

Non-Taxation of imputed rent: A gift to Scrooge ? Evidence from France *

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Abstract

Homeowners save an imputed rent which is usually exempted from income taxation. This paper exploits the fiscal simulator developed by Landais et al. (2011) to estimate this tax saving and its distribution between households in France. We show that net imputed rents represent 7% of the national net income and that their non taxation is a hidden fiscal spending estimated between 9 and 11 billions of euros. This is thus the major public spending to support homeownership while it mostly benefits to the wealthiest and the oldest age groups. Substituting the property tax with imputed rents taxation could improve the situation of the youngest and the poorest households who have been facing larger barriers to homeownership over the last decades.

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1 Introduction

Imputed rent is defined as the rent a homeowner would have to pay if he was renting his house. From 1914, French authorities, as most developed countries between 1910 and 1980, used to include it in the income tax base. It was then a vital source of taxation for European Government when the 1% wealthiest owned more than 60% of private national capital within the continent (Piketty et al. (2013)). Nevertheless, it was finally removed in 1965 as a measure to foster access to homeownership. This period was indeed associated with the emergence of a middle-class of homeowners. However, it should be noted that OECD countries such as Iceland, Luxembourg, the Netherlands, Slovenia and Switzerland still include it in their fiscal base and treat imputed rents as any other capital income.

The recent surge in housing prices that started in the early 2000s combined with the dramatic drop in the homeownership rate of the lowest income decile (Laferrère et al. (2017)) awoke the debate on the opportunity to tax capital and housing wealth (Piketty (2014); Bonnet et al. (2017)). According to Piketty (2014) the top 1% in France owns 25% of total wealth. Within this context, reincluding imputed rents in the tax base could be a redistributive tool (Landais et al. (2011)). Not only we support this view, but we also embrace an intergenerational and demographic dimension in our analysis.

In this paper, we argue that the end of imputed rents taxation should be treated as a subsidy. We partially extend the work of Figari et al. (2017) to France using the TAXIPP micro-simulation model developed by Landais et al. (2011). We assess the amount of tax saved by homeowners and analyze who benefits from this fiscal incentive. Answering such questions appears important to enlighten the debate on the opportunity of reestablishing their taxation. Three main conclusions are reached. First, non-taxation of imputed rents represents a fiscal spending ranging between 9 and 11 billions euros which broadly corresponds to the tax receipts of the Property tax from homeowners. It is also the first fiscal spending directed to homeowners. Second, provided that home-ownership rates rise dramatically with age, non taxation of imputed rents is an important transfer from young to the elderly. Third, this subsidy is mainly focused on the richest fiscal households who are full-right owners. Indeed, if the average subsidy is relatively small, it is very unevenly distributed. Owners with a mortgage benefit marginally from such a tax scheme which is mostly captured by the top income decile where 90% of the households own their homes. The fact that this subsidy is higher for owners cast some serious doubts about its capacity to promote home ownership within the lowest income deciles. We propose to substitute the property tax which is based on out dated rental value and is not progressive with imputed rents taxation. This would turn homeownership more affordable for younger and poorer households with extremely low homeownership rates while increasing the cost of home-ownership for the top income decile.

Section 2 shows that imputed rents represent a sizeable share of the net national

income and try to demonstrate that their non taxation should be treated as a subsidy that supports homeowners. We then present our methodology to assess the distribution of the subsidy thanks to TAXipp in Section 3. Section 4 presents our results while section 5 concludes.

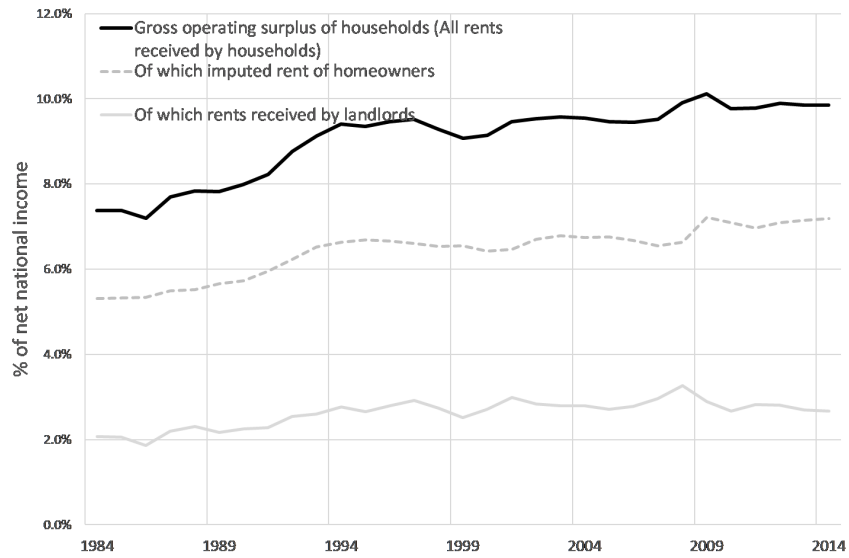
2 Imputed rents exemption: a controversial subsidy

2.1 Assessing imputed rents in France: calculation and share of national net income

Imputed rents correspond to the value homeowners derive from living in their own dwelling. Goode (1960) defines net imputed rent as the rental value of a dwelling at market prices from which property taxes, depreciation, reparation costs, maintenance and loan interest payments are deducted. The gross imputed rent is usually computed thanks to the rental equivalent method where one evaluates the amount rent owners would have to pay in the private rental sector for a similar unit (De Haan and Diewert (2011)). In France, the National Statistics Agency (INSEE) estimates imputed rents based on the French Housing Survey. Using the coefficients of hedonic regressions allows to decompose the rent of the private rental sector in order to predict the rent of homeowners units.

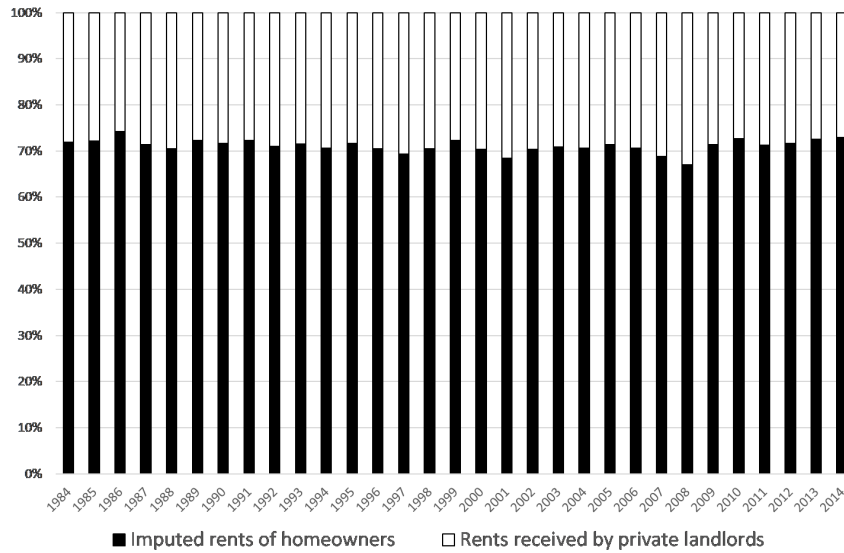
Combined with the rent paid by tenants in the private sector, imputed rents represent most of households' gross operating income in the national account. They enter in the computation of the GDP and represent a sizeable amount of the net national income. Indeed, as illustrated in Figure 1 and Figure 2, the share of imputed rents represents up to 7% of the net national income and more than 60% of the rental income in the private sector.

Figure 1: Gross operating surplus of households and gross rents



Source: Authors' computations from the French housing account 2014
Households' gross operating surplus, composed mainly by rents and imputed rents net of some expenditures as the property tax. Rent are before depreciation and taxation.

Figure 2: Share of imputed rents in total rents



Source: Author's computation from the French housing account 2014
Decomposed rents received by households between actual rents paid by tenants to their landlords and imputed rents of homeowners.

Given their sizeable amount, accounting or not for imputed rents might have important implications in the measurement of income inequalities. For example, Driant and Jacquot (2005) analyze the differences between income distribution when imputed rent is taken into account. They show that not accounting for imputed rent could lead to poverty overestimation and change households' position within income deciles. They also perform a similar exercise for the in-kind subsidy due to access to social housing units.

To summarize, the relevance of imputed rents taxation is non negligible contrary to the case of several other types of domestic capital of their dramatic importance in our modern and urban economies.

2.2 Non imputed rents taxation is a subsidy toward homeownership

This section illustrates why non taxation of imputed rent is a subsidy designed to support homeownership. Consider a household receiving a wage w paying income the tax rate $\tau(I)$ where $\frac{\partial \tau(I)}{\partial I} > 0$ and I denotes the household's fiscal income. This household owns a capital K that he can either invest in an alternate asset and get a return $r \times A$ or buy a house for a price P where he can live and save a net Rent R . Without loss of generality, we assume that there is no capital gains $g_P = 0$. The variation of its net wealth will depend on his tenure choice. In case of homeownership, it will be:

$$\Delta W^0 = (1 - \tau(w)) \times w \quad (1)$$

In this equation, we account for the current situation where imputed rent is not taxed. The sole expenditure of the owner is its income tax based on its wage $\tau(wA) \times w$. On the other hand, if he rents while investing in an alternate asset, he will get:

$$\Delta W^T = (1 - \tau(w + rA)) \times (w + rA) - R \quad (2)$$

The non taxation of imputed rent generates an important difference between owners and tenants. One can illustrate this subsidy by assuming that the net return on housing and the alternate investment is the same, i.e. $rA = rK = R$. In such a case, the subsidy provided to homeowners will be :

$$subsidy = \Delta W^0 - \Delta W^T = \tau(w + R) \times R + (\tau(w + R) - \tau(w)) \times w \quad (3)$$

Or assuming that the impact of non taxation of imputed rent on the average tax rate of wage is negligible (i.e $(\tau(w + R) - \tau(w)) \times w = 0$):

$$subsidy = \tau(w + R) \times R \quad (4)$$

This simple definition is relatively close to the situation where the alternate investment is another house that is bought to be rented. Indeed, Goode (1960) argues that

homeowners could choose to rent their house while owner occupation reveals that the returns of this status are higher than renting on the market. Moreover, when receiving the same wage, a homeowner will be better off than a tenant. The inclusion of imputed rent is thus in line with Haig (1921) and Simons (1938)'s tax base definition¹. For Figari et al. (2017) their exclusion violates the principle of horizontal equity and results in a 'homeownership bias'. Several comments arise from this first definition of the subsidy. First, the magnitude of the subsidy is increasing with the net rent. This will thus favour homeowners living in more expansive home, for example, these living in large urban areas or having large homes. It will also favor households with the highest net equity. As a consequence, the life cycle theory developed in Modigliani and Miller (1958) lead us to believe that non taxation of imputed rent will favour the oldest age groups. Second, the magnitude of the subsidy is increasing with the marginal tax rate τ and thus with the income of the owners when the income tax is progressive.

One might argue that homeowners are still taxed as they have to pay a property tax. However even accounting for property tax, the bias toward owner occupation persists. To illustrate this point, we can compare the homeowner receiving ΔW^O with a tenant who decides to become a landlord investing in housing. The tenant/landlord will have to pay a Rent R while receiving only $(1 - \tau(w + R - \tau_p)) \times R - \tau_p$ where τ_p is the property tax. In such a situation depreciation and property tax cancel out. The resulting subsidy would thus be :

$$subsidy = \tau(w + R - \tau_p) \times (R - \tau_p) + (\tau(w + R - \tau_p) - \tau(w)) \times w \quad (5)$$

This is the main definition of the subsidy that we will use in the main scenarii of the paper (scenarii 1,2,3). If the alternate investment is another asset only subject to the income tax, assuming that the impact of the average tax rate of the wage is negligible, the subsidy would be :

$$subsidy = \tau(w + R - \tau_p) \times (R - \tau_p) - \tau_p \quad (6)$$

Several comments arise from this alternate definition. First, in France local property tax are based on outdated rental values and not on actual rent. This generates important subsidies toward homeowners and landlords owning undervalued expensive homes. Second, local property tax is not progressive in France resulting in a subsidy that is still increasing with income and that might even be negative for low income owners. Moreover, the property tax is paid regardless of the debt level. This alternate definition of the subsidy is relatively close to the redistributive effect of a reform where the property tax would be replaced by imputed rents taxation (scenario 4)²

¹ Any type of income that increases individuals' ability to consume should be included in the income tax base.

²The change in taxation would be $\Delta \dot{T}axation = \tau(w + R) \times (R) - \tau(w) \times (w) - \tau_p$

To summarize, a homeowner will receive a positive subsidy if he is in a relatively high income tax bracket and if the property tax is lower than the tax treatment of an alternate investment. The resulting bias for a medium/high income household is significant. For example, Trannoy and Wasmer (2013) use a similar model to compute the difference in capital accumulation between a owner and a tenant with a marginal tax rate of 30%. Accounting for the the cost of the mortgage, property tax, capital depreciation and considering an alternate investment with a safe return of 4%, they find that after twenty years, the owner would be twice wealthier than the tenant having the same income and capital in the beginning. They thus proposed to offer the possibility of deducing tenant’s rents from the taxable income while substituting housing allowance with a negative tax. Moreover, Artus et al. (2013) assess that, even accounting for property tax homeowners benefit from a considerable subsidy as local property tax has a rate of 23% which deeply contrasts with the tax rate of productive economy estimated to be around 55-58% . Furthermore, local property taxes are designed to finance local public goods which are essential for developing residential areas where houses keep acquiring real estate capital gains while the income tax represents the main redistributive tool at the national level.

In this paper, we consider that non taxation of imputed rent should be treated as a tax credit defined by equation 5, and as such, can be accounted as a public spending in the same spirit of other favorable tax treatments that were put into place to promote home-ownership in France in the following decades. For example, the possibility offered between 2007 and 2009 to deduce interests paid on the loan for the primary residence is considered as a public spending and still represented a fiscal spending of 7 billion euros in 2010. In our framework, the reference situation from which the fiscal spending should be assessed corresponds to a situation where the tax treatment is indifferent between occupation status. We illustrate such a situation in Table 2 accounting for the two main policies generally used to promote home-ownership³.

	Interest payments deduction for housing loans	Non-deduction of interest payments for housing loans
Imputed Rent Taxation	Neutral environment	Not favourable to owner-occupiers
Non Taxation of Imputed Rent	Very favourable to owner-occupiers	Favourable to owner-occupiers

Table 1: Definition of the neutral environment

France is in a situation favorable to homeowners and was briefly in a very favorable situation, (after the aforementioned TEPA law or in the 1990s). However, many other countries have also a favorable or very favorable tax treatment of homeowners in particular the United States (see for example Sommer et al. (2013)) or the United Kingdom (see Figari et al. (2017) for an analysis of several European Countries).

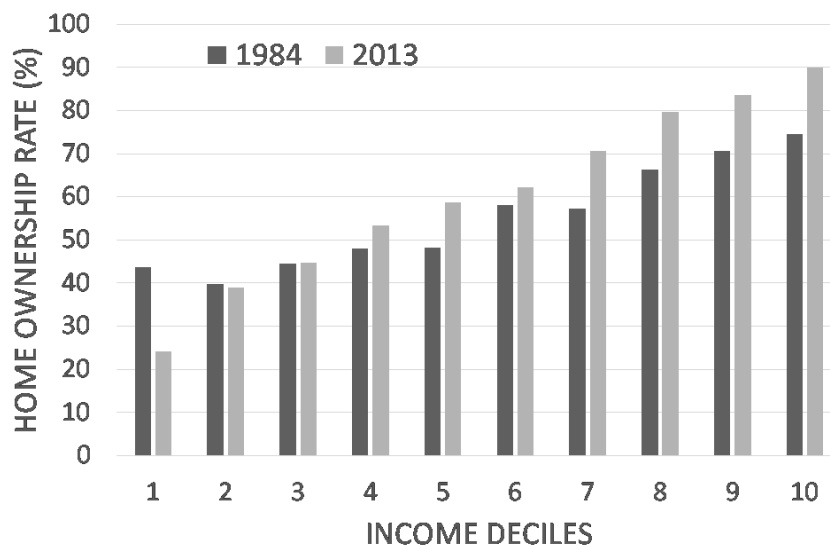
³We neglect here the other subsidies affecting the tenure choice as social housing, housing allowances or subsidized loans as they are accounted in the public expenditures. We will revert to this issue later

2.3 Limits of non taxation of imputed rent

Non taxation of imputed rent was presented as a way to support homeownership. This political desire is supported by several contributions documenting that higher home-ownership rates are desirable as home-ownership has positive impacts on living standards (see Dietz and Haurin (2003); Rohe et al. (2013); Hilber (2012)). For example, home-ownership decreases crime in neighborhoods (Glaeser and Sacerdote (2000)). In addition, Dietz and Haurin (2003) emphasize that it could also generate more pro-social behaviors.

As a consequence, non-taxation of imputed rents should be assessed through the lens of its capacity to foster home-ownership. However, most academic contributions cast some doubts on its efficacy and are relatively critical towards programs subsidizing home-ownership in general.

The first drawback of subsidizing homeownership through non taxation of imputed rents is linked with its failure to reach the most vulnerable households who went through a steep decline in their home ownership rates as illustrated in Figure 3. In this paper, we will show that in a country as France, where only half of the fiscal households are subject to the income tax, such a fiscal incentive is limited to richer households. This confirms the results of Bourassa and Hendershott (1994) who declare that in spite of being launched to encourage low-income households to become homeowners and create positive externalities within communities, tax exemption policies concerning imputed rents finally benefit high-income households.



Source: INSEE, Logement en France en 2013

Figure 3: Home ownership rate by income decile rents

A second limitation, which naturally stems from the previous point, is the impact

of non taxation of imputed rents on income inequalities. Indeed Goode (1960) shows that non-taxation of imputed rents and interest rate exemptions deepen existing inequalities because, it is more profitable the higher the marginal tax rate. In addition to this, he considers that this situation benefits people that prefer housing to other goods. This intuition is confirmed in Bourassa and Hendershott (1994) when looking at taxes paid over the life cycle in Australia, imputed rents taxation would result in a progressive or neutral scenario. Similar studies have been conducted in England (Yates (1994)) and Finland (Saarimaa (2011)) showing that imputed rents taxation would lower the Gini coefficient. More recently, Figari et al. (2017) presented an article analyzing three scenarios that reduced labor taxation without increasing inequalities (no compensation for fiscal pressure, compensation by a proportional reduction of taxable income or a fixed annual tax in which imputed rents would be taxed). They consider that in a scenario where imputed rents is exclusively taxed without compensation, the richest house-holds are proportionally more concerned than low-income households. Conversely, a proportional reduction in the tax base would be positive for wealthier households. Finally, a fixed annual tax would have a more direct impact on high-income households without necessarily increasing inequalities. Figari et al. (2017) conclude that imputed rents taxation could be an interesting tool to increase fiscal revenues or to alleviate labor taxation without raising inequalities.

The third argument that casts some doubts on the impact of non taxation of imputed rents on home-ownership is closely related to the recent results analyzing the efficiency of housing policies. A growing stream of literature has been increasingly pessimistic when analyzing the impact of public subsidies on the housing market. For example Fack (2005) shows that housing allowances tend to be capitalized into rents, while Gobillon and Le Blanc (2008) or Labonne and Welter-Nicol (2015) show that subsidized loans designed to increase home-ownership rates increase housing and land prices and tend to result in a windfall profit. These results point that the low supply elasticity of the housing due to land scarcity dramatically reduces the efficiency of public subsidies and fiscal incentives which tend to mostly generate price increases. One might fear that similar criticisms could apply to non taxation of imputed rents but no empirical work tried to tackle this issue.

The fact that the housing supply remains inelastic in France reinforces the claim that it should be more efficient to tax housing rather than any other type of capital as illustrated in Bonnet et al. (2017). While it should be more efficient to tax the most inelastic production factor, non taxation of imputed rents has been criticized because it generates a distortion that pushes to invest in land instead of the productive economies (Artus et al. (2013); Allègre et al. (2012, 2016)). Several contributions as Landais et al. (2011) push toward a reform that would include imputed rent taxation. Artus et al. (2013) proposed to reequilibrate capital taxation by providing less incentive to invest in housing. More recently, Allègre et al. (2016) support the total elimination of the ISF (French Solidarity Tax on Wealth), which could be compensated by taxing imputed rent. All these arguments and debates preceded the French

fiscal capital taxation reform in 2017, which led to a transformation of the ISF into the IFI (*Impôt sur la fortune immobilière*), which took out financial assets of the fiscal base, creating a new tax solely on real estate assets in order to foster investment in the productive economy.

Despite these contributions, one can regret the lack of precise analysis of the quantitative and redistributive impact of such a reform. While the estimates were made thanks to Euromod for several countries in Figari et al. (2017), so far there is no precise idea about the amount of the implicit subsidies received by homeowners in France. In this paper we aim to quantify the fiscal benefit they receive and to identify which type of fiscal households benefits the most from this fiscal device.

3 Assessing the subsidy provided to homeowners thanks to Taxipp

3.1 Taxipp model

Most of the previous academic work simulates and analyzes the potential redistributive impact of imputed rents taxation. However, our approach is slightly different as our main goal is not to assess the potential impact of imputed income taxation but firstly aims to assess the transfers between households due to this fiscal exemption and compare it with other type of housing subsidies in France. In a nutshell, we consider imputed rents taxation as a subsidy that should be computed in government spending as housing allowances, and analyze to which extent such subsidy affects differently households following their income level and age.

For this reason, we create a counterfactual situation reproducing a neutral fiscal treatment of imputed rents using the fiscal simulator provided in Landais et al. (2011). The Taxipp model is a micro-simulation model of mandatory social contributions that unlike the standard micro-simulation approach, places a special emphasis on imputation of high revenues and on calibrating the model according to national accounts. In addition to this, it should be noted that the database can be used at the fiscal household level. This allowed us to assess the amount of tax credit received by each fiscal household and its redistributive impact. The calculation of imputed rent, imputed property tax and imputed property revenues as described below .

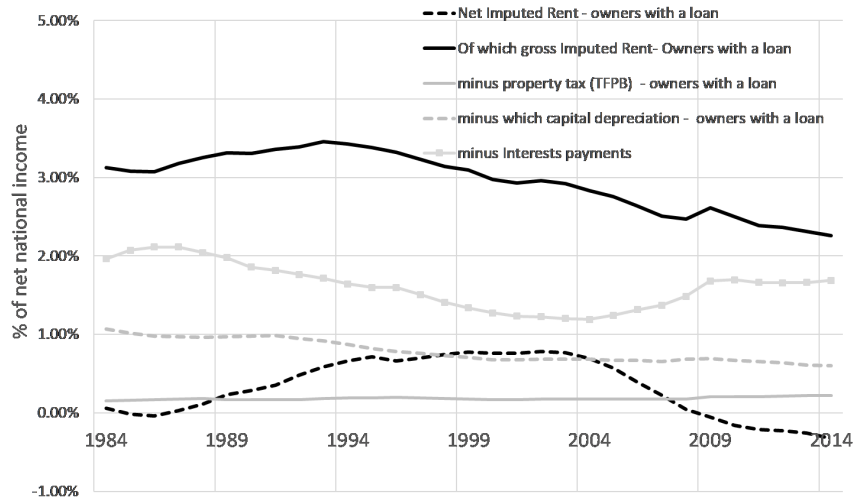
3.2 Computing the net imputed rent

Landais et al. (2011) provide an estimate of the gross rent thanks to a hedonic regression model. We then use several scenarios described in Table 2 in order to compute the net imputed rent. In the first scenario, we use the baseline parameters of Landais

et al. (2011) based on the National account base 2005. We slightly change their approach attributing the mortgage interests payments solely to owners with a mortgage identified in the database.

As a robustness check, we then account for the change in National accounts occurred when switching from the base 2005 to the base 2010. Indeed, the base 2010 adopted a much higher depreciation rate for housing capital which increased by 10 percentage points between 2000 and 2010. Moreover, in the second scenario we use the imputed property taxes (IPT) provided by Landais et al. (2011) while in the third we consider it as a share of the gross rent. All the scenarii yield relatively close results, the major change in the tax base coming from the hypothesis on capital depreciation which creates a discrepancy of about 10 billion euros between the two extreme scenarii. Finally the fourth scenario takes a different perspective and tries to assess what would be the fiscal income in the hypothesis of the substitution of the Property Tax by the taxation of imputed rents for homeowner occupiers. We take the same parameters as Scenario 1 but consider that the Property Tax does not exist anymore. This scenario allows to assess whether the substitution of the two taxes for homeowners would translate into a net fiscal gain or loss for the state.

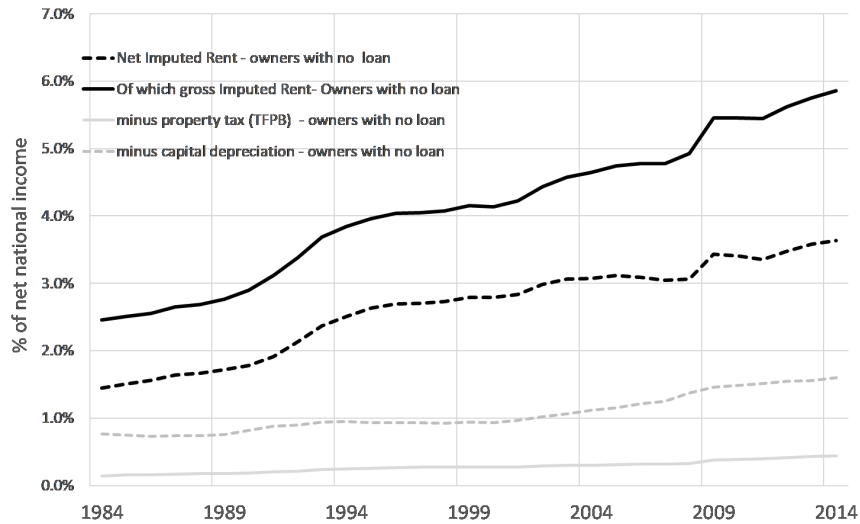
In Figure 4 and 5 we realize the same exercise with aggregate data in order to compare the fiscal base from the simulator with national accounts. Reassuringly, the aggregate net rents is very close to the sum of the fiscal base in the micro data set. Total net imputed rent remains between 53 and 73 Billions euros which represents about 4% of the net national income as in the aggregate data.



Source: Authors' computations from the French housing account 2014 (Comptes du logement 2014).

Decomposed aggregate taxable rents of homeowners with a mortgage (dash line) into its four main components :the gross rent, the capital depreciation, the interests repayment and the Property tax.

Figure 4: Gross, net imputed rents and property tax for owner occupiers with a loan



Source: Author's computation from the French housing account 2014 (Comptes du logement 2014).

Decomposed taxable rents of homeowners with no loan (dash line) into its three main components : the gross rent, the capital depreciation and the property tax.

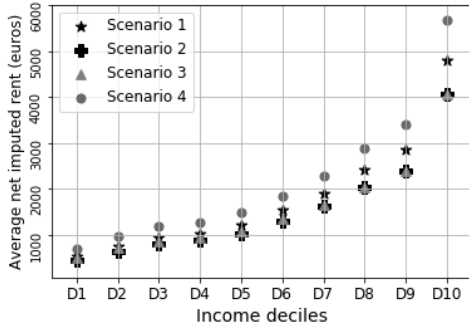
Figure 5: Gross, net imputed rents and property tax for owner occupiers without a loan

	Scenario 1 (Nat. Accounts Base 2005)	Scenario 2 (Nat. Accounts Base 2010)	Scenario 3 (Nat. Accounts Base 2010)	Scenario 4 (Nat. Accounts Base 2006)
Depreciation rate	18%	28%	28%	18%
Mortgage interest payments	70%	70%	70%	70%
Property Tax (PT)	declared	declared	8%	suppressed
Net/Gross Imputed rent - full owner	82% - IPT	72% - IPT	64%	82%
Net/Gross Imputed rent - owner with loan	12% - IPT	5.4% - IPT	0%	12%
Total Net Imputed Rent (Billions of Euros)	63.85	53.93	55.19	76.96

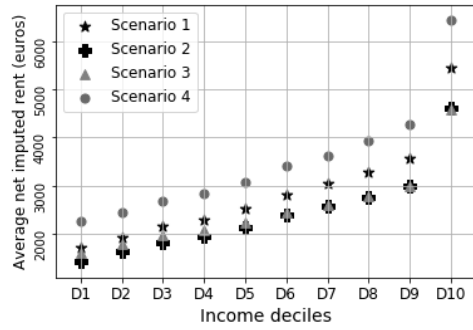
Table 2: Scenarii to calculate the net imputed rent

In Figures 6 we represent the distribution of the average net imputed rents per decile of taxable income for all households, owners with a mortgage and full right owners. When looking at all households, one can observe that the taxable base dramatically increases with income. This is easily explained by two phenomena. The share of homeowners is higher in the upper deciles and richer households have a higher housing consumption and thus higher imputed rents. Panel c) shows that the highest net imputed rents are received by the upper deciles who are full right owners. For these households, the average net imputed rents is between 7,000 and 9,000 euros per year. However, it steeply declines as income lowers: the 9th decile only receives between 5,000 and 6,000 euros and the 1st decile only receives between 2,000 and 3,000 euros on average. The difference between owners with mortgage and full right owners is striking when comparing panel c) and d). Accounting for interest rate repayment reduces dramatically the net imputed rent: for the 10th income decile, owners with a loan only receive on average about 400 euros (or 1,200 when suppressing the property tax), which stands for only 5% of the subsidy of full right owners with a similar income level.

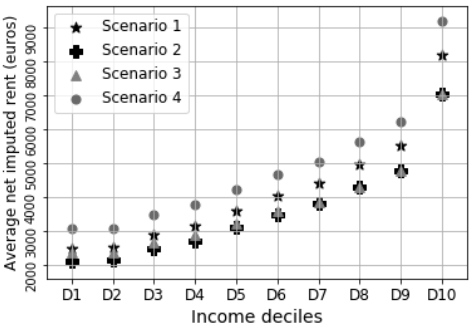
Figure 6: Net Taxable Imputed Rent



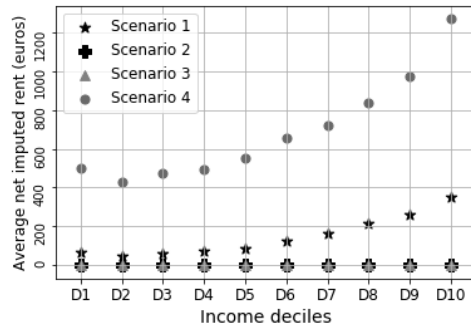
(a) All Households



(b) All owners



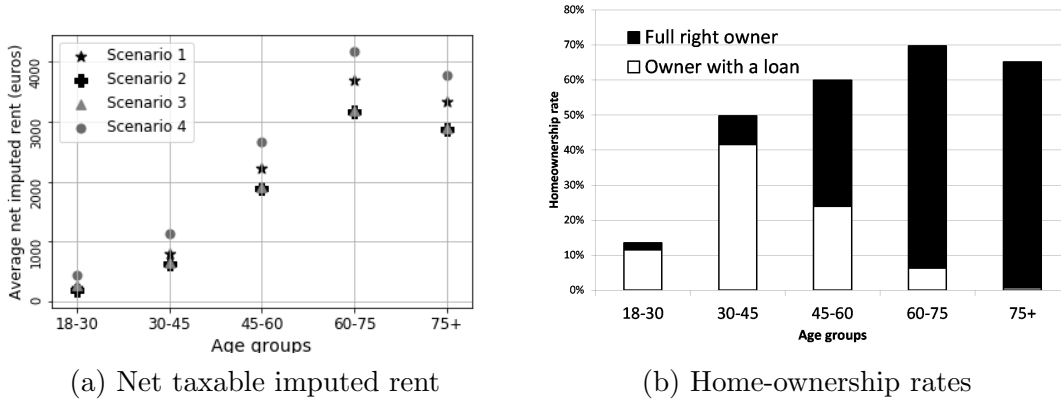
(c) Full owners



(d) Owners with a loan

Moreover, the inter-generational inequality is found to be remarkable when analyzing net imputed rents and its distribution across age groups as illustrated in panel a) in Figure 7. One can note that it is unevenly distributed between generations. The average net imputed rents of young households is extremely low as few of them own their house and among the few owners most of them still have to repay their mortgage. The untaxed imputed rents revenues are thus undeniably larger for old age groups. In fact, they represented in average 194 euros for 18-30 year-olds whereas they accounted for 3,713 euros and 3,316 euros for 60-75 year-old cohort and above 75 year-olds respectively. These patterns can be easily explained when looking at panel b). Indeed, relatively few households belonging to groups aged between 18-30 and 30-45 are homeowners (respectively 13% and 50%) and among those who own their house, a majority has a mortgage. In contrast, the home-ownership rate is relatively high for older groups (more than 60%) and most of the older households are full right owners.

Figure 7: Net Taxable Imputed Rent and Home-ownership rates by age group



Finally, even if the dataset is not precisely geolocated it is also interesting to compare how imputed rents vary between French Regions. Our data set only allows to compare three types of Area mainland France (Area 3), Large Urban Areas with more than 200,000 inhabitants (Area 2) and Paris Urban Area (Area 1). We report in Figure 15 the average imputed rent by area. One can observe that it is larger in Paris and in large urban areas than for the rest of France for owners. However, when considering all households mainland France receives on average a larger imputed rent than urban area with more than 200,000 inhabitants because the homeownership rate is higher in rural areas.

4 Results

4.1 Non-taxation of imputed rent is the most important subsidy to homeowners

We first present our estimates of the aggregate fiscal subsidy provided by non-taxation of the imputed rent. As illustrated in Table 3, following the parameters of the simulation, the total fiscal subsidy represents between 9 and 11 billion euros. This subsidy represents around 25% of the total subsidies dedicated to housing in the French National accounts of 2010. Indeed as described in Table 4, total subsidies represented 40 billion euros in 2010. Non-taxation of imputed rent is thus the second most important housing program after housing allowances which represented 17 billion euros. It is worth noting that this subsidy is larger than the Property Tax paid by homeowners which represented about 10 Billions euros in 2010 as illustrated in Table 6 in the appendix. As a consequence a substitution of the property tax by imputed rent taxation for home owners would be totally self financed.

Non-taxation of imputed rent appears, by far, as the major subsidy to homeowners. The second program being the deduction of interest rate from loans which was possible between 2007 and 2009 (TEPA fiscal device) and is still having some

budgetary consequences years after its repeal. Not accounting for the non-taxation of imputed rent leads to underestimate the public support to home-ownership. We can notice that the inclusion of non-taxation of imputed rent changes dramatically the distribution of subsidies between housing tenure. While the current national accounts show that the vast majority of housing subsidies go the rental sector, this trend is no longer valid when accounting for non-taxation of imputed rent. Indeed, total subsidies to owners almost double and are very close to subsidies created for tenants (around 23 billion euros for owners vs 26 billion euros for tenants).

When confronting these results with the findings in Figari et al. (2017), one can note that in case of imputed rents taxation, additional tax receipts would remain relatively modest. This is because, the income tax only represent less than 10% of the public revenues in France (Guillot and André (2014)) and is supplemented by the CSG and CRDS⁴ which are not progressive.

	without Imputed rent	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Total tax revenue (Billions of Euros)	53.54	65.00	63.19	63.33	66.78
Estimated subsidy (Billions of Euros)	-	11.46	9.65	9.79	13.38

Table 3: Estimation of the Fiscal Subsidy due to non taxation of imputed rents

⁴Contribution Social Generalisée

	Main Residences (MR)				Secondary Residences		Provisionary residences	Total
	Owners	Rental Sector			Total (MR)			
		Physical landlords	Social Landlords	Other Landlords	Total (rental)			
				Subsidies to consumers				
Housing allowances	0.948	7.757	5.772	0.760	13.843	-	1.137	15.928
Other allowances	0.005	0.095	0.131	0.038	0.264	-	0	0.268
Fiscal Subsidy	1.061	-	-	-	0.354	-	-	1.414
Total	2.013	-	-	-	14.460	-	1.137	17.611
				Subsidies to Producers				
Operating and investment subsidies	0.134	0.230	1.288	0.497	2.015	-	0.027	2.176
Subsidized loans	2.818	-	-	-	2.833	1	0	5.652
Fiscal Subsidies	7.027	-	-	-	4.249	-	-	11.276
Others	1.252	0.156	1.936	0.419	2.510	0.099	0.070	3.931
Total	11.231	-	-	-	11.607	0.100	0.096	23.034
Total	13.244	-	-	-	26.067	0.100	1.233	40.645
				Accounting for non imputed rent taxation				
Non imputed rent taxation	9.11	0	0	0	0	0	0	0
Total with non imputed rent	22.244	-24.244	-	-	26.067	0.100	1.233	49.645-51.645

Table 4: Total housing subsidies in 2010

4.2 Estimating the marginal tax rate of imputed rents

As emphasized in Equation 5, the magnitude of the subsidy is defined by the marginal income tax rate of households and their net imputed rent. As the income tax schedule is progressive, we estimate in column 1 and 3 of Table 5, the following equation:

$$Y_i = \tau_j \times D_{d(i)=j} \times R_i + \epsilon_i \quad (7)$$

we interact the income decile dummies ($D_{d(i)=j}$) with the imputed rent (R_i) to recover the marginal tax rate of each income decile j (τ_j). In column 1, Y_i is the implicit subsidy estimated in scenario 1 and defined in equation 5. In column 3, Y_i is the variation in taxation resulting from a substitution of the property tax by imputed rent taxation⁵ as defined in scenario 4. Columns 2 and 4 estimate the following equation :

$$Y_i = \tau \times R_i + \epsilon_i \quad (8)$$

which allows us to recover τ which is the average marginal tax rate of imputed rent for the whole sample of landlords. The dependant variables are the same as in columns 1 and 3.

Following closely results shown in Table 5, we observe that in the first scenario, all income deciles would face a progressive increase in their income tax payment if imputed rent taxation was reestablished in France while keeping the current fiscal system. In fact, the first and second deciles would pay respectively 0.0034 and 0.0202 euros per net taxable euro concerning imputed rent, which would lead to a marginal taxation of 0.34% and 2.2%. On the other hand, middle-classes in the 5th and 6th deciles would pay respectively 0.115 euros and 0.148 euros per net taxable euro, with marginal rates at 11.5% and 14.5%. Finally, upper classes in the 9th and 10th deciles, would pay 0.173 euros and 0.351 euros per each net taxable euro, which would imply a 17.3% marginal tax rate for the 9th decile and a marginal rate of 35.1% for the 10% highest incomes in France. In addition to this, it can be observed that when only regressing the first scenario on taxable net imputed rent without controlling for income deciles, we see that overall per one net taxable euro in imputed rent, there would be a 0.29 euros increase, which represents a 29% marginal tax rate.

Concerning the second scenario, which consists of simultaneously reintroducing imputed rent taxation and eliminating property tax for homeowners, the fiscal burden is transferred from a local regressive tax to a progressive national tax. Looking at results in column 3 and 4 (Table 5), we can conclude by merely looking at the signs in our coefficients, that the first income deciles would benefit from a decrease in income tax, favouring redistribution. Marginal negative rates for the 30% most modest revenues in France would be comprised between -8.07% (first income decile) and -0.0647% (third income decile). Moreover, for middle classes from the 5th and 6th deciles, marginal rates would represent 5.17% and 9.13%, lower than those calculated for the 1st scenario. Finally, for the highest income deciles, eliminating property

⁵ $Y_i = \Delta Taxation = \tau(w + R) \times (R) - \tau(w) \times (w) - \tau_p$

tax, would lead to marginal tax rates lower than those described in Columns 1 and 3: 11.3% for the 9th decile and 16.9% for the 10th decile. When regression solely the dependent variable on net taxable imputed, the overall marginal tax rate is 14.4%.

VARIABLES	(1) IR current taxation	(2) IR Current System	(3) IR Current System- PT	(4) IR Current System-PT
1st Income decile * R	0.00340*** (0.00112)		-0.0807*** (0.00185)	
2nd Income decile * R	0.0202*** (0.000967)		-0.0580*** (0.00161)	
3rd Income decile * R	0.0674*** (0.000859)		-0.00646*** (0.00143)	
4th Income decile * R	0.0935*** (0.000819)		0.0227*** (0.00136)	
5th Income decile * R	0.115*** (0.000726)		0.0517*** (0.00121)	
6th Income decile * R	0.148*** (0.000627)		0.0913*** (0.00104)	
7th Income decile * R	0.170*** (0.000557)		0.114*** (0.000925)	
8th Income decile * R	0.177*** (0.000481)		0.121*** (0.000799)	
9th Income decile * R	0.173*** (0.000422)		0.113*** (0.000701)	
10th Income decile * R	0.351*** (0.000172)		0.169*** (0.000286)	
R		0.291*** (0.000249)		0.144*** (0.000273)
Constant	3.957*** (0.851)	-241.7*** (1.292)	-256.8*** (1.412)	-366.1*** (1.416)
Observations	347,782	347,782	347,782	347,782
R-squared	0.925	0.798	0.529	0.445

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in column (1) and (2) correspond to the implicit subsidy received by a household because of non imputed rent taxation computed in scenario 1 with the current fiscal system. The dependent variables in column (3) and (4) indicates the change in taxation after the substitution of the property tax by the imputed rent taxation computed in scenario 4. For columns (1) and (2), interaction terms represent the marginal values per income decile based on R in euros.

Table 5: Marginal taxation rate by net taxable imputed rent and income decile

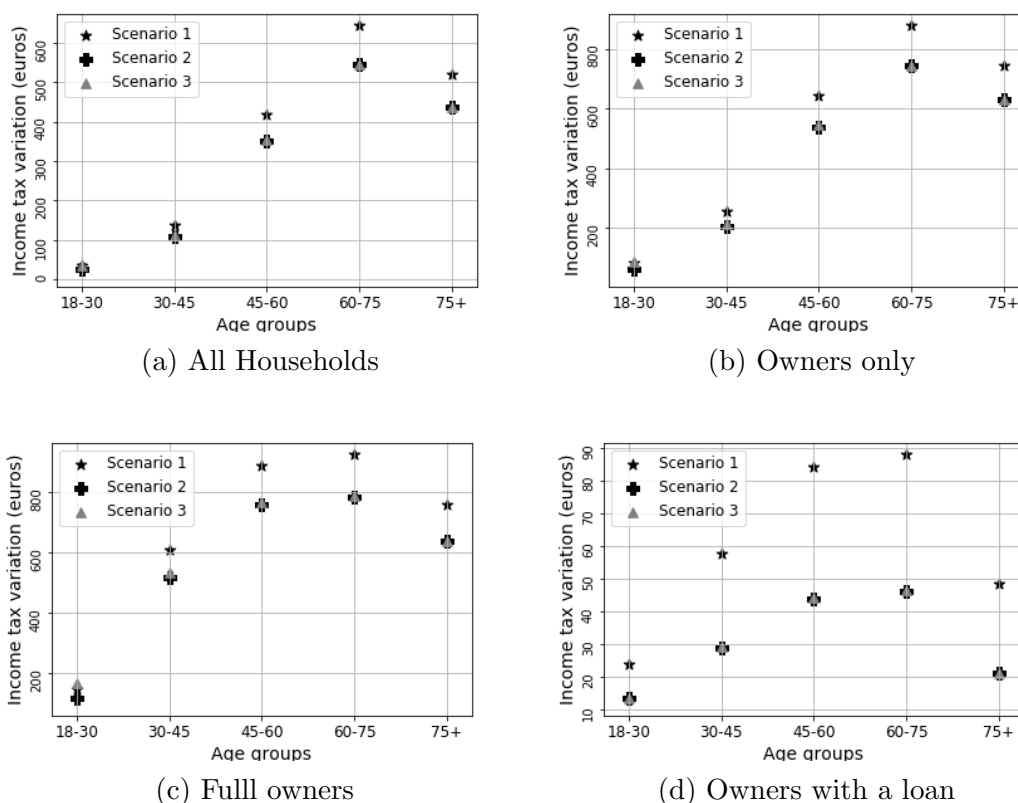
In Table 7 in the appendix, we also report the characteristics of our micro sample of fiscal households. It is worth noting that from our estimates about 1 826 081 mostly from the deciles 3,4 and 5 would become taxed if imputed rents were included in the tax base. Nevertheless, on average their income tax would be lower than 300 euros.

4.3 Non-taxation of imputed rent mainly benefits older households

Figure 8 shows the average subsidy by age groups. Overall results underline that older groups (60-75 year-olds and above 75 year-olds) are the main beneficiaries from non-taxation of imputed rent. The subsidy closely follows the patterns of the net imputed rent received by each generation and the homeownership rate by age group. One can observe that younger households, aged between 18 and 30 years old, only receive a residual subsidy below 20 euros per year while those aged between 30 and 45 receive about 100 euros. (Figure 8). This can be explained by the fact that these generations are respectively mostly tenants or owners with a mortgage and thus would either have to pay any or very low net imputed rent. The average subsidy then rises dramatically for older households who have a higher homeownership rate and are more likely to be full-right owners. Households between 45 and 60 or older than 75 receive a yearly subsidy between 400 and 600 euros while those aged between 60 and 75 years old receive the highest subsidy, amounting up to 600 euros.

These trends are confirmed when we divide homeowners into full right homeowners and owners with a mortgage (Figures 15 and 16 in the Appendix). It can be observed that the average increase is substantially higher for older categories, in particular full right owners in the 45-60 and 60-75 categories. In fact, these age groups save an average of around 850 euros in income tax, whereas the amount would only represent between 40 and 90 euros for mortgage payers from these same age cohorts. Conversely, households under 30 who pay a mortgage, which is the case of the majority of fiscal households of this age group (Figure 7, panel b)) it would account for an average of approximately 15 euros, whereas it would represent around 180 euros for full right owners (less than 0.5 % of total full right homeowners across age groups).

Figure 8: Current Implicit subsidy due to non taxation of imputed rent by age groups



Given results observed in these figures, one can say that in the debate occurring around the potential removal of this hidden subsidy, the inter-generational analysis is a key issue and deserves a particular attention.

The fact that non-taxation of imputed rent mainly benefits older households extends the literature that points at the difficulties of the young on the housing market. For example, Eyméoud and Wasmer (2016) showed that difficulties for the young to access to the rental sector decreased dramatically their mobility and their capacity to find a job. The non-taxation of imputed rent presents two major drawbacks after the recent surge in housing prices. First, it benefits old households who already received important capital gains in the 2000s and have a high level of wealth while other housing policies appear to fail granting access to young and poorer households to homeownership. It is thus reinforcing inequalities between generations. Second, given the growing role of inter-vivos donations in access to homeownership, inter-generational inequalities also have deep consequences on intra-generational inequalities. In such a context, one can question the relevance of a subsidy that ultimately advantages households who benefited from an inter-vivos donation from their relatives to access homeownership.

Figure 9: Variation in Taxation when substituting the property tax with imputed rent taxation by age group

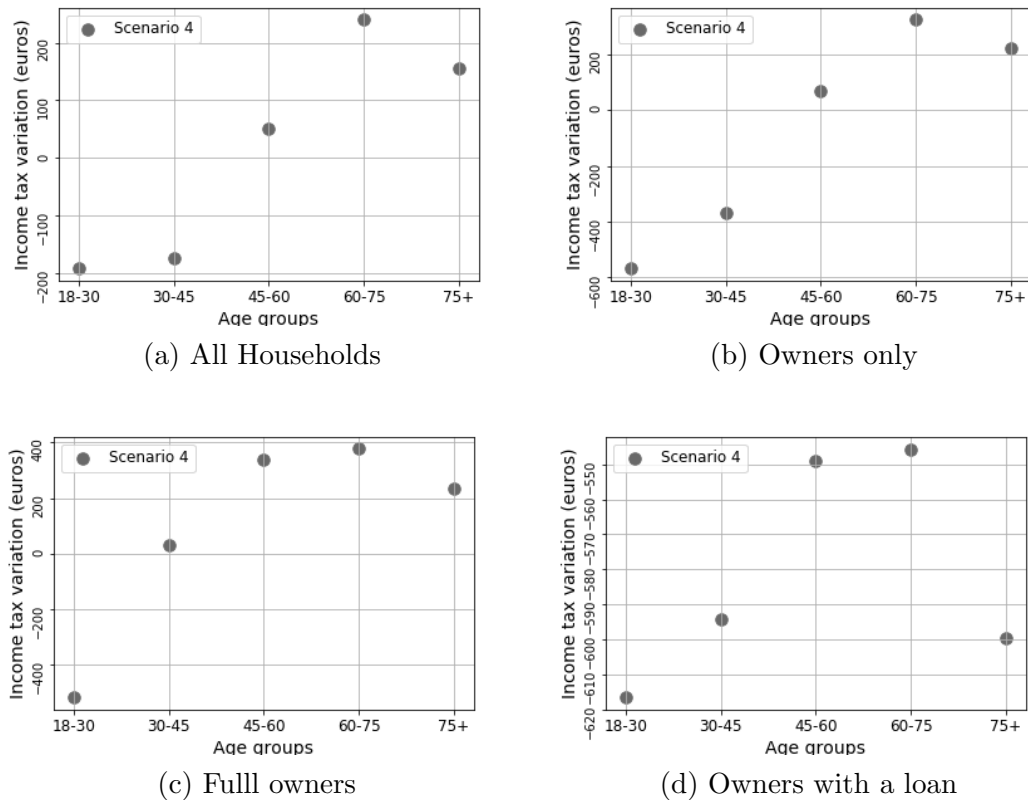
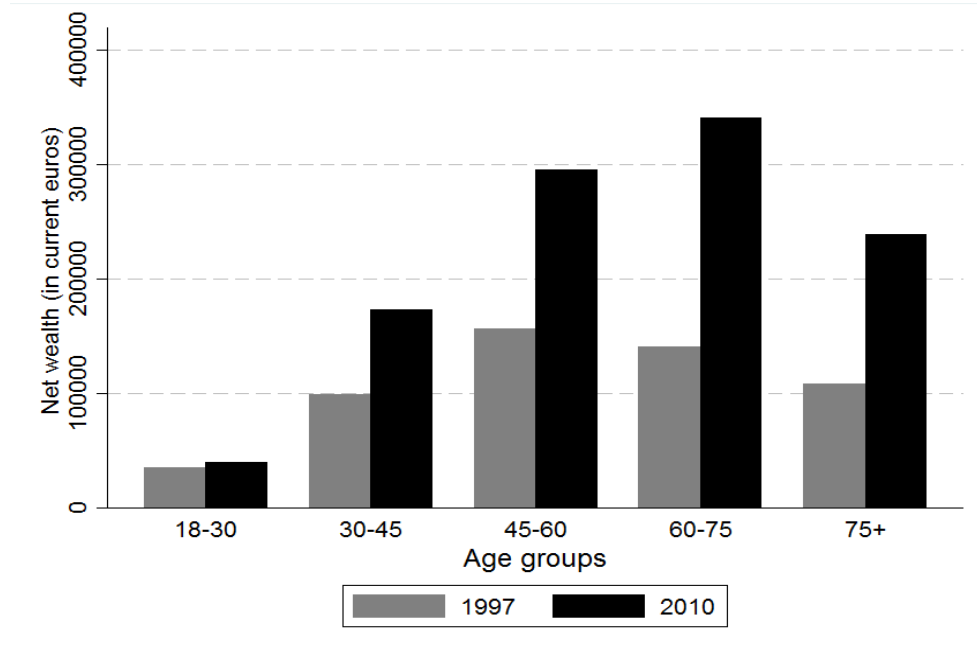


Figure 9 illustrates how age groups would be affected by a substitution of the Property tax with imputed rent taxation for homeowners. As expected such a subsidy would strongly benefit to the youngest and to the owners with a loan. As the youngest have the highest financial liabilities and are on the lowest income brackets. On average young households would benefit from a drop of taxation of around 200 euros while older households would see their taxation level increase by more than 150 euros. The reform would strongly benefit to owners with a loan who would benefit from a drop of 600 euros of their level of taxation. Such a reform would thus constitute a major transfer from the elderly to the youngest households on the short run and could be an interesting response to the increasing wealth inequality resulting from the surge in housing prices. Indeed, when looking at the evolution of the net wealth by age groups as illustrated in Figure 10, one can observe that older generations mostly benefit from the appreciation of the housing wealth while younger households' wealth remained almost stable.

Figure 10: Evolution of net wealth by age group (1997-2010)



Source: Authors' computations from the French wealth survey (1997 and 2010)

4.4 Upper deciles of full right owners are the main beneficiaries

Figure 11 represents the distribution of the subsidy by income deciles. One can clearly observe that non taxation of imputed rent mostly benefits high income households. This is easily explained by two reasons. First, as already mentioned richer households are mostly owners, consume more housing and are less dependent on mortgage funding. Their implicit rent is thus much higher as illustrated in Figures 6. Second, it is important to remember that 50% of the French fiscal households are not paying any income tax because their total income is below the taxation threshold. This casts some doubts on the capacity of such subsidy to increase the homeownership rate, as it benefits mostly to richer households which are already mostly owners. Indeed, increasing the home-ownership rate would require programs mostly focused on poorer households who constitute the vast majority of the tenants. However, we acknowledge the case of low-income retirees that have inherited or bought with past revenues high valued property. Providing targeted fiscal measures could avoid affecting the life standard of the latter.

An additional remark arises when looking at these results. First, as expected the subsidy mostly concerns full right owners who receive an implicit subsidy of 2,000 euros for the top income decile but only between 500 and 800 euros for the deciles 7, 8 and 9. Finally, the subsidy received by the lower deciles is below 500 euros and

almost null for the two first deciles. As far as owners repaying a mortgage are concerned, the yearly subsidy received for the top income decile is slightly higher than 100 euros. As a consequence, one can say that most of the benefit is received by full right owners belonging to the top income decile, while owners with mortgage receive almost no subsidy.

Figure 11: Current Implicit subsidy due to non taxation of imputed rent by income decile

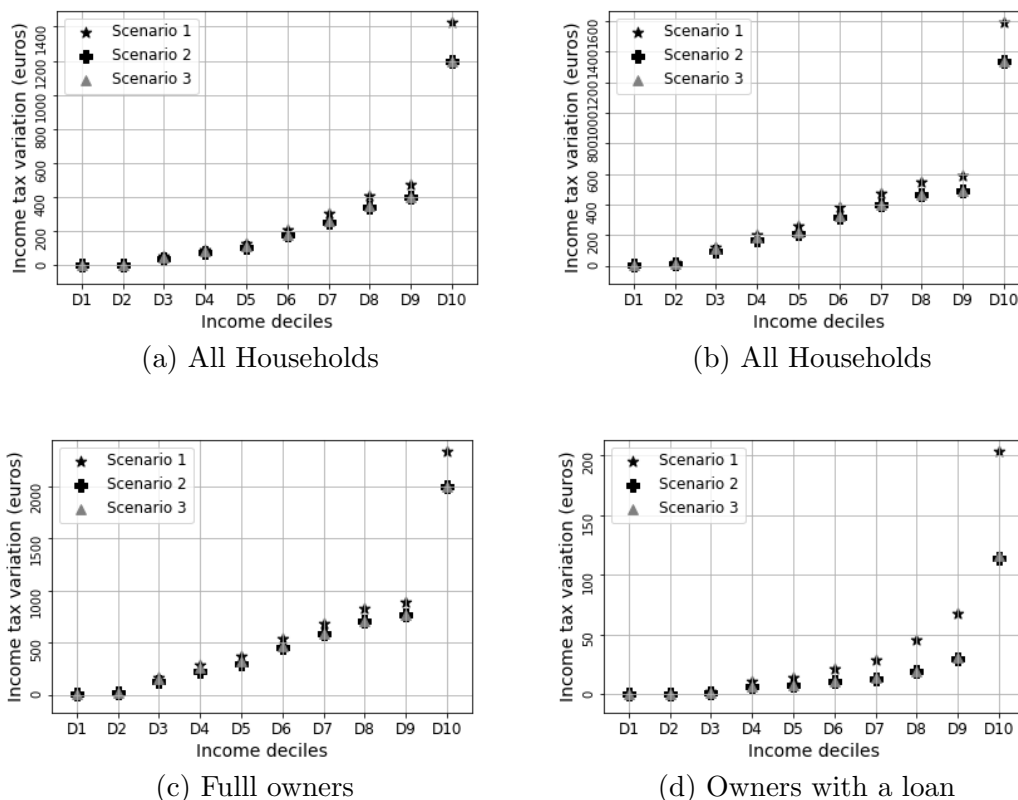
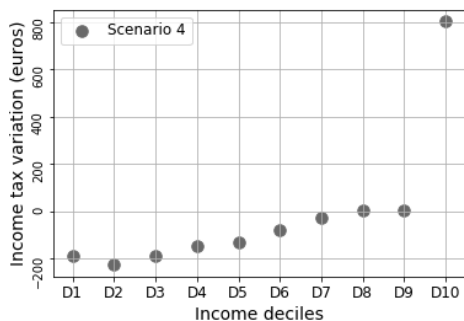


Figure 12 illustrates the redistribution between deciles provoked by a substitution of the property tax by the taxation of imputed rent. It is worth noting that such a reform would mostly benefit to the five first income decile who would see their taxation decrease by 200 euros (500 euros for homeowners of the two first deciles). The reform would be neutral for the deciles 6 to 9 while the tenth decile would see its taxes increase by 800 euros (1000 euros for homeowners). Such a reform would subsidize the households where the homeownership rate is the lowest and tax the households with the highest income and homeownership rate.

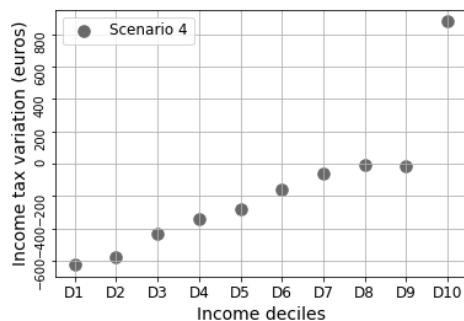
This fact is of particular interest provided that the lowest income deciles went through a dramatic drop of their home-ownership rate. In 1984, 43.6% of the first decile owned their home while they represented only 24.2% of this decile in 2013. On

the other hand, the home-ownership rate of the top income decile increased dramatically going from 74.5% in 1984 up to 89.9% in 2013. Abstracting from the general equilibrium effect, one might hope that such a reform could help to improve the access of the poorest households to home-ownership and partially mitigate the housing burden of these households. Being more progressive and more precisely accounting for the situation of each household, this substitution could prove more useful than alternate policies supporting home-ownership for low and medium income households. Indeed, additional policies developed in order to decrease the cost of home-ownership as subsidized loans (PTZ) have been proved to be relatively inefficient, having a positive impact on housing prices (Labonne and Welter-Nicol (2015)) and resulting to a large extent in a pure windfall effect for potential owners (Gobillon and Le Blanc (2008)). One can expect that as such a tax scheme would mostly benefit to low income households by reducing their fiscal burden and reducing the willingness to pay of households belonging to the highest tax income brackets. It remains unclear whether such a reform would reduce housing price as it provides some incentives to finance homeownership with debts. Nevertheless, provided that the reform decrease the benefits of homeownership for the top income decile, one might hope that such a tax scheme could improve the situation of low income and medium income households on the housing market.

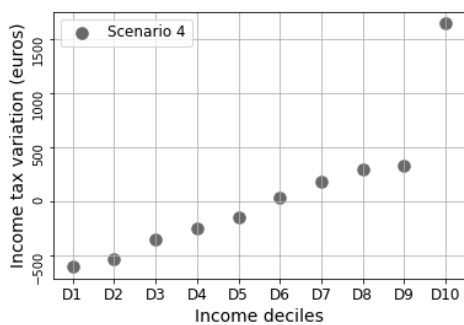
Figure 12: Variation in Taxation when substituting the property tax with imputed rent taxation by income decile



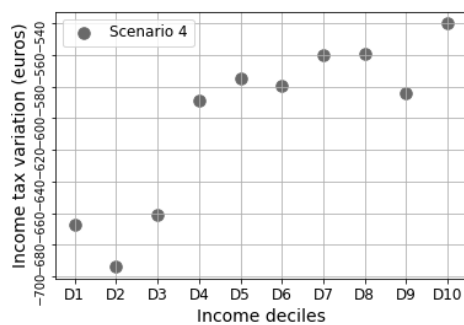
(a) All Households



(b) All owners



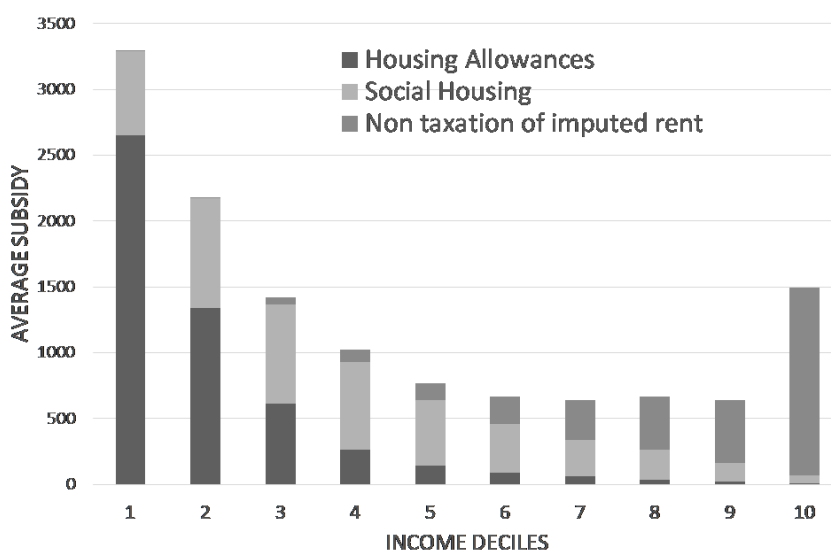
(c) Full owners



(d) Owners with a loan

Finally, in Figure 13, we represent the redistributive profile of the three main housing policies : Housing allowances, social housing (which benefits was estimated in Trevien (2014)) and non imputed rent taxation. It is worth noting that non imputed rent taxation cancels the redistributive profile of the two previous schemes. If the two first deciles receive the largest yearly transfer (respectively 3,200 and 2,200 euros), the third income decile receive as much at the 10th income decile (around 1500 euros). Middle class (deciles 4 to 9) receive about 500 euros. While housing subsidies and in particular housing allowances are often presented as the main redistributive tool of the French fiscal system, it is worth noting that accounting for non taxation of imputed rents tends to attenuate this view as the top income decile appears to benefit much more from the fiscal devices than deciles 4 to 9.

Figure 13: Distributive profile of the three main housing policies



4.5 Potential General Equilibrium effects of Imputed Rent Taxation

A large stream of the economic literature stresses that it should be both more equitable (Goode (1960); Landais et al. (2011)) and more efficient (Bonnet et al. (2017)) to tax imputed rent. In this paper, we showed that on the short run, the substitution of property tax with imputed rent taxation might lead to a large redistribution from the rich to the poors and the older to the youngest. However, this exercise does not allow to account for General Equilibrium effects. As homeownership might turn more or less attractive for some households, prices and rent might vary on the medium run. The large literature on tax incidence lead us to expect a drop in real estate price as households with the highest willingness to pay see their tax on housing consumption increase. Nevertheless, as imputed rent taxation allows for interest rate deduction, part of this first order effect might be compensated by a larger use of real estate mortgage leading to higher property prices (Hilber and Turner (2014)). Under the light

of these contrasted results, one might wonder whether one should allow households to itemize interest rate or whether the tax base should include the imputed rent net of depreciation regardless of interest rate payments.

5 Conclusion

In this paper we showed that non-taxation of imputed rent represents a significant amount of fiscal spending mostly directed toward the richest and wealthiest home-owners with no financial liabilities. Moreover, while reviewing the literature we showed that such a fiscal spending of about 10 billion euros designed to foster homeownership is relatively unlikely to foster homeownership rates and could lead to an overinvestment in housing. We consider that the recent rise in housing prices of the 2000s that led to a divergence of wealth between older and younger generations should re-open the debate on the opportunity to restore a tax on land through imputed rent taxation. From our perspective, the suppression of a subsidy which is mostly captured by the top income decile should not affect owners with mortgage and thus should not be detrimental to access homeownership. Moreover, it would allow to reestablish inter- and intra-generational equity to a certain extent and to stop subsidizing the wealthier households that benefited from unprecedented capital gains in the 2000s or from the inter-vivos donations or inheritances from their relatives.

References

- Allègre, G., Antonin, C., Sterdyniak, H., Touzé, V., et al. (2016). Quelles réformes de l'imposition sur le capital pour les hauts revenus? Technical report, Sciences Po.
- Allègre, G., Plane, M., and Timbeau, X. (2012). Réformer la fiscalité du patrimoine? *Revue de l'OFCE*, (3):231–261.
- Artus, P., Bozio, A., and García-Peñalosa, C. (2013). Fiscalité des revenus du capital. *Notes du conseil d'analyse économique*, (9):1–12.
- Bonnet, O., Chapelle, G., Trannoy, A., and Wasmer, E. (2017). Land is back...and must be taxed. *Sciences Po mimeo*.
- 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.
- De Haan, J. and Diewert, W. (2011). Handbook on residential property price indexes. *Luxembourg: Eurostat*.
- Dietz, R. D. and Haurin, D. R. (2003). The social and private micro-level consequences of homeownership. *Journal of urban Economics*, 54(3):401–450.

- Driant, J.-C. and Jacquot, A. (2005). Loyers imputés et inégalités de niveau de vie. *Economie & Statistique*.
- Eyméoud, J.-B. and Wasmer, É. (2016). *Vers une société de mobilité: les jeunes, l'emploi et le logement*. Presses de Sciences Po.
- Fack, G. (2005). Pourquoi les ménages pauvres paient-ils des loyers de plus en plus élevés?[l'incidence des aides au logement en france (1973-2002)]. *Économie et statistique*, 381(1):17–40.
- Figari, F., Paulus, A., Sutherland, H., Tsakloglou, P., Verbist, G., and Zantomio, F. (2017). Removing homeownership bias in taxation: The distributional effects of including net imputed rent in taxable income. *Fiscal Studies*, 38(4):525–557.
- Glaeser, E. L. and Sacerdote, B. (2000). The social consequences of housing. *Journal of Housing Economics*, 9(1-2):1–23.
- Gobillon, L. and Le Blanc, D. (2008). Economic effects of upfront subsidies to ownership: The case of the prêt à taux zéro in france. *Journal of Housing Economics*, 17(1):1–33.
- Goode, R. (1960). Imputed rent of owner-occupied dwellings under the income tax. *The Journal of Finance*, 15(4):504–530.
- Guillot, M. and André, M. (2014). 1914 - 2014: one hundred years of income tax in france. *IPP Policy Brief*, (12):0–5.
- Haig, R. M. (1921). The concept of income-economic and legal aspects. *The federal income tax*, 1(7).
- Hilber, C. (2012). *The determinants of homeownership across europe: Panel data evidence*. Christian Hilber.
- Hilber, C. A. and Turner, T. M. (2014). The mortgage interest deduction and its impact on homeownership decisions. *Review of Economics and Statistics*, 96(4):618–637.
- Labonne, C. and Welter-Nicol, C. (2015). Cheap credit, unaffordable houses? *Débats économiques et financiers de la Banque de France-ACPR*.
- Laferrère, A., Pouliquen, E., and Rougerie, C. (2017). *Les Conditions de logement en France*. Insee.
- Landais, C., Piketty, T., and Saez, E. (2011). *Pour une révolution fiscale: un impôt sur le revenu pour le 21 ème siècle*. Seuil.
- Modigliani, F. and Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American*, 1:3.
- Piketty, T. (2014). Capital in the 21st century. *Harvard University Press, Cambridge*.

- Piketty, T., Saez, E., and Zucman, G. (2013). Rethinking capital and wealth taxation. *Working Paper, Paris School of Economics*.
- Rohe, W. M., Van Zandt, S., and McCarthy, G. (2013). The social benefits and costs of homeownership: A critical assessment of the research. *The affordable housing reader*, 40:00–01.
- Saarimaa, T. (2011). Imputed rental income, taxation and income distribution in finland. *Urban Studies*, 48(8):1695–1714.
- Simons, H. C. (1938). *Personal income taxation: The definition of income as a problem of fiscal policy*. University of Chicago Press.
- Sommer, K., Sullivan, P., and Verbrugge, R. (2013). The equilibrium effect of fundamentals on house prices and rents. *Journal of Monetary Economics*, 60(7):854–870.
- Trannoy, A. and Wasmer, É. (2013). La politique du logement locatif. *Notes du conseil d'analyse économique*, (10):1–12.
- Trevien, C. (2014). Habiter en hlm: quel avantage monétaire et quel impact sur les conditions de logement? *Economie et statistique*, 471(1):33–64.
- Yates, J. (1994). Imputed rent and income distribution. *Review of income and wealth*, 40(1):43–66.

A Appendix

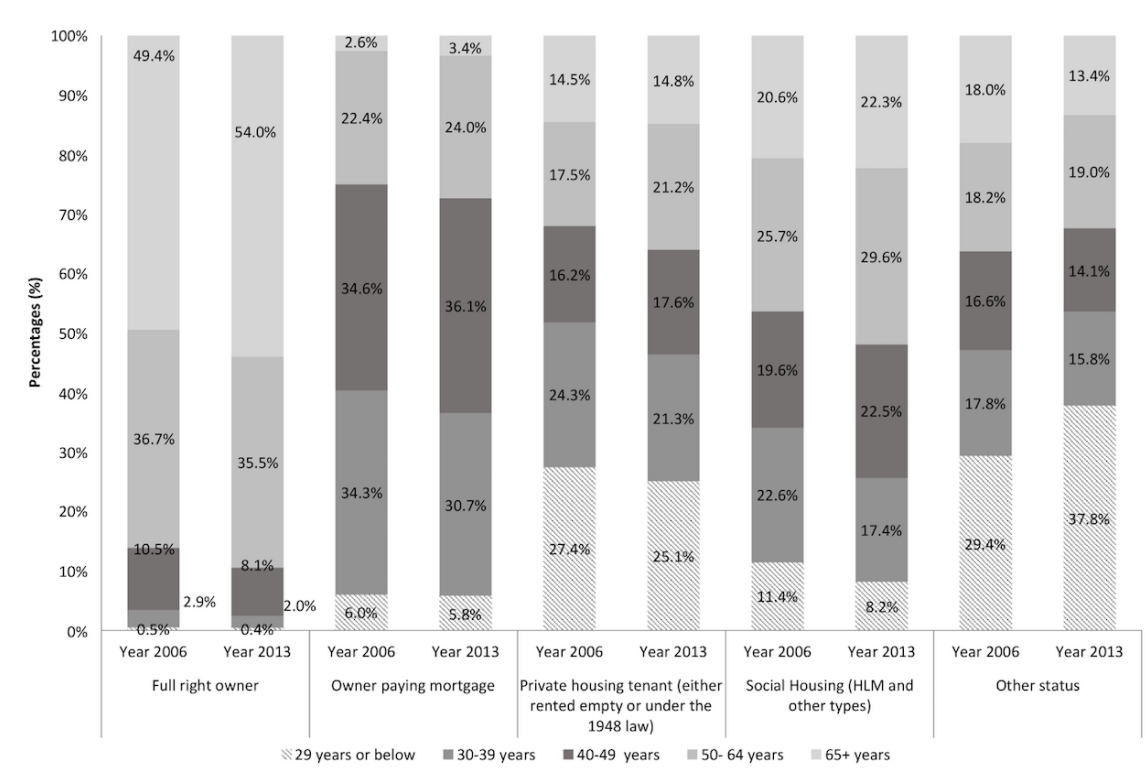


Figure 14: Homeownership status by age groups

Source: Authors' computations from the French housing survey (Enquête Logement) 2006 and 2013.

Stacked bars above represent the evolution of homeownership status by age groups between 2006 and 2013. The left axis accounts for the percentage of each age group within each homeownership status either in 2006 or 2013.

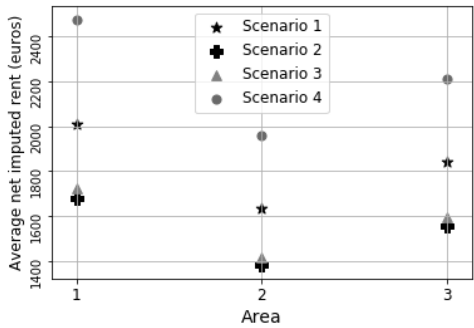
Contributors	Amount of TFPB	percent
Owners with mortgage	3.392	19.8%
Owners outright	6.767	39.49%
Landlords	2.815	16.4%
Social Housing	2.094	12.2%
Others	2.063	12%
All	17.137	100%

Table 6: Property Tax income by source

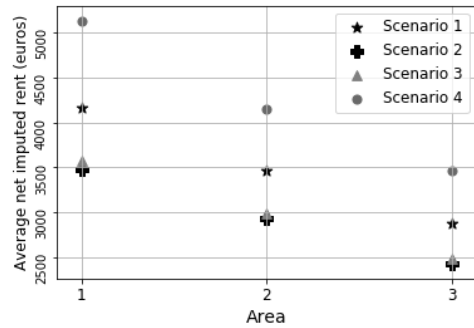
	All	Never taxed	Become taxed	Always taxed
Number	35 55 9744	13 023 974	1 826 081	20 709 694
Average imputed rent	2750.89	1374.63	5266.81	3394.55
Average tax without imputed rent	1505.73	0.00	0.00	2585.42
Average tax with imputed rent	1780.99	0.00	291.69	3032.34
Average tax savings	275.26	0.00	291.69	446.92
Demographics				
Married (%)	35.88	22.20	34.25	44.63
Women (%)	45.27	26.37	31.36	58.39
average age	48.27	45.39	61.15	48.94
Age Groups				
18-30 (%)	20.98	27.93	10.01	17.57
30-45 (%)	28.33	30.27	14.20	28.35
45-60 (%)	24.28	19.01	18.22	28.13
60-75 (%)	14.51	10.41	26.90	15.99
> 75 (%)	11.90	12.38	30.67	9.95
Area				
Area 1 (Paris) (%)	13.28	9.27	7.24	16.34
Area 2 (other agglomerations) (%)	32.83	34.30	28.22	32.31
Area 3 (others) (%)	53.89	56.43	64.54	51.34
Gross Income Deciles				
1	10	27.47	0.01	0.00
2	10	26.67	3.32	0.00
3	10	20.48	25.47	2.04
4	10	10.43	25.82	8.33
5	10	6.73	21.44	11.05
6	10	3.90	14.61	13.43
7	10	2.36	4.13	15.32
8	10	1.20	2.56	16.19
9	10	0.43	1.51	16.77
10	10	0.32	1.13	16.87

Table 7: Descriptive statistics of beneficiaries' socio-demographic traits

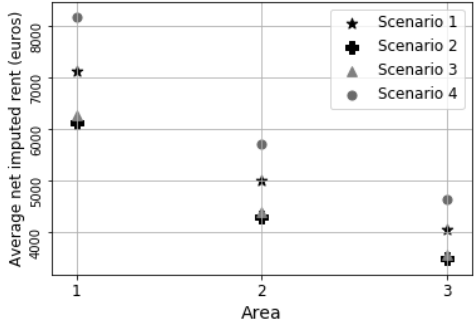
Figure 15: Net Taxable Imputed Rent by area



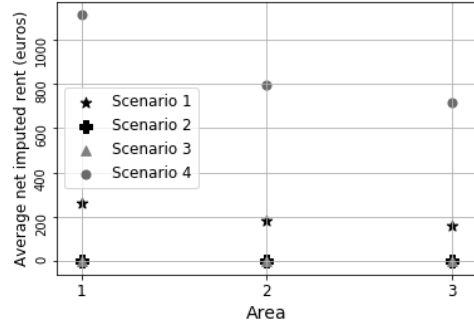
(a) All Households



(b) All owners



(c) Full owners



(d) Owners with a loan