	All	44.9	1.1%	–2.2%	–1.6%
GR	Bottom quintile	6.8	25.0%	17.6%	–1.5%
	2	14.1	19.1%	9.2%	–2.1%
	3	18.7	15.0%	3.2%	–1.1%
	4	24.9	9.2%	–3.2%	–4.0%
	Top quintile	34.2	3.5%	–11.1%	–3.8%
	All	22.8	8.8%	–3.9%	–3.5%
IT	Bottom quintile	25.2	6.0%	–0.4%	–7.9%
	2	35.0	2.3%	–5.4%	–4.9%
	3	36.7	2.2%	–6.0%	–2.7%
	4	38.8	1.3%	–7.2%	–1.3%
	Top quintile	42.0	1.0%	–7.9%	0.0%
	All	37.0	1.9%	–6.5%	–2.2%
NL	Bottom quintile	39.5	3.0%	–1.5%	0.8%
	2	37.7	1.1%	–8.5%	–0.3%
	3	34.7	2.0%	–9.8%	0.6%
	4	37.6	2.4%	–12.8%	2.4%
	Top quintile	40.4	2.7%	–17.3%	2.5%
	All	38.0	2.4%	–11.6%	1.6%
UK	Bottom quintile	54.3	3.5%	1.3%	–0.7%
	2	51.1	1.0%	–2.0%	–2.5%
	3	34.5	0.6%	–3.8%	–3.2%
	4	31.8	0.9%	–4.1%	–1.6%
	Top quintile	33.8	1.8%	–4.1%	1.2%
	All	36.6	1.4%	–3.6%	–1.4%

Note: Definition of IR1, IR2 and IR3: see note to Table 6. METRs are calculated for each working-age individual (aged 18–64 included) with positive earnings. Quintile groups are defined on the basis of household equivalised disposable cash income.

Source: Own calculations using EUROMOD version D25 with net imputed rent estimates as in Frick et al. (2010).

Taxation of net imputed rent combined with a tax exemption increase (IR3) lowers the average METR, for the overall sample considered in the analysis, relative to the baseline (except in the Netherlands). However, it 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 they are similar 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 favourable distributional impact of the taxation of net imputed rental income.

V. Conclusions

In times of economic downturn and fiscal crisis, it is particularly valuable to identify policy measures able to improve fiscal balances, with no detrimental effects on income inequality. In a number of countries, tax reforms removing provisions favouring homeownership were implemented under similar circumstances in the past (e.g. after the recession of the early 1990s, when some EU countries reduced deductibility of mortgage interest expenses). Following the economic crisis at the end of the 2000s, austerity measures adopted in several European countries consider housing taxation as one of the ingredients in the corresponding fiscal consolidation packages (Avram et al., 2013).

Still, the tax treatment of housing is far from representing an area where economic principles lead to unambiguous conclusions on tax design, mostly because of the multifaceted nature of housing, which can be regarded not only as a form of investment, but also as a consumption good. In this study, we have considered the income tax treatment of the main residence focusing on the investment nature of owner-occupied housing. While the net return on owner-occupied housing investment represents, on average, a non-trivial proportion of the cash income typically used as a basis for personal income taxation, it is currently entirely or partially tax exempted in most western countries, leading to a homeownership bias in income taxation.

In this paper, we have investigated the fiscal and distributional consequences of correcting the income tax homeownership bias through the inclusion of net imputed rent in taxable income in six European countries (Belgium, Germany, Greece, Italy, the Netherlands and the UK), which vary considerably in their housing market characteristics and their joint distribution of housing tenure and cash disposable income. When considering the option of taxing net 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 net imputed rent taxation may not necessarily be progressive; for example, in countries where older people have higher net imputed rents (having paid off their mortgages) but lower cash incomes than the rest of population.

Using existing microlevel estimates of net imputed rent, tax incidence analysis was conducted with the multi-country tax benefit model EUROMOD, exploring three scenarios. First, we considered a non-revenue-neutral scenario, where net imputed rent was included in the tax base, while the existing taxation of cadastral income and existing housing-related tax expenditures (mainly mortgage interest tax relief) were abolished, with the aim of conducting an absolute tax incidence analysis. The outcome of this scenario is that horizontal inequities between homeowners and tenants, as residence occupiers, 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 UK, but consistent across countries. At the same time, because of the progressivity of the income tax schedules, the inclusion of net imputed rent in the tax base reduces labour market incentives and also implies a non-trivial increase in personal income tax revenues, ranging from about 5 per cent in Germany (where a large proportion of the population lives in rented accommodations) to almost 30 per cent in the Netherlands (as a result of the abolition of the very generous existing 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, thus increasing work incentives. 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 in our simulations. Our empirical evidence shows that taxation of net imputed rent is pro-rich when combined with a tax rate reduction, whereas 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 net imputed rent is taxed, but this effect is largely counteracted in the budget-neutral scenarios. Although the tax rate reduction lowers the marginal burden of tax on labour incomes on average by more than the tax exemption increase, the largest reductions were encountered among 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 except the Netherlands, indicating that such a shift in tax burden from labour income to housing can lead to improved work incentives for these individuals.

Taxing net imputed rent may not only affect work incentives, but it can also affect incentives in other domains, most notably in the housing market. It is currently not feasible to take account of these effects in our simulations, but existing evidence suggests that a positive housing demand shock in countries with a more generous mortgage interest tax relief typically translates into higher housing prices than in countries without such relief (Andrews, Caldera Sánchez and Johansson, 2011). Hence, we might expect that reforms such as those simulated in this paper may, in the longer run, affect 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, and are thus likely to lead to new equilibria in the housing market. On the other hand, in the longer run, equilibrium prices in both the owner-occupied housing and the rental market might be affected, possibly affecting home tenure and capital allocation decisions. However, the analysis of these effects and the further implications of modified returns to investment on present and future work and consumption decisions, 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 for homeowners[26] and political economy considerations certainly represent a challenge to implementing net imputed rent taxation. Still, we have demonstrated that abolishing the homeownership bias inherent in personal income taxation appears to be a promising avenue for raising additional revenues, with no adverse inequality side effects to be envisaged, or for reducing the taxation of labour with an enhancement of work incentives and distributional consequences, depending on the way in which the additional tax revenues are returned to taxpayers. Our results provide useful insights on the likely fiscal and distributional consequences of following such a route. 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.

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[26]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).

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