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Abstract

The presence of extensive housing subsidies characterises the current tax systems as inefficient. In this paper, we study whether inefficiency is the price to be paid to improve equity, by assessing the actual distributive impact of housing taxation on Italian households. We concentrate on the personal income tax on the main residence, and compare provisions of the Tax Code with an alternative approach, by considering the imputed rent from owner-occupied dwelling as a component of the Personal Income Tax gross income. Our results suggest that current tax system is just as inefficient as it is inequitable.

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Keywords: housing taxation, imputed rents, microsimulation models.

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1. Introduction

Homeownership is largely subsidised all around the world with a blend of different measures. Imputed rents are often excluded from the tax base of the personal income tax, while interests paid on mortgages are often deductible. The justifications for these important government interventions are based on both efficiency and equity arguments (e.g., Rosen, 1985). On the efficiency side, it is recognised that there are positive externalities in housing consumption: for instance, improving one's own property has positive effects on property values in the neighbourhood. However, it is doubtful that all investments generate positive externalities: painting interior walls is likely to have no spill-over effects on other owner occupiers.

Hence, for a number of reasons, housing subsidies are most probably better justified on *equity* grounds. First, homeownership has a large impact on individual wellbeing, and the impact is presumably larger for the poor (e.g., Watson et al., 2007). Second, houses constitute a large share of individual wealth portfolios (e.g., Sierminska et al., 2008); again, this share is presumably larger for poor households. Third, homeownership is associated with a variety of collateral positive effects, which are larger for the poor and contribute to reduce social inequalities. A strand of literature suggests that children benefit from home-owning, because they stay in school longer and perform better; and these effects are particularly important for low income households (e.g., Green and White, 1997). Moreover, among the poor, homeowners are less involved in crimes, again contributing to trim down social disparities (e.g., Glaeser and Sacerdote, 1999).

Of course, as homeownership is subsidised, current tax systems are inefficient, and conducive to excess investments in housing with respect to alternative assets, like stocks and bonds (e.g., Sierminska et al., 2008). However, given the significance of equity considerations in justifying housing subsidies, inefficiencies can be the price to be paid in order to foster equity, so that it is important to study the redistributive effects of the current tax systems, as well as understand who they really target. This is even more true in the presence of a booming housing market (which was experienced in recent decades in almost all countries, despite the latest retrenchment) and sluggish-to-adapt tax systems (with tax bases largely reflecting historical values).

With respect to these arguments, Italy is an important case study. Homeownership has historically received (and still continue to receive) large tax subsidies. Not surprisingly, the share of owner-occupied dwellings has increased heavily after the II World War, climbing to about 70 percent of households, a number that characterizes Italy has one of the Western countries with the highest share of owners-occupiers (close to the situation of UK, Finland and Norway; e.g., Watson et al., 2007; Bernardi and Poggio, 2004). Moreover, differently from other countries, Italy shares with the Mediterranean countries also a high number of owner-occupiers which is coupled with a particularly generous system of public pensions, generating a substantial redistribution in favour of the elderly (e.g., Ferrera and Castles, 1996). Tax subsidies are even larger now, due to the combination of a sharp increase of prices in the housing market - the average value of the dwelling with respect to household income climbed from 3.5 in 1977 to 5.8 in 2004 – and the fact that tax bases are locked at cadastral values far from market prices. On the contrary, public expenditures on housing are among the lowest in industrialized countries: a mere 0.1 percent of welfare expenditures compared with an average 3.5 percent in the EU countries (D'Alessio and Gambacorta, 2007). Also fiscal expenditures are substantially lower than other countries, given the scant use of mortgages with respect to other countries (Bernardi and Poggio, 2004; Sierminska et al., 2008).

Starting from these premises, in this paper we aim at assessing the redistributive effects of the existing housing tax system in Italy. In particular, we concentrate on the personal income tax on the main residence, and compare current situation with an alternative one, which considers within the tax base an "imputed rent" which takes into account current market prices. The main results of the literature assessing the impact of imputed rents on income distribution sum to a somewhat mixed evidence (e.g., Bourassa and Hendershott, 1994, and Yates, 1994, for Australia; Yagi and Tachibanaki, 1998, for Japan; Frick and Grabka, 2003, for UK, US, and West Germany; D'Ambrosio and Gigliarano, 2007, for Italy; Callan and Keane, 2009, for Ireland; Onrubia et al., 2009, for Spain). Moreover, most of the papers do not explicitly consider the role of taxes in influencing income distribution. Here we rely on a static microsimulation model (discussed in Pellegrino et al., 2010), and simulate the personal income tax on the main residence, using as input data the Bank of Italy Survey on Household Income and

Wealth. Our main results suggest that the current tax system is both inefficient and inequitable. In particular, by including imputed rent from owner-occupied dwellings as a component of the personal income tax base, we find that overall inequality measured by the Gini coefficient is reducing. Moreover, broadening the personal income tax base could lead to a consistent reduction of marginal tax rates, with likely significant positive effects on labour supply and overall efficiency. However, when considering the net cash income instead of a broad definition of income, taxing imputed rents implies an increase of the Gini coefficient given the high share of owner-occupiers in the bottom income deciles. Specifically, our analysis shows that most of the losers are elderly people for whom current incomes from pensions are relatively less important than imputed rents from their dwellings.

The remainder of the paper is structured as follows. Section 2 sets the stage, providing essential background information on the housing taxation system in Italy in the context of an optimal taxation scheme for housing. In section 3, we briefly present our microsimulation model and the data. Section 4 reports the results of our analysis, while section 5 concludes.

2. On Housing Taxation in Italy

In this section we briefly describe how the tax system on housing should be defined from a normative point of view, and how this actually translates into the provisions of the Italian Tax Code. Following the simplest approach by Rosen (1985), let V be the market value of a given dwelling. If i is the market interest rate (which we assume to be constant over time, in order to simplify the argument), then $R=Vi$ is the gross imputed life annuity on the dwelling. To obtain the net imputed rent, also the maintenance costs (MA), the depreciation costs (D), and the interests paid on mortgage (MI) need to be considered, so that $R^N=R-MA-D-MI$. It is this net rent R^N that should be included in the tax base of the comprehensive Personal Income Tax (PIT from now on).

For a number of reasons, current tax systems are usually far from this theoretical definition. On the one hand, cyclical variations of V and i justify a wealth tax besides a PIT. On the other hand, equity considerations (as discussed above) usually give reason for the introduction of large subsidies for housing. In the US, for instance, property tax

$T_p=t_pV$ is deductible from the net rent R^N; more importantly, R^N is excluded from the PIT taxable income (e.g., Rosen, 1985; Poterba, 1992). Moreover, both V and R considered by Tax Authorities are sluggish to adapt to changes in market conditions, so that the "exempted" tax base tends to increase when market is booming.

Something similar is provided also by the Italian Tax Code. In principle, including a wide array of incomes categories (from wages and salaries to financial capital rents), but also figurative incomes like cadastral rents, the Italian PIT (or *IRPEF*) should be a comprehensive income tax *à la* Schanz-Haig-Simons. In practice, however, since many income sources are taxed under a separate regime, others are highly under-estimated, and others are totally exempted, the Italian PIT is very far from the theory. The differences with respect to the theoretical definition of comprehensive income tax are amplified in the context of housing taxation. Incomes from dwellings are determined in different ways according to the kind of use, and they are imputed to each owner or life tenant according to her percentage of ownership. Current rules in the Tax Code identify income for the taxpayer dwelling as the "cadastral" income, i.e. a hypothetical rent based on the property description and valuation listed in the local Land Register, the so-called *Nuovo Catasto Edilizio Urbano*. This was introduced in 1939, revising old cadastral incomes. Valuations were then updated several times afterwards: the last revision has been made in 1990 according to *average* market values in 1988-1989, and these values were made effective from 1992, so that those included in the tax base were largely different from current market values already at that time, in fact exempting a large share of the potential tax base.[1] Income from unoccupied or holiday homes is equal to cadastral income augmented by one third, so it is largely different from market values as well. On the contrary, income from rented dwellings is defined on a cash basis, and – leaving aside tax evasion – the tax base is equal to 85 percent of the actual cashed rent.

These general rules need a specification for the main residence, i.e. the dwelling where the household actually lives according to Italian rules. Though greatly underestimated, the income from the main residence is considered as part of the PIT gross income for

[1] As we will discuss below, according to our estimates the taxable rent R^t (i.e., the "cadastral income") is about 8 percent of net rent R.

homeowners, but it can be fully deducted starting from 2001. Hence, the main residence is basically exempted from the PIT tax base. As in other countries, the main residence for owner-occupiers is favoured also along other dimensions. Indeed, some expenditures in purchasing or in restructuring the main residence allow the owner a tax credit. In particular, a tax credit of 19 percent of the yearly paid interests (up to 687 euro) is allowed when funding the purchase through a mortgage (hence, $c^{MI}=0.19\times MI$). A tax credit is available also for restructuring expenditures: the total expenditure (up to 48,000 euro from 2003 and up to about 77 thousand euro before 2003) has to be split in 10 years (which is the conventional length of the amortization schedule defined by the law); every year a 41 percent (or 36 percent depending on the year the expenditure was incurred) tax credit is allowed (hence, $c^{MA}=0.41\times MA$). On the contrary, up to 2007 no tax credits were allowed for *renters* of the main residence. It is only starting from 2008 that a tax credit related to personal income of the renter (up to about 30,000 euro) is allowed, which is higher for renters younger than 30 years old.

There are some important problems arising from the current house-PIT: first, the difference between the actual market values and the actual tax base (i.e., R-R^t) has become particularly large given the recent boom in housing market (and it is still large despite the recent retrenchment). Second, there is a correlation between dwelling *income* taxation and dwelling *wealth* taxation, which extend this problem to the property tax.[2] Moreover, income from buildings is also characterized by a high level of tax evasion (e.g., Reviglio, 1998): at least half of cashed rents are not included in the tax base by landlords, so that tax cheaters are taxed only on the cadastral income.

[2] The Imposta Comunale sugli Immobili (ICI, Municipal Tax on Dwellings) is a property tax on each dwelling that has been introduced since 1993. Differently from the US case, the Italian property tax is not deductible from the PIT tax base. Tax revenues accrue directly to each Municipality where the buildings are located, and represent their major source of revenues. In theory, the ICI tax base should be the market value V of the dwelling. In practice, this is not the case. The Land Register value of the dwelling is evaluated by simply multiplying cadastral income by 100: $V^t=R^t\times 100$; hence, the value of the dwelling is equal to the perpetual annuity of the cadastral income with a 1 percent discount rate. Each Municipality can choose the tax rate in a range between a minimum of 4 per thousand and a maximum of 7. The mean average tax rate is about 5-6 per thousand, so that ICI tax debt is effectively equal to 50-60 percent of the cadastral income R^t. As for the PIT, main residence for owner-occupiers is favoured. Up to 2007, a tax credit on the main residence was available. Starting from 2008, the main residence is totally exempted.

3. The Empirical Analysis

3.1. Data

Together with the IT-SILC Survey, the Bank of Italy Survey of Household Income and Wealth (hereafter, SHIW-BI) is the most important Italian source of information for the analysis of the characteristics and the evolution of the Italian society. It is carried out every two years. The Survey published in 2008 contains information on households income and wealth in the year 2006, covering 7,768 households, and 19,848 individuals. The sample is representative of the Italian population, composed by 23,5 millions households and 60 millions individuals. According to definition in the survey, "*a household is a group of persons living together, whether related by kinship or not, who fulfill their needs by pooling all or part of the income earned by the members*"; …"*the head of the household is defined as the person earning the highest income (excluding property income)*" (Bank of Italy, 2008).

Relevant information in the SHIW-BI include: net income, net wealth, financial assets (bank deposits, government bonds, other securities and trade credits), real assets (real estate, business equity, valuables), and financial liabilities (liabilities towards banks, trade liabilities, liabilities towards other households). Differently from other countries, which consider the household as the tax unit, income is defined in Italy on a *personal* basis. Interests, dividends, financial assets and real estates information are available only at the household level. However, by exploiting information on the ownership shares, it is possible to evaluate the real estates incomes also at the individual level[3].

One main problem for our analysis concerns the definition of imputed rent R. There are at several different methods to define R (e.g., Frick and Grabka, 2003; Garner and Short, 2009): the market-value approach, the capital-market approach, the opportunity-cost approach, the selection/hedonic approach. The first is based on national accounts, and consider survey data on rents, including expenditures like water and lighting. The second basically considers the relationship $R=\rho V$, where ρ is the current market interest

[3] Notice that – according to Italian tax law – children do not bear any special ownership shares of the dwellings where they live with their parents. In particular, in the SHIW-BI sample, about 50 percent of the dwellings are 100 percent owned by one component of the household, while most of the remaining are owned by two components.

rate on alternative use of capital. The third method – also known as the modified market-value approach – corrects the estimated market value by deducting interests payments and all relevant operating and maintenance costs, excluding heating. Finally, the fourth approach estimates a gross rent using a hedonic regression model, and then compute *R* using estimated model coefficients for housing characteristics.

Here we define net imputed rent (hereafter, IR) following a sort of modified market-value approach, also known as "reported rental equivalence" (Garner and Short, 2009). We start from gross IR, considering the value interviewees indicated in SHIW-BI answering to the following question: "Assuming you wanted to rent this dwelling, what monthly rent do you or your household think could be charged?"[4]. To obtain the net IR, we subtract mortgage interests and one tenth of maintenance expenditures[5] from the gross IR.

3.2. The Microsimulation Model

The analysis of the redistributive effects of housing taxation is based on a microsimulation model that estimates all the most important taxes on housing characterizing the Italian fiscal system described above (technical details are available in Pellegrino et al., 2010). The model considers all incomes included in the PIT tax base, incomes exempt from taxes and incomes taxed under a separate regime in order to evaluate net and gross incomes earned by each person (which, according to the Italian rules, is the subject of taxation, even if belonging to a family). Once each individual incomes have been simulated, we then aggregate results at the household level. The gross disposable income is equal to the sum of gross PIT income, family benefits[6], incomes exempt from taxation, gross incomes from financial assets, gross incomes taxed under a separate regime; from this result, we subtract the mortgage interests. The net disposable income is equal to the gross disposable income net of all taxes; we subtract the mortgage interests to the result. Finally, in order to obtain the household

[4] This is exactly the same question asked in the US *Consumer Expenditure Interview Survey*. See Garner and Short (2009).

[5] Ten years is the conventional length of the amortization schedule defined by the Italian law.

[6] Family benefits represent the so-called *Assegni al Nucleo Familiare,* a very small cash transfer typical of the corporative Italian Welfare State, which varies with the number of children and income.

equivalent disposable income, we adopt the Cutler Scale (CS), defined as: $CS = (N_A + .5N_C)^{.65}$ where N_A and N_C are respectively the number of adults and children within each household[7].

Focusing on housing, the cadastral income – which is considered as the figurative income to be included in the gross income – is equal to the cadastral value of the dwelling divided by 100. The problem is the estimation of the cadastral value of each dwelling. The National Land Agency estimates the number and the composition, as well as the overall cadastral value of dwellings (i.e., the overall ICI tax base). The SHIW-BI dataset contains information on the current market value of each dwelling owned by households. We compare these two aggregate values in order to obtain the average underestimation of overall cadastral values with respect to overall market values. Then, we imputed the same percentage of underestimation to the real value of each dwelling declared by each interviewed[8]. By dividing the result obtained by 100, and using the percentage of ownership of each person within the household, we obtain the cadastral income included in the definition of individual PIT gross income.

The model "goodness-of-fit" is reassuring. Estimated revenues from the House-PIT on residential dwellings are about 7 billion euro in 2007, an estimates close to figures provided by the Ministry of Finance. As discussed at length in Pellegrino et al. (2010), the microsimulation model can then be used as a reliable tool for the analysis of housing taxation in Italy.

[7] Of course, different equivalence scales have been proposed in the literature. However, the Cutler and Kats scale is the most general, since most of the other equivalence scales can be obtained by varying its parameters.

[8] Notice that applying the same percentage of underestimation, we introduce a bias towards a more equal distribution of IR.

4. Results

4.1. Some Preliminary Statistics on Household Main Residences

Italian households are 23.5 million (Table 1): 16.8 million (71.7 percent) are the owner-occupiers of their main residence or the life tenants[9]; 5 million (21.3 percent) rent their residence[10]; 1.6 million (7.0 percent) are rent-free tenants (and in 92 percent of the cases, the dwelling is owned by relatives or friends). Almost 70 percent of tenants rent their house from other households; 25.7 percent of tenants rent from public bodies, like the *Istituto Autonomo Case Popolari* (a locally funded Institute providing housing to the poor), but also Regions, Provinces, Municipalities; and 4 percent from private firms. Almost all the owner-occupiers (88.7 percent) are not burdened with a mortgage, while only a small percentage (11.3 percent) have a mortgage[11].

Table 1: Households composition by tenure status

Tenure Status	Number of households	Composition
Owner occupiers without mortgage or life tenants	14,944,066	63.6
Owner occupiers with mortgage	1,900,215	8.1
Tenants	4,999,697	21.3
Rent-free tenants	1,638,022	7.0
Total	**23,481,999**	**100.0**

Source: Own calculations based on SHIW.

As in the UK and the US, the share of the households living in owner-occupied dwellings is about 70 percent in Italy (about 45 percent in Germany), while renters (including rent-free tenants) are about 30 percent (a half in Germany). However, the composition of owner-occupied dwellings is different: the share of Italian households without mortgage is three times bigger than in the UK, Germany and the US (Frick and Grabka, 2003); Italian households with a mortgage are only 8.1 percent in Italy and

[9] Life tenants bear the right (which is called "usufruct") to use the dwellings for all their life. The owners retain in this case just the bare property.

[10] Included in this category are also the households that rent their main residence "*a riscatto*" (literally, "redemption agreement"). This means that the rental contract includes also a call option that allows the tenant to buy the house where she lives at a given price and date. Rents paid up to the maturity are subtracted from the market price to define the strike price.

[11] Gale et al. (2007) suggest that mortgage interest deduction seems to have a small impact on homeownership. Similar results are provided for Italy by Jappelli and Pistaferri (2007).

about 25 percent in Germany and 50 percent in the UK and the US. The typical mortgage maturity and the maximum loan to value are also lower in Italy than in other countries (Bernardi and Poggio, 2004). Maturity is 10 years in Italy, 25 in the UK, up to 30 years in Germany, Netherlands and Norway. The maximum loan to value is 50% in Italy, 80% in Germany, and up to 100% in the UK.

Another relevant difference between Italy and other countries is related to social housing: only 4.2 percent of households (one million tenants, about one fifth of total tenants) rent a council house at a subsidized rate. Very few countries (e.g., Germany and Portugal, with figures of 6.5 and 3.3 percent respectively) share this situation. On the contrary, most other EU countries have considerable higher percentages of households living in council houses: examples include Netherlands (34.6 percent), Sweden and Great Britain (21 percent), and Denmark (20 percent) (D'Ambrosio and Gigliarano, 2007).

Looking at the distribution of households by deciles of equivalent disposable gross income, the higher the decile, the higher the percentage of owner occupier within each decile (Table 2). Since 71.7 per cent of household own their main residence, the gap between the bottom and the top decile is relatively small (57.3 percent to 75.9 for household without mortgage and 5.1 percent to 10.1 for households with mortgage). As expected, the percentage of tenants within each decile is decreasing: it is 28.3 percent in the bottom decile and 10.7 percent in the top one. The same picture is observed for rent-free tenants, with values ranging from 9.4 percent in the bottom decile to 3.3 in the top one.

Not surprisingly, the share of households still paying off their mortgage is decreasing with the age of the household head, while the opposite occurs considering owner-occupiers without a mortgage. Moreover, the first age class here considered has a considerable high percentage of tenants (more than one third), while it is only 16 percent for household in which the head is older than 65 (Table 3).

Table 2: Distribution of households by decile of equivalent gross income

	Tenure status				
Decile	**Owner occupiers without mortgage or life tenants**	**Owner occupiers with mortgage**	**Tenants**	**Rent-free tenants**	**Total**
1	**57.3**	**5.1**	**28.3**	**9.4**	**100.0**
2	**61.9**	**1.9**	**26.9**	**9.3**	**100.0**
3	**61.9**	**6.6**	**22.6**	**8.9**	**100.0**
4	**60.8**	**5.8**	**24.9**	**8.6**	**100.0**
5	**59.3**	**10.1**	**24.5**	**6.1**	**100.0**
6	**66.5**	**8.8**	**19.1**	**5.7**	**100.0**
7	**63.3**	**10.4**	**19.6**	**6.6**	**100.0**
8	**63.9**	**10.0**	**20.8**	**5.3**	**100.0**
9	**65.7**	**12.1**	**15.4**	**6.7**	**100.0**
10	**75.9**	**10.1**	**10.7**	**3.3**	**100.0**
Total	**63.6**	**8.1**	**21.3**	**7.0**	**100.0**

Source: Own calculations based on SHIW.

Table 3: Distribution of Households by age class

	Tenure status				
Age class	**Owner occupiers without mortgage or life tenants**	**Owner occupiers with mortgage**	**Tenants**	**Rent-free tenants**	**Total**
≤ 35	**36.2**	**15.4**	**36.6**	**11.9**	**100.0**
>35 & ≤ 65	**60.5**	**10.6**	**21.3**	**7.6**	**100.0**
> 65	**78.9**	**0.9**	**16.0**	**4.1**	**100.0**
Total	**63.6**	**8.1**	**21.3**	**7.0**	**100.0**

Source: Own calculations based on SHIW.

4.2. The Distribution of Main Residence Cadastral Incomes and Imputed Rents

The main residence cadastral income R^t is very low with respect to the net IR: the mean value of the former is 524 euro, while that of the latter 6,707 (Table 4). Both R^t and net IR similarly increase with respect to income deciles: the cadastral income is 318 euro in the bottom decile and only 901 euro (about 2.8 times) in the top one; the corresponding

values for the net IR are 4,502 and 11,055 (about 2.5 times), respectively. A very different picture emerges whenever they are evaluated with respect the equivalent disposable gross income: on average, R^t is only 1.6 percent of the gross income, while the net IR is about one fifth. Moreover, even if both R^t and IR are decreasing with income, the net IR is clearly decreasing at a faster rate: it is 61.3 percent in the bottom decile and only 12.1 percent in the top one; the corresponding values for R^t are 4.4 and 1 percent, respectively. According to these results, whenever the net IR is considered as a part of the PIT taxable income, both the overall inequality and the overall redistributive effect of the tax are expected to decrease, as we show in the following empirical analysis.

Table 4: Value of main residence cadastral income by decile of household equivalent gross disposable income

		Cadastral income		Net IR	
Decile	**Percentage of households with positive main residence income**	**Mean value (euro)**	**Mean value / household income**	**Mean value (euro)**	**Mean value / household income**
1	**62.4**	**318**	**4.4**	**4,502**	**61.3**
2	**63.8**	**360**	**3.1**	**4,570**	**39.3**
3	**68.5**	**377**	**2.4**	**5,224**	**33.6**
4	**66.6**	**392**	**2.1**	**5,294**	**28.5**
5	**69.4**	**470**	**2.1**	**6,058**	**27.2**
6	**75.2**	**518**	**1.9**	**6,677**	**25.1**
7	**73.7**	**504**	**1.6**	**6,558**	**20.9**
8	**73.9**	**569**	**1.5**	**7,242**	**19.1**
9	**77.9**	**680**	**1.4**	**8,192**	**17.0**
10	**86.0**	**901**	**1.0**	**11,055**	**12.1**
Total	**71.7**	**524**	**1.6**	**6,707**	**20.3**

Source: Own calculations based on SHIW.

4.3. The Redistributive Consequences of Taxing Imputed Rents

As discussed above, one major problem with the actual taxation of housing income in Italy is the discrepancy between cadastral incomes and market values. Moreover, the main residence cadastral income is totally exempted. The favorable tax treatment can generate inefficiencies in the composition of wealth portfolios, resulting in a stronger

share of households capital invested in housing with respect to alternative assets, like stocks and bonds. Indeed, according to Sierminska et al. (2008), Italy is a country where the share of households wealth invested in housing (net of debt) is the highest among several western countries (including Germany, UK and US). On the contrary, Italian families invest a mere 1 percent in stocks, the lowest percentage among the same group of countries.

However, these presumably consistent inefficiencies can be the price to be paid in order to foster equity. To judge the current tax system from this point of view, we need to assess its redistributive effect compared to alternative systems. We consider here two: we first ask what will happen to income distribution if we consider actual cadastral income in the PIT taxable income; we then explore what will happen if we update cadastral income to current market values (the "imputed rent" approach)[12]. According to most of the literature, excluding imputed rent amount to a subsidy for owner-occupation, and it is likely to favor highest income groups (e.g., Aaron, 1970; Rosen, 1985). Including imputed rent in the tax base should then be equality enhancing. The following exercise considers four groups of households by their tenure status: owner occupiers without mortgage or life tenants (group 1); owner occupiers with mortgage (group 2); tenants (group 3); rent-free tenants (group 4). According to the actual Tax Code, only households belonging to group 1 and 2 have a positive cadastral income from their main residence.

Gross income including the in-kind income from owner-occupied dwellings. We first consider a broad definitions of gross income, which includes also the in-kind income from owner-occupied dwellings as suggested for instance by the Canberra Group (2001). Let the actual overall household average gross income be 100. Then, the actual mean gross income is about 106.3 for owner occupiers with a mortgage, and 113.8 for owner occupiers without mortgage; on the contrary, it is considerable lower for tenants (82.6) and for rent-free tenants (79.4) (Table 5). These income positions are not affected

[12] As observed originally by Goode (1960), taxing imputed rents will involve administrative difficulties, like the measurement of certain deductible expenses (for instance, how to distinguish between repairs and permanent improvements when setting annual depreciation allowances?), and the upkeep of estimates in period of rapid changes in housing values. However, these difficulties are no less than those actually faced by current tax systems in measuring appropriately income.

whenever R^t is included in taxation: its inclusion affects only the PIT taxable income, and not also the PIT gross income. On the contrary, the relative positions are very different whenever the net IR is considered as a component of the PIT gross income: with respect to the actual situation, the overall gross income is 114.2, and it raises up to 126.4 for owner occupiers without mortgage and to 131.2 for owner occupiers with a mortgage. As long as the other two groups considered here are not affected by the imputed rent, their income positions do not change with respect to the actual situation.

The inclusion of net IR yields a considerable reducing effect on income inequality, as already observed in other works (Frick and Grabka, 2003; D'Ambrosio and Gigliarano, 2007): Gini coefficient for equivalent household disposable gross income is .3823 with the reference model and decreases to .3678 with the net IR. By considering the owner occupiers without mortgage, the Gini coefficient fall from .3913 to .3601, whilst the corresponding values for owner occupiers with a mortgage are .3392 and .3165, respectively.

Similar comments emerges also when decomposing population by age groups. Relative income positions are: 87.7 if the head of the household is 35 or younger, 107.5 if she is in the class 35-65, and 90.2 if she is older than 65 (Table 6). With the inclusion of the net IR, the corresponding values are 97.5, 120.8 and 107.5, respectively. Clearly, as the share of owner-occupiers households increases with age, the higher variations of the Gini coefficient are registered in the top two age classes if net IR is considered, whilst the variation in the first age class is marginal.

Net income including the in-kind income from owner-occupied dwellings. The inclusion of net IR from owner-occupied dwelling as a component of the PIT gross income would increase revenues by about 20 percent. But this will alter the assessment of the redistributive effect of the actual tax system by modifying the overall monetary net income. Given the broadening of the tax base following the inclusion of IR, we then fix tax revenues at the actual level, and ask what reduction in tax rates this will allow.[13] Not surprisingly, the reduction in the level of marginal tax rates would be consistent (Table 7): it could be possible to reduce the marginal tax rates by 6 percentage points on the

[13] We leave tax deductions and tax credits unchanged with respect the actual Tax Code. For details on the 2006 PIT structure, see Pellegrino and Vernizzi (2010).

first bracket, by 5 percentage points on the second one, by 2 points on the third and by 1 point on the last.

Renters and rent-free tenants (which are also the poorest ones) could benefit the most from this marginal tax rate modification since they will have the same tax base as before. In particular, letting the actual overall household average net income be 100, the overall net income is 117.8, and it raises from 105.4 up to 128.9 for owner occupiers without mortgage and from 110 to 132.1 for owner occupiers with mortgage. For tenants and rent-free tenants the corresponding values are 85.8, 89.6, 82.7 and 86.4, respectively (Table 8). Since R^t is about 8 percent of net IR, note that if it were taxed only small variation in the income positions could be registered. Moreover, taxation of net IR will change in opposite directions the inequality of groups with positive and null IR. In particular, Gini coefficient falls for owner occupiers and raises for tenants and rent-free tenants. For the latter groups, the reduction of marginal tax rates benefits the most the richer taxpayers; this does not happen for owner occupiers households because the reduction of tax debts due to the decreasing marginal tax rates is more than compensated by the increase of the gross income.

Similar conclusion can be observed analyzing results by age class: in the first age class inequality is increasing, whilst it is reducing for the last two (Table 9). This is due to the lower percentage of owner occupiers in this group with respect to the other two.

Net cash income (excluding the in-kind income from owner-occupied dwellings). Up to now, we considered a broad definition of income that includes also figurative rents from owner-occupied dwellings, and showed that including IR will reduce the Gini index, both considering gross and net incomes. However, given the significant change in the tax base for some taxpayers (and – correspondingly – the significant change in the tax debt), one may wonder whether considering net *cash* income distributions (when rents are included in the PIT tax base) leads to the same conclusions as before. We then take into account here the net cash income distributions when both R^t and IR are taxed, and compare these to the gross cash income distribution. Results are shown in Table 10. The Gini coefficient drops by 5 points when moving from the gross cash income to the net cash income taxing R^t. The reduction - when considering the net cash income taxing IR - is lower, from 0.3842 to 0.3416. This means that – judged by using the concept of

cash income – the inclusion of IR will actually reduce the redistributive power of the PIT. This is due to the high number of owner-occupiers in the lowest deciles, which opens the door to the question of whether people who have little current income but substantial wealth are to be considered poor[14].

In order to propose a first attempt to better evaluate whether including IR is pro-poor or not, we identify gainers and losers across deciles considering net cash incomes[15]. In particular, we compare the tax burden when including IR in the PIT tax base, and the one when rents are excluded. In general, given the reduction in marginal tax rates following the enlargement of the tax base, we expect taxpayers to obtain a reduction of their tax burden on labour incomes, and an increase of their burden because of the IR from dwellings. Taxpayers will then gain either because they are not owner-occupiers and they just have labour incomes, or because the increase in the tax debt due to IR is smaller than the reduction in the burden on labour incomes. In other words, labour incomes are relatively more important than rents from dwellings.

Table 11 shows unequivocally that the share of losers is not monotonically increasing from the bottom to the top decile: 33.6 percent of taxpayers in the bottom decile lose on average 509 euro, while 35.7 percent in the top decile lose on average about four times, 1917 euro. Most of the gainers are concentrated in the top deciles: starting from the 5th decile, more than 50 percent of taxpayers gain from including IR in the PIT tax base and reducing the marginal tax rates. Finally, most of the people in the first two deciles are indifferent: their net cash income is unaffected.

Table 12 makes clear that most of the employees will gain from the inclusion of rents from dwellings in the tax base, while most of the pensioners will lose. This is hardly surprising: in a life-cycle perspective, labour income will grow up to middle-age, then decline. Hence, for most of the employees, labour incomes are relatively more important than IR, while for most of the pensioners the contrary is true. For self-

[14] On this specific point, UK is not much different than Italy given the high proportion of owner occupiers. See the discussion in Mirrlees et al. (2011) for a proposal of reforming housing taxation in the UK, which shares some features of the exercise proposed here. However, the distribution of wealth is relatively *less* concentrated in Italy than in the UK, making the redistributive consequences of including IR in the PIT larger. In particular, according to Shorrocks et al. (2010), median wealth represents 50% of mean wealth in Italy, while just 34% in the UK.

[15] Notice that here the analysis is based on individuals. This is because the tax unit according to the Italian Tax Code is the individual and not the household.

employed the situation is mixed: 43.5 percent of these taxpayers will obtain a net gain, while 37.3 percent will lose.

Tab. 11: Winners and losers by decile of cash income

	Win		Indiff.	Lose		All
Decile	%	Av. Gain (euro)	%	%	Av. Loss (euro)	%
1	0.0	0	66.4	33.6	-509	100.0
2	6.7	82	63.9	29.4	-643	100.0
3	27.0	143	28.4	44.6	-821	100.0
4	44.5	251	10.4	45.1	-900	100.0
5	50.4	374	4.9	44.6	-719	100.0
6	57.9	517	0.8	41.3	-629	100.0
7	65.7	617	0.1	34.2	-736	100.0
8	69.7	714	0.0	30.3	-945	100.0
9	70.1	1019	0.0	29.9	-1049	100.0
10	64.3	1554	0.0	35.7	-1917	100.0
All	45.5	716	17.8	36.8	-880	100.0

Source: Own calculations based on SHIW.

Tab. 12: Winners and losers by work status

	Win		Indiff.	Lose		All
Work-status	%	Av. Gain (euro)	%	%	Av. Loss (euro)	%
Employees	60.1	767	13.4	26.5	-921	100.0
Pensioners	32.5	607	17.2	50.3	-856	100.0
Self-employed	43.5	724	19.2	37.3	-992	100.0
Others	8.8	342	57.7	33.5	-604	100.0
All	45.5	716	17.8	36.8	-880	100.0

Source: Own calculations based on SHIW.

The life-cycle perspective of real capital accumulation, which makes IR relatively more important than labour incomes when age increases is pretty much clear from Table 13: 63.7 percent of taxpayers under 35 years of age will gain on average 668 euro when including IR in the PIT tax base, while just 31.2 percent of the elderly will obtain an average benefit of 568 euro. On the contrary, just 15.7 percent of the youngest taxpayers and 50.9 percent of the oldest will lose. The average loss will be respectively 816 euro and 884 euro.

The main conclusions from this analysis is then that favoring owner-occupiers by excluding IR from the PIT tax base amounts to favoring the elderly who accumulated a real capital. This is worrisome for the younger generations, especially given the sharp increase in housing prices and the corresponding increase in rents, the lack of an adequate housing policy in Italy, and the liberalization of the mortgage market (e.g. Berloffa and Villa, 2010). From the point of view of well-being, is it then fair or not to include IR in the PIT tax base? Let us follow Goode (1960) and take for instance two individuals, A and B. A obtains a 35.000 euro income from labour, and rents the main residence where she lives by paying 5.000 euro per year; while B has a pension of 30.000 euro and lives in a dwellings with a figurative income of 5.000 euro per year with exactly the same characteristics of the one rented by A. According to the current rules, A will pay more taxes than B, but it is difficult to sustain that B's welfare is lower than A's. If this is true, then we should consider IR to evaluate the income position of each taxpayer. And in this case, our analysis shows that moving to IR leads unequivocally to a reduction of the Gini coefficient.

Tab. 13: Winners and losers by age

	Win		Indiff.	Lose		
Age	**%**	**Av. Gain (euro)**	**%**	**%**	**Av. Loss (euro)**	**All**
<=35	**63.7**	**668**	**20.6**	**15.7**	**-816**	**100.0**
35-65	**45.8**	**786**	**16.8**	**37.4**	**-886**	**100.0**
>65	**31.2**	**568**	**18.0**	**50.9**	**-884**	**100.0**
All	**45.5**	**716**	**17.8**	**36.8**	**-880**	**100.0**

Source: Own calculations based on SHIW.

5. Concluding Remarks

In this paper we study the actual distributive impact of housing taxation on Italian households, and then compare this with an alternative approach which considers a broader definition of income, that includes also in-kind components. In particular, we take into account the imputed rent from owner-occupied dwelling as a component of the personal income tax gross income. The analysis is based on a static microsimulation

model that uses as input data those provided by the Bank of Italy in its Survey on Households Income and Wealth. We first simulate the distribution of the 2006 housing taxation on households. We then highlight the problems and the distributional consequences of this tax system with respect to one in which the "imputed rent" is included in the personal income tax base.

Our results show that, by including imputed rent from owner-occupied dwellings as a component of the personal income tax base, we find that overall inequality measured by the Gini coefficient is reducing. Moreover, broadening the personal income tax base could lead to a consistent reduction of marginal tax rates, with likely significant positive effects on labour supply and overall efficiency. However, when considering the net cash income instead of a broad definition of income, taxing imputed rents implies an increase of the Gini coefficient given the high share of owner-occupiers in the bottom income deciles. Specifically, our analysis shows that most of the losers are elderly people for whom current incomes from pensions are relatively less important than imputed rents from their dwellings.

Tab. 5: Gross income by tenure status (incl. in-kind from owner-occupied dwellings)

	Tenure status				
Gross income	**Owner occupiers without mortgage or life tenants**	**Owner occupiers with mortgage**	**Tenants**	**Rent-free tenants**	**Total**
2006 mean income	**106.3**	**113.8**	**82.6**	**79.4**	**100.0**
Mean income if R were taxed	**106.3**	**113.8**	**82.6**	**79.4**	**100.0**
Mean income if net IR were taxed	**126.4**	**131.2**	**82.6**	**79.4**	**114.2**
Gini coefficient for the 2006 distribution	**0.3913**	**0.3392**	**0.3514**	**0.3584**	**0.3823**
Gini coefficient for the distribution with R	**0.3913**	**0.3392**	**0.3514**	**0.3584**	**0.3823**
Gini coefficient for the distribution with net IR	**0.3601**	**0.3165**	**0.3514**	**0.3584**	**0.3678**

Source: Own calculations based on SHIW.

Tab. 6: Gross income by age class (incl. in-kind from owner-occupied dwellings)

	Age class			
Gross income	**≤ 35**	**> 35 & ≤ 65**	**> 65**	**Total**
2006 mean income	**87.7**	**107.5**	**90.2**	**100.0**
Mean income if R were taxed	**87.7**	**107.5**	**90.2**	**100.0**
Mean income if net IR were taxed	**97.5**	**120.8**	**107.5**	**114.2**
Gini coefficient for the 2006 distribution	**0.3162**	**0.3922**	**0.3711**	**0.3823**
Gini coefficient for the distribution with R	**0.3162**	**0.3922**	**0.3711**	**0.3823**
Gini coefficient for distribution with net IR	**0.3131**	**0.3789**	**0.3555**	**0.3678**

Source: Own calculations based on SHIW.

Table 7: Tax brackets and marginal tax rates

Tax base (euro)		Marginal tax rate (%)		
		2006	if R were taxed	if net IR were taxed
Up to	26,000	23	22.43	17
26,000	33,500	33	33	28
33,500	100,000	39	39	37
Above 100.000		43	43	42

Source: Ministry of Finance, 2005; own calculations based on SHIW.

Tab. 8: Net income by tenure status (incl. in-kind from owner-occupied dwellings)

	Tenure status				
Net income	**Owner occupiers without mortgage or life tenants**	**Owner occupiers with mortgage**	**Tenants**	**Rent-free tenats**	**Total**
2006 mean income	**105.4**	**110.0**	**85.8**	**82.7**	**100.0**
Mean income if R were taxed	**105.2**	**109.8**	**86.1**	**83.0**	**100.0**
Mean income if net IR were taxed	**128.9**	**132.1**	**89.6**	**86.4**	**117.8**
Gini coefficient for the 2006 distribution	**0.3389**	**0.3026**	**0.3042**	**0.3148**	**0.3316**
Gini coefficient for the distribution with R	**0.3391**	**0.3031**	**0.3048**	**0.3155**	**0.3318**
Gini coefficient for distribution with net IR	**0.3144**	**0.2800**	**0.3129**	**0.3239**	**0.3231**

Source: Own calculations based on SHIW.

Tab. 9: Net income by age class (incl. in-kind from owner-occupied dwellings)

	Age class			
Net income	**≤ 35**	**> 35 & ≤ 65**	**> 65**	**Total**
2006 mean income	**90.2**	**105.8**	**92.6**	**100.0**
Mean income if R were taxed	**90.3**	**105.8**	**92.4**	**100.0**
Mean income if net IR were taxed	**103.9**	**123.1**	**112.8**	**117.8**
Gini coefficient for the 2006 distribution	**0.2813**	**0.3435**	**0.3143**	**0.3316**
Gini coefficient for the distribution with R	**0.2816**	**0.3436**	**0.3144**	**0.3318**
Gini coefficient for the distribution with net IR	**0.2831**	**0.3341**	**0.3085**	**0.3231**

Source: Own calculations based on SHIW.

Tab. 10: Net income by tenure status (excl. in-kind from owner-occupied dwellings)

	Tenure status				
Net income	**Owner occupiers without mortgage or in usufruct**	**Owner occupiers with mortgage**	**Tenants or occupiers under redemption agreement**	**Rent-free tenats**	**Total**
Gini coefficient for the 2006 gross income distribution without R	**0.3946**	**0.3430**	**0.3514**	**0.3584**	**0.3842**
Gini coefficient for the net distribution if R is taxed	**0.3425**	**0.3080**	**0.3048**	**0.3155**	**0.3337**
Gini coefficient for the net distribution if net IR is taxed	**0.3529**	**0.3145**	**0.3129**	**0.3239**	**0.3416**

Source: Own calculations based on SHIW.

References

Aaron H. (1970), Income Taxes and Housing, *American Economic Review*, 60 (5), 789-806.

Bank of Italy (2008), *Household Income and Wealth in 2006*, Supplements to the Statistical Bulletin, Vol. XVIII, no. 7.

Berloffa G. and Villa P. (2010), Differences in equivalent income across cohorts of households, *Review of Income and Wealth*, 56 (4), 693-714.

Bernardi F. and Poggio T. (2004), Home ownership and social inequality in Italy, in K. Kurz and Blossfeld H. P. (eds.), *Home ownership and social inequality in comparative perspective*, Stanford: Stanford University Press, 187-232.

Bourassa S. C. and Hendershott P. H. (1994), On the equity effects of taxing imputed rent: Evidence from Australia, *Housing Policy Debate*, 5 (1), 73-95.

Callan T. and Keane C. (2009), Non-Cash Benefits and the Distribution of Economic Welfare*, IZA Discussion Paper*, n. 3954.

Canberra Group (2001), *Final Report and Recommendations*, Expert Group on Household Income Statistics, Ottawa.

D'Alessio G. and Gambacorta R. (2007), L'accesso all'abitazione di residenza in Italia, Banca d'Italia*, Quaderni di Economia e Finanza (Occasional Papers)*, n. 9.

D'Ambrosio C. and Gigliarano C. (2007), The distributional impact of "imputed rent" in Italy, Aim-Ap Project, ISER, University of Essex, *mimeo*.

Ferrera M. and Castles F. (1996), Home ownership and the Welfare State: is Southern Europe different?, *South European Politics and Society*, 1(2), 163-185.

Frick J. R. and Grabka M. M. (2003), Imputed Rent and Income Inequality: a Decomposition Analysis for Great Britain, West Germany and the U.S., *Review of Income and Wealth*, 49 (4), 513-537.

Gale W. G., Gruber J., and Stephens-Davidowitz S. (2007), Encouraging Homeownership Through the Tax Code, *Tax Notes*, June 18, 1171-1189.

Garner T., Short K. (2009), Accounting for owner-occupied dwelling services: Aggregates and distribution, *Journal of Housing Economics*, 18, 233-248.

Glaeser, E. and B. Sacerdote (1999), Why is there more crime in cities?, *Journal of Political Economy,* 107, S225-S258.

Goode R. (1960), Imputed rent of owner-occupied dwellings under the income tax, *Journal of Finance*, 15(4), 504-530.

Green R. K. and White M. J. (1997), Measuring the benefits of home-owning: Effects on Children, *Journal of Urban Economics*, 41, 441-461.

Jappelli T. and Pistaferri L. (2007), Do people respond to tax incentives? An analysis of the Italian reform of the deductibility of home mortgage interests, European Economic Review, 51, 247-271.

Mirrlees J., S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds) (2011), *Tax by Design: the Mirrlees Review*, Oxford University Press.

Onrubia J., Carmen Rodado M., Ayala L. (2009), How do services of owner-occupied housing affect income inequality and redistribution?, *Journal of Housing Economics*, 18, 224-232.

Pellegrino S., Piacenza M., Turati G. (2010), Developing a static microsimulation model for the analysis of housing taxation in Italy, International Journal of Microsimulation, *forthcoming*.

Pellegrino S. and Vernizzi A. (2010), The 2007 Personal Income Tax Reform in Italy: Effects on Potential Equity, Horizontal Inequity and Re-ranking, Dipartimento di Scienze Economiche e Finanziarie "G. Prato", Università degli Studi di Torino, *Working Paper Series*, n. 14.

Poterba J. M. (1992), Taxation and housing: old questions, new answers, *American Economic Review*, 82 (2), 237-242.

Reviglio F. (1998), *Come siamo entrati in Europa e perché potremmo uscirne*, Utet, Torino, 1998.

Rosen H. (1985), Housing Subsidies. Effects on Housing Decisions, Efficiency, and Equity, in Auerbach A. J. and Feldstein M. (eds.), *Handbook of Public Economics*, Elsevier (North-Holland), vol. I, 375-420.

Sierminska E., A. Brandolini and T. M. Smeeding (2008), Comparing Wealth Distribution Across Rich Countries: First Results From the Luxembourg Wealth Study, in *Household wealth in Italy*, Rome: Bank of Italy.

Shorrocks A., Davies J. and Lluberas R. (2010), Global Wealth Report, Research Institute, Credit Suisse.

Watson D., R. Webb, T. Hinks and M. Brooks (2007), European Castles? The Well-being Effects of Home Ownership and Housing Market Disparities in the European Union, University of Wales, mimeo.

Yagi T. and Tachinabaki T. (1998), Income Redistribution Through the Tax System: A Simulation Analysis of Tax Reform, *Review of Income and Wealth*, 44 (3), 397-415.

Yates J. (1994), Imputed Rent and Income Distribution, *Review of Income and Wealth*, 40 (1), 43-66.