



Equity and Neutrality in Health Care Taxation

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EQUITY AND NEUTRALITY IN HOUSING TAXATION

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Abstract

Equity and neutrality are distinct concepts in housing taxation and weak and strong tenure neutrality should be distinguished. When a tax system is tested for those criteria, the taxes paid by landlords must be included, as they affect the rents renters pay. This paper defines appropriate tests, applies them to a stylised tax system and simulates tax changes designed to restore equity and/or neutrality. It shows how the homeowner's implicit income should be computed for taxes to be fundamentally tenure neutral or equitable or both. And it shows the key role played by the differential in producing housing services under owner-occupation and renting.

Keywords: Housing taxation, tenure choice, tax equity, tax neutrality

JEL Classification: R21, R31, H21

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1. Introduction

The tax advantage to homeowners is traditionally measured by reference with full imputation of the implicit rent (e.g. Aaron, 1970). The implicit rent is taken to be the market rent for an equivalent dwelling, from which the homeowner should be allowed to deduct mortgage interest and operating costs. There are two problems with that approach, one practical and one conceptual. The practical problem is estimating the market rent for an equivalent dwelling, or the rent at which the homeowner could let his dwelling to a renter, or the rent a landlord would charge him for that dwelling. Sometimes national averages are used to eliminate quality differences, but the 'average' rental apartment is certainly of lower quality than the 'average' owner-occupied housing unit.

The conceptual problem is simply that it is not clear why the market rent for the dwelling should be used to measure the homeowner's implicit income, and even less why he should be taxed on that basis. Feldstein (1976) challenged that view, so it is necessary to return first to basic principles of equity and neutrality of housing taxation. We do so in this paper, where we show how the homeowner's implicit income should be computed for tax purposes.

A related branch of the literature examines the relative costs of owner-occupied and rental housing and their impact on tenure choice (e.g. Rosen and Rosen, 1980, Hendershott and Schilling, 1982). It generally concludes that personal income tax advantages can substantially favour home ownership (Rosen, 1984). In fact, that literature shows that the user cost for owner-occupied housing is a smaller proportion of the dwelling's price than the user cost of rental housing, but that might be offset by a premium for dwellings sold to owner-occupiers. The tax advantages could be capitalised in higher house prices (Capozza, Green and Hendershott, 1999).

That literature yields no straightforward indication about the neutrality of housing taxation. Indeed, differences in user costs mingle differences in tax treatment and differences in production costs. In addition, there exists some confusion about the meaning of neutrality. Tenure neutrality is generally interpreted as equal costs for rental and owner-occupied housing, presumably of the same quality. Haffner (2003) provides an overview of the possible meanings of tenure neutrality, ranging from equal cash outlays by renters and homeowners to equal public spending for either mode. She concludes that equality of user costs is the appropriate concept: 'if user costs differed between tenures, they could be equalized, in order to remove any distortion of consumers' choice' (p. 84). In that interpretation, a public policy seeking tenure neutrality would iron out all differences in user costs created by housing and tax policy but also by market forces. Lundqvist (1986) goes even farther: 'A neutral policy would include legal measures to make tenure alike in terms of freedom of disposal and security of tenure. Systems of housing finance, and terms of repayment, would be structured in such a way as to neutralise the impact of ability to pay on household choice of tenure' (p. 16). Note however that he does not operationalise those concepts.

We shall argue that such requirements go too far. They attempt to make all players equally strong where levelling the playing field and letting the best win is more conducive to efficiency. Instead, we shall define a tenure neutral tax and subsidies system as one that preserves the ordering of user costs – that tenure which is cheaper before tax is still cheaper after tax. Under certain

conditions, a stronger neutrality condition might be warranted – a tax system is strongly neutral if it preserves the absolute difference in user costs.

When neutrality is carefully defined, it appears that it is not equivalent to equity: an inequitable tax system might well be neutral, by favouring that tenure which is already cheaper. An equitable tax system might not be neutral, if tenure choice depends on the absolute difference in user costs and taxes narrow that difference.

Public finance analysts are familiar with testing the equity of a tax system for household categories by considering what incomes are included in the tax base and what deductions are allowed. They seldom consider the taxation of commodities, even when its incidence is higher prices. Indeed, it is held that these taxes are like consumption taxes, that all households bear them similarly in proportion of their consumption. That is not true for the largest item in most households' budget: housing. Taxes levied on the production of rental housing services – taxes paid by landlords – are not borne by homeowners. This paper shows that landlord taxation must be included in the examination of the equity and neutrality of housing taxation, and how to do so.

Obviously tenure choice cannot be reduced to a comparison of user costs (Shelton, 1968), but it is a component of that choice that public authorities can influence, mainly through taxation. Numerous countries encourage home ownership through tax advantages. Some European authorities may appear less generous, as they tax an imputed income for the homeowner. This contribution will define the benchmark with which the tax systems ought to be compared in order to determine the generosity of tax advantages granted to homeowners.

User costs depend on particular circumstances: the type of landlord, the terms at which he can borrow funds compared to the homeowner, the types of dwelling occupied, the length of residence and the holding period, the timing of purchase and sale over the real-estate cycle, the performance of the local housing market, and so forth. No tax system can be tenure neutral under all circumstances. Our goal here is to define a tax system that is fundamentally tenure neutral, i.e., it is tenure neutral when the economic differences between the two tenures are reduced to plain structural differences.

2. User Costs in an Intertemporal Setting

The relevant cost in the comparison of housing tenures is the user cost. For the homeowner, that cost is commonly defined to include actual outlays – interest, operating costs, taxes – as well as components that imply no expenditure – tax savings, the opportunity cost of equity, capital gains or losses. For the renter, the user cost essentially corresponds to rent paid, possibly lowered by personal housing aid. It might seem that computing user costs is easy: just observe the relationship between rental rate and price of apartments that exist on the market and use it in the comparison. That is not sufficient, however, when one wishes to assess the incidence of taxation on tenure choice. Indeed, that assessment cannot be restricted to the taxes paid directly by the renter or the homeowner. As important are the taxes the landlord pays, if they are passed on through higher rents.

More careful analysis compares particular rental and owner-occupied units, selected to be comparable. Elsinga (1996) does so for the Dutch Randstad. She interviews households about the purchase price of their housing, which allows her to set up a sort of price index, as they bought their houses at different dates. The change in that index is a central component in her annual user cost of owner-occupied housing; so much that it dominates the comparison in user costs. During the first half of the 1980s, when house prices were stable, the user cost of owner-occupied housing was higher than that of rental housing. The strong rise in house prices during the second half of the 1980s exactly reverses the comparison. The mortgage interest rate also plays an important role in the comparison, as it affects only the user cost of owner-occupied housing.² A surprising result of Elsinga's work is that rents do not reflect those changes in interest rates and real-estate prices: they grow perfectly monotonously in the Netherlands. She thus shows that homeowners are exposed to considerable risks, risks that landlords seem to absorb completely when they set rents. As a result, home ownership, just like common stocks, is an asset that can only be recommended to investors who calculate their returns over a very long horizon – or who do not care about true costs.

User costs are generally computed year after year. It may then be more advantageous to own one's home in a certain year, when real estate prices grow and interest rates are low, and less advantageous the next year, when prices decline and interest rates rise. To obtain a general result on the relative costs of owner-occupied housing, one could compute the user costs over several years. Still, the date of purchase – peak or trough – would remain crucial. It is also essential to choose well when taking up a fixed-rate mortgage (the vast majority of mortgage credits in the Netherlands).

In those comparisons of user costs, annual changes in real-estate prices and interest rates dwarf all other differences between renting and owning, notably tax differences. Nevertheless, landlords also bear those changes and they must certainly pass them on to their tenants. The competition among landlords and the comparison with other investments force them to do so. Apparently, it is sufficient for them to pass those costs over a long horizon. Certainly the homeowner computes his costs over more than one year, so that the comparison of annual user costs cannot explain tenure choice.

We wish to develop here a model that makes it possible to compare user costs over long horizons, so as to evidence stable underlying determinants, such as taxation. That model describes the average user costs, without computing the mean of annual user costs. On the side of the homeowner, it resembles closely the usual models of user costs, including capital and operating costs. On the renter's side, the user cost corresponds essentially to the rent, but that rent is computed to reflect the landlord's costs (as in Shelton, 1968, and Poterba, 1990). We therefore admit that the landlord passes those costs on to his tenant in such a way that he earns his required return over the whole investment period (and not in one individual year).

We assume that the household that considers buying or renting its home is the *alter ego* of the landlord. It rents or owns the same housing unit, has the same alternatives for investment and

² Localisation has no great incidence for its part. Indeed, the evolution of prices is rather uniform over the different parts of the Randstad.

locates in the same tax brackets.³ It even pays the same price when buying the dwelling, because the seller cannot tell whether the buyer will rent it out or occupy it himself, so there is no capitalisation of tax advantages.

That last assumption eliminates another possible difference between the user costs of renting and owning: differential price appreciation. Indeed, so long as rental and owner-occupied dwellings are on the same market, price appreciation must be the same. As a consequence, capital gains taxation only creates a wedge in user costs by being charged at the date of sale rather than on accrual. The longer the holding period, the lower the effective tax on capital gains, simply by deferral of taxes. In addition, capital gains tax rates are sometimes made to decrease for longer holding periods. Such capital gains taxation together with transfer taxes are a higher burden for shorter holding periods. Should that be included in the test of the tenure neutrality of the tax system? Our claim is that it should not. Indeed, that is a (deliberate) discrimination between shorter and longer holding periods, not between renting and owning. Only if it were proven that one tenure had fundamentally shorter holding periods should capital gains and transfer taxes be introduced into the test of tenure neutrality.

One fundamental economic difference between renting and owning we shall allow for. That is different costs of producing housing services depending on whether a renter or a homeowner occupies the apartment, due for instance to management costs and faster depreciation for rental housing. We shall thus focus on differences between the costs of renting and owning that are introduced by the tax system and by 'production costs'.

Obviously, landlords need not be the same people as homeowners, tax differences having the potential to encourage a certain specialisation. However, in the largest rental market of all OECD countries, that of Switzerland, 57.4% of all rental dwellings belong to individuals (2000 census). Even in that country, rental units are not the same as owned apartments: Among owner-occupied dwellings the share of single-family houses is 57% while that share is only 5% among rental dwellings (2000 census). Shelton (1968) saw the rental and owner-occupied markets as related though separated. Ten years later, White and White (1977) emphasised that rental and owner-occupied housing are substitutes in supply, not only for developers but also for landlords who have the option to sell their dwellings to individual households, possibly the renters themselves.

It is not quite correct either to ignore the impact of taxes on prices and quantities (except rents, landlords being assumed to pass housing taxes on to their tenants). At this first stage, however, we wish to concentrate on the tax system in partial equilibrium (as opposed to a general equilibrium with endogenous prices and categories of owners and renters). This is a common and quite acceptable approach when comparing two assets – owner-occupied and rental housing – that are not taxed that differently after all.

³ Those are assumptions similar to the setting of Giertz and Sullivan (1978), who compare a homeowner with an identical tenant who invests his equity in rental housing rented to a third party.

3. The Users Costs of Renting and Owning

When choosing tenure, a household endowed with wealth W compares, among other things, the cost of each solution:⁴

$$K^O + T^O \Leftrightarrow R + T^R - OCF \quad (1)$$

where K^O encompasses all operating costs for the owner-occupant (maintenance,⁵ repair, gardening, insurance, electricity, water, heating, property tax) as well as interest paid on the mortgage, T^O encompasses all taxes paid by the owner-occupant in direct connection with his dwelling, R is the rent he would pay on the rental market for the same dwelling, T^R designates taxes that are specific and related to renting, and OCF (opportunity cost of funds) is the income the household would earn from investing its wealth W in other assets than its own home. In place of T^R there could be an allowance for rents in the definition of taxable income,⁶ or, at this stage, any form of direct housing subsidy reserved to rental housing (in which cases $T^R < 0$).

The terms on the left-hand side of condition (1) are the outlays for the household if it owns its home, whereas the terms on the right-hand side represent the costs of renting, reduced by the return on 'free' wealth. The user cost of rental housing (U^R) is usually defined as the rent, without deduction of income earned on wealth that would otherwise be locked in one's dwelling. Therefore, that income passes on the other side of condition (1) to truly become an opportunity cost of funds, part of the user cost of owner-occupied housing (U^O):

$$U^R = R + T^R \quad (2)$$

$$U^O = K^O + T^O + OCF \quad (3)$$

The homeowner could have invested his equity W in a financial asset that yields total return i for comparable risk and liquidity. He would have had to pay taxes T on that income. Replacing those terms for the opportunity cost of funds, the user cost of owner-occupied housing becomes:

$$U^O = K^O + T^O + iW - T \quad (4)$$

The comparison of the tax treatment of owner-occupied with rental housing should not be tainted by differences of dwelling type. That is why R was defined for condition (1) as the rent the household would have to pay for the same dwelling if it were put up for renting. Equally, that comparison of tax treatment should not be tainted by the particular nature of the landlord. Therefore, we shall assume that the landlord for the rental option is a household identical to the

⁴ Price appreciation will be dealt with below.

⁵ Spending for maintenance is assumed sufficient to prevent physical depreciation.

⁶ Such allowances exist in four Swiss cantons out of 26, with the purpose of setting tenants on a more equal footing with homeowners. In one canton, all taxpayers are allowed to deduct from their taxable income that part of their annual rent (or imputed rent) that exceeds 20 percent of their net income, with a ceiling. Since imputed rents are set rather conservatively, it is essentially tenants who benefit from that allowance. In two cantons, tenants may deduct 20% of their rent with a ceiling. In one canton, tenants are allowed a fixed amount.

owner-occupant, using the same wealth to purchase the same dwelling at the same price (presumably the seller of the dwelling would not know whether the purchaser buys it for his own use or for letting). However, there are differences. The landlord faces his own set of taxes, denoted T^{LL} . More fundamentally, operating costs K^{LL} for the landlord may be different from those of the owner-occupant because they include management fees (manager, janitor) and because a rented apartment might wear faster and require more maintenance. There is not much evidence on those differences, probably because its sign is pretty obvious. The main argument was developed by Shilling et al. (1991): landlords cannot monitor and charge to their tenants all the damage they have done. The problem is to measure the consequences of that principal-agent problem because in the reference situation, that of owner-occupied housing, spending for wear and tear is undistinguishable from spending for home improvements. Thus, when Shilling et al. (1991) showed that single family houses occupied by renters depreciate faster than those that are occupied by their owner, that might simply mean that homeowners choose to spend more for maintenance, not that they have to. Harding et al. (2000), used similar data to show that highly indebted homeowners spend less for maintenance, which might indicate that maintenance spending depends more on the funds available than on the actual wear and tear.⁷ Thus, the data on maintenance spending and housing depreciation are not easily informative about underlying wear and tear. What is needed is data on spending required to maintain a dwelling at constant quality. Short of such data, we shall adopt the central principal-agent argument of Shilling et al. (1991): renters impose higher maintenance costs on landlords than homeowners would have to spend to maintain the constant quality of their dwelling.

The landlord could have invested his equity W in the same financial asset as the renter, which was also used to determine the opportunity cost of funds for the homeowner. His arbitrage condition that defines the required rent R is therefore:

$$R - K^{LL} - T^{LL} = iW - T \quad (5)$$

Thus, the required rent is

$$R = K^{LL} + iW + T^{LL} - T \quad (6)$$

The required rent is equal to the production cost of housing services (operating and financial costs, including the required return on equity), augmented by taxes the landlord pays but reduced by the taxes he would have had to pay on his reservation investment. When the market rent is equal to the required rent, the user cost of rental housing can be written:

$$U^R = K^{LL} + T^{LL} + iW - T + T^R \quad (7)$$

If the market rent is equal to the required rent defined in (6) and the opportunity cost of funds for the owner-occupant is defined as in (4), then the difference in user costs is:

⁷ Harding et al. (2000) actually develop a different explanation for that result. They believe that highly indebted homeowners consider the option to default, in which case maintenance spending is of no advantage to them. They even develop a further idea in response to Shilling et al. (1991), that homeowners do not bear the full consequences of poor care and maintenance, just like the renters, because future buyers also fail to measure all damages. This is not confirmed by their data.

$$U^R - U^O = K^{LL} - K^O + T^{LL} + T^R - T^O \quad (8)$$

The market rent is equal to the required rent under either of two opposite sets of conditions: perfect competition or effective rent control that forces landlords to lower their rents to the level of costs. In Switzerland, rent regulation applies that allows renters to challenge a rent that yields the landlord a higher than 'normal' return, which is defined as the reference mortgage interest rate plus a small risk premium. On market with free rent setting, it is an empirical question whether competition is sufficient to force landlords to pass their costs and cost savings on to their tenants. Blackley and Follain (1996) found, with the help of a dynamic econometric model for the United States' rental housing market, that a 10 percent increase in landlord costs has rents increase by 6 percent, but only after 200 years. After five years, real rents are only 1 percent higher and 1.7 percent after ten years. DiPasquale and Wheaton (1992) had even estimated a smaller impact on rents, of the order of 0.8 percent for a 10 percent shock.

To save our assumption of rents equal to costs, we could argue that even if it takes a long time for production cost changes to translate into changes in rents and the translation is only partial, rents may still best be explained by production costs, provided they do not change too often. That defence is not necessary. Suppose that landlords earn a better than required return. Then, the homeowner missed the opportunity to earn that better return because he could have been a renter and used his equity to buy rental housing. The missed return is the landlord's income on the left-hand side of equation (5). Using that value for OCF in equation (3), the user cost of owner-occupied housing becomes:

$$U^O = K^O + T^O + R - K^{LL} - T^{LL} \quad (9)$$

This user cost of owner-occupied housing is not the same as in equation (4) when the landlord's arbitrage condition (5) does not hold. However, the difference in user costs would still be given by (8): just subtract (9) from (2) and see how R washes out. Thus, it is not necessary that rents be equal to costs for the difference in the user costs of rental and owner-occupied housing to reduce to the right-hand side of equation (8).

To see the intuition behind this result, consider a situation where housing shortage allows landlords to charge rents that exceed their costs and earn an extraordinary return. The homeowner escapes the rise in rent that the renter must bear, but on the other hand he forgoes the option to earn that extraordinary return, his wealth being locked in his dwelling. Overall, he is indifferent to the rise in rents.

Finally, the difference between the user costs of renting and owning depends on the difference in financial and other costs incurred in providing housing services, see equation (8). It depends not only on the taxes paid by the renter and the owner-occupant but also on the taxes paid by the landlord (T^{LL}). Thus, it is essential, when testing the incidence of the tax system on tenure choice (i.e. tenure neutrality) not to forget the taxes paid by the landlord as they add to the user cost of rental housing. If the costs of producing housing services are the same for rental and owner-occupied housing, the difference in user costs reduces to a difference in taxes. Without taxes, the user costs of rental and owner-occupied housing differ by the production costs.

The difference in user costs is quite robust to the investment options assumed for the household that chooses to rent and to the relationship between rent and costs. Separate user costs are not. For most of the analysis to come, we shall use only the difference in user costs. Nevertheless, it will be necessary to consider the impact of taxes on the separate user costs, e.g. in assessing whether some tax solution encourages housing consumption or housing investment by lowering user costs. In that case, we shall retain the assumption that the opportunity cost of funds for the owner-occupant is given by the financial alternative and that rents are equal to the net costs for the landlord. Then, the separate user costs are those of equations (7) and (4). For later use, let us define benchmark user costs that obtain from these in the absence of all taxes (assuming that taxes have no impact on before-tax production costs):

$$U^{R*} = K^{LL} + iW \quad (10)$$

$$U^{O*} = K^O + iW \quad (11)$$

4. Reference Income for Tax Equity

We shall consider housing taxation from the point of view of neutrality but also of equity, defined simply as the condition that taxes paid reflect capacity to contribute. Capacity to contribute is generally measured by income. Suppose, however, that there exists a commodity that all households must buy, but it comes at two prices: a low price reserved to some households and a high price for all the others. Households that may buy the commodity at the low price have higher income available for other goods. Should capacity to contribute not take that advantage into account? We believe that it should.

The commodity we have in mind is of course housing, which comes at one price as owner-occupied housing and at another as rental housing. Owner-occupied housing is out of reach for many households. If it is a cheaper arrangement, for instance because $K^O < K^{LL}$, households that can benefit from it have higher capacity to contribute. Let us call 'available income' the income after housing costs. Consider the household that compares owner-occupation with renting as in equation (1). If it owns its dwelling, its available income is, in the absence of taxes:

$$Y^{O*} = Y - K^O \quad (12)$$

where Y is regular income. If the same household rents its dwelling and invests its wealth in financial assets, its available income is

$$Y^{R*} = Y - R + iW \quad (13)$$

It may be difficult to accept that taxes should depend on income reduced by optional consumption spending (for housing). Indeed, that approach should not be used to compare the taxes paid by two households in the same tenure that decide to spend different amounts for housing. It is only valid for examining how taxes discriminate between a renter and a homeowner when it is the same household occupying the same dwelling in two different tenures. This is the narrow sense in which

tax equity is defined here, with focus on tenure. Alternatively, the implicit investment income of the owner-occupant could be measured by market rent. We shall show that such an assumption leads to the same income differential between renting and owning.

The difference in pre-tax available incomes is

$$Y^{O*} - Y^{R*} = R - K^O - iW \quad (14)$$

We obtain that the difference in available incomes is equal to the difference between the price the renter must pay for housing services and the cost of their production for the homeowner, including the opportunity cost of funds. One arrives at the same expression when assuming that owning ones home generates an implicit income equal to the rent the homeowner could earn by renting the apartment out on the market.⁸

The household does not necessarily have the same available income whether it owns or rents its home, so equity does not require it to pay the same amount of taxes in both cases. However, it requires the household to pay the same amount of taxes in both tenures if available incomes are equal (horizontal equity) and to pay more taxes in the tenure that leaves more available income (vertical equity). We wish to add an additional condition: the available income that is higher before taxes should not be lower after taxes for that would amount to a marginal tax rate of more than 100 percent on the production cost advantage of the cheaper tenure.⁹ A tax system that is equitable under those conditions leads to after-tax available incomes that are closer than before-tax available incomes. An equitable tax such as a proportional tax or progressive tax on the available incomes defined in equations (12) and (13) would lower the difference between available incomes in equation (14).

The problem is that equation (14) does not represent the difference in available incomes before all taxes. It does not take into account taxes paid by the landlord. Because of those taxes, the rent R differs from the production cost $K^{LL} + iW$ of rental housing services. Replacing its value from equation (6) into equation (14) yields:

$$Y^O - Y^R = K^{LL} - K^O + T^{LL} - T \quad (15)$$

where $T^{LL} - T$ is the difference in taxes the landlord pays when investing his equity in rental housing instead of the reservation asset.

It is perfectly possible that the production cost is higher for rental than for owner-occupied housing services ($K^{LL} > K^O$), but that rental housing is a tax shelter (e.g. thanks to accelerated depreciation allowances), so that $T^{LL} < T$. In that case, the available income of the owner-occupant is higher than that of the renter in the absence of any tax (eq. (15)), but the renter could have greater income when the landlord's tax saving is passed down to him (Titman, 1982). A proportional personal tax on the available incomes of the renter and homeowner would narrow $Y^O - Y^R$. It would not return its sign back to its value before all taxes. Thus, a proportional personal tax that looks

⁸ We shall distinguish strictly between implicit income, which is income in nature assessed on the basis of market prices, and imputed income, which is income assessed by the tax authority.

⁹ This is not so much a condition of equity as a condition of feasibility: no one would make the efforts required to earn higher income to end up with lower income after taxes.

perfectly equitable is no guarantee that the full tax system is equitable. In this example, it does not satisfy the additional condition for equity, as the income that is higher before tax is lower after tax.

Clearly, the full set of taxes pertaining to housing must be included when testing tax equity between renting and owning. Again, it is unusual to include taxes comprised in consumption goods when assessing the equity of household income taxation. Indeed, one may generally admit that those taxes are born by all households equally. That assumption is wrong in the case of housing. Only the renter bears the taxes paid by the landlord, while the homeowner escapes them.

Let us now define available incomes properly before all taxes (marked by *) and after taxes. We assume that rents are equal to the landlords' reservation rent (eq. (6)), that the investment option for the renter is the reservation asset, and that all costs and financial returns are unaffected by income taxation:

$$R^* = K^{LL} + iW \quad (16)$$

$$Y^{R*} = Y - K^{LL} \quad (17)$$

$$Y^{O*} = Y - K^O \quad (12)$$

$$Y^R = Y - K^{LL} - T^{LL} - T^R \quad (18)$$

$$Y^O = Y - K^O - T^O \quad (19)$$

$$Y^{O*} - Y^{R*} = K^{LL} - K^O \quad (20)$$

$$Y^O - Y^R = K^{LL} - K^O + T^{LL} - T^O + T^R \quad (21)$$

In the absence of taxes, the change in available income for a household that buys its rental dwelling ($Y^{O*} - Y^{R*}$) is equal to the difference in operating costs.

If one does not like defining capacity to contribute after housing costs, one can try to define instead the homeowner's full income. That implies imputing some income for the equity he invested in his own dwelling. A market-based solution is to impute that income as being equal to the equivalent market rent for his dwelling minus production costs. In that case, the household's full income as a homeowner is (using eq. (6) for market rent):

$$\begin{aligned} Y^O &= Y + R - K^O - T^O \\ &= Y + K^{LL} + iW + T^{LL} + T - K^O - T^O \end{aligned} \quad (22)$$

while its full income as a renter is:

$$Y^R = Y + iW - T - T^R \quad (23)$$

The income difference is, therefore, the same as in equation (21) with full taxes and (20) in the absence of all taxes.

5. Equity and Neutrality

Taxation is equitable if it reduces the difference between available incomes between the tenures, but not so that the household (or team) that has higher net income before tax ends with lower net income after tax. From equations (20) and (21), those two conditions can be expressed as:

$$0 < \frac{T^O - T^{LL} - T^R}{K^{LL} - K^O} < 1, \text{ and } T^O = T^{LL} + T^R \text{ when } K^O = K^{LL} \quad (24)$$

The difference in available incomes is equal to the difference in user costs (compare eq. (8) and (21)). The condition of tax neutrality with respect to tenure choice therefore resembles the condition for equity. In fact, only one of the equity conditions is relevant for the choice of tenure: taxes should not reverse the sign of the difference in user costs, or, put differently, the tenure with lower user cost before taxes should also yield lower user cost after taxes. Formally:

$$\frac{T^O - T^{LL} - T^R}{K^{LL} - K^O} < 1, \text{ and } T^O = T^{LL} + T^R \text{ when } K^O = K^{LL} \quad (25)$$

Neutrality allows imposing greater taxes on the tenure that has lower operating and interest costs. However, the difference in taxes should not be greater than the difference in those costs. Contrary to equity, it is perfectly compatible with neutrality to levy a heavier tax on the mode of tenure that already has higher production cost.

Condition (25) is sufficient for the neutrality of housing taxation only to the extent that the choice of tenure depends on the sign of the difference in user costs as in condition (1). We shall say that taxation is weakly tenure neutral when it does not reverse the sign of the difference in user costs. It is quite possible, however, that tenure choice depends on the very difference in user costs, say because there must be a sufficient economic advantage to becoming a homeowner to justify the sacrifices needed to accumulate the required equity. To be strongly tenure neutral, taxation would have to leave that difference unchanged. Strong tenure neutrality requires

$$T^{LL} + T^R = T^O \quad (26)$$

even when $K^O \neq K^{LL}$. A tax system that is strongly tenure neutral is equitable only in a very weak sense, as the renter and the homeowner pay the same amount of taxes even when their incomes differ.

We have made no distinction between households. If the user cost of one tenure is lower than that of the other, all households should choose the former. If they do not, it must be that they are influenced by factors that are not directly related to user costs. Those factors could be gathered in a personal minimum difference in user costs, D_i , that would be required for household i to choose to own its home rather than rent it. Thus, household i chooses to own its home if $U^R - U^O > D_i$. It rents its home if the contrary is true. With this approach, neutrality should be redefined as requiring that taxes do not change the sign of $U^R - U^O - D_i$, i.e., this expression should have the same sign as $K - K^O - D_i$. One would therefore need personalised conditions for each household. If one wishes to dispense from that, neutrality must be strong.

Our definition of neutral housing taxation is not the only possible one. Haffner (2000) defines tax neutrality as a condition that owner-occupied housing be taxed like all other investment goods. That definition places the household's choice of how to invest its savings at the centre of the analysis. It requires quite naturally full taxation of implicit rents and taxation of capital gains in the same way as those on other assets. Our definition of tax neutrality emphasizes the household's choice of tenure. We shall see that full taxation of implicit rents is not required. We share with Haffner the focus on taxes and subsidies, leaving out land use and building code regulation, which also have an impact of housing costs but make no difference between tenures.

6. Neutrality and Equity of a Stylised Tax System

The formulas elaborated in the previous sections allow us to test the equity and neutrality of any housing taxation system. We shall do so in this section, with a stylised system that reproduces the main principles applied in many European countries. It has elements, such as an imputed rent, that exist in 9 out of 20 OECD countries (in 1993).¹⁰ We also test a deduction or particular imputation for renters.

The income tax is levied at the flat rate t .¹¹ Thus, the return on the reservation financial asset is taxed as follows:

$$T = tiW \quad (27)$$

As a renter, the household may be allowed to claim a deduction D^R from his other income in connection with his rental contract. It is worth

$$T^R = -tD^R \quad (28)$$

The landlord is taxed on economic income reduced by supplementary deductions D^{LL} such as an allowance for energy-saving investments, accelerated depreciation or the permission to claim as maintenance some expenditures that increase in fact the value of the property. He pays taxes:

$$T^{LL} = t(R - K^{LL} - D^{LL}) \quad (29)$$

Replacing tax terms (27) and (29) into equation (6) of the required rent and solving that equation for a reduced form of R , which appears on both sides of the equation, we obtain:

$$R = K^{LL} + iW - sD^{LL} \quad (30)$$

with

$$s = \frac{t}{1-t} \quad (29s = \frac{t}{1-t} \quad (31))$$

¹⁰ OECD (1994). The other countries do not allow unlimited deductibility of mortgage interest paid.

¹¹ Flat rates have been found repeatedly to be good approximations of effective tax schedules when deductions are taken into account. For Switzerland, see Mottu (1997).

If only economic costs were deductible ($D^{LL} = 0$), the tax would be perfectly neutral, without any incidence on rents. That is a well-known feature of taxes on pure economic profit. The supplementary deductions D^{LL} lower taxable rents, which lowers the tax on rents, and so forth, hence the multiplier-type coefficient for D^{LL} in (30).

For the homeowner, an estimated implicit rental income R^I is imputed for tax purposes for his use of his own dwelling, but he may deduct the interest paid and expenditures that maintain the value of the object from taxable income.¹² He might also be granted supplementary deductions D^O similar to those of the landlord. If, on the contrary, not all of his expenses were deductible, say because there is a ceiling on interest deductions, then D^O would capture those non-deductibles and be negative. Thus, the homeowner pays taxes:

$$T^O = t(R^I - K^O - D^O) \quad (32)$$

In order to test the equity and the tenure neutrality of the stylised tax system, we need to compute the tax differential and compare it to the production cost differential for owner-occupied and rental housing services (conditions (24) and (25)). The tax differential is:

$$\begin{aligned} T^O - T^{LL} - T^R &= t(R^I - K^O - D^O - R + K^{LL} + D^{LL} + D^R) \\ &= t(R^I - K^O - iW - D^O + (1+s)D^{LL} + D^R) \end{aligned} \quad (33)$$

The second expression obtains when market rents are equal to required rents as in equation (30). It might be interesting to examine the impact of taxes not only on tenure choice but also on the choice of housing consumption or investment relative to other goods or assets. That will depend on the separate impacts of taxes on the user costs of rental and of owner-occupied housing. Using equations (7) and (10) for the user costs of rental housing with and without taxes and the definitions of taxes above, we obtain:

$$U^R - U^{R*} = -sD^{LL} - tD^R \quad (34)$$

Similarly, we use equations (4) and (11) for the user costs of owner-occupied housing with and without taxes to obtain this difference for the stylised tax system:

$$U^O - U^{O*} = t(R^I - K^O - iW - D^O) \quad (35)$$

For ease of interpretation and without loss of generality, we shall from now on assume that operating costs are higher for rental housing ($K^{LL} > K^O$), as was argued in section 3. That implies that owner-occupied housing is the cheaper solution in the absence of all taxes. A tax system that is equitable and weakly neutral with respect to tenure choice reduces that cost advantage. A tax system that is strongly neutral leaves it unchanged.

¹² Great Britain has used estimated rents for tax purposes from 1803 until 1963. Schedule A, the tax levied on income from land and buildings, taxed the imputed income of homeowners. In the years before abolition, the tax progressively lost its "bite" as rent estimations lagged inflation while deductions were allowed on current terms. Abolition implied small revenue losses (Cullingworth, 1979).

The tax system narrows the difference in user costs if the tax differential of equation (33) is positive. That is the case if

$$R - R^I < (K^{LL} - K^O) + (D^{LL} + D^R - D^O) \quad (36)$$

Thus, the tax system reduces the cost advantage of home ownership if the imputed rent is not farther below the market rent than can be justified by lower production costs and greater supplementary deductions for the landlord and the renter than the homeowner.

More precise conditions for equity and neutrality can be found by aiming at a tax differential in equation (33) equal to the rate of tax multiplied by the income or cost differential. In that case, the income tax is truly a proportional tax at rate t on available incomes.

$$T^O - T^{LL} - T^R = t(K^{LL} - K^O) \quad (37)$$

which is equivalent to

$$R^I - D^O = R - D^{LL} - D^R \quad (38)$$

Sufficient condition (38) for equity and weak tenure neutrality of the stylised tax system is satisfied for a number of configurations, among which the following might be easiest to understand and implement. They are represented together with their impacts on user costs in Table 1.

< Table 1 about here >

- (a) Imputed rent equal to market rent, no supplementary deductions

This tax system has no impact on rents. It taxes the pure profit of the landlord, so that his return on wealth is reduced just as if he had invested that wealth in the reservation asset. However, the tax increases the user cost of owner-occupied housing in proportion of the difference between operating a rental and owner-occupied dwelling. Thus, it reduces the user-cost wedge between owner-occupied and rental housing by making only the former less attractive.

- (b) Imputed rent equal to market rent, same supplementary deductions for homeowner and landlord, no supplementary deduction for renter

The idea behind this tax system is to allow the homeowner the same supplementary deductions as the landlord since he is taxed on the same rental income. The supplementary deductions make both rental and owner-occupied housing more attractive by the same amount.

- (c) No imputed rent or supplementary deductions for homeowner and landlord; renter is allowed to deduct rent from taxable income

If one does not wish to impute the market rent as implicit income for the homeowner, but allow him to deduct all operating and interest costs K^O , then equity and weak tenure

neutrality can still be obtained by letting the renter deduct the rent he pays from his taxable income. This tax system reduces the user costs of rental and owner-occupied housing, but the first a little more because the rent is higher than the production cost of owner-occupied housing.

It is not necessary that the tax system reduce the difference in incomes in the proportion of the statutory tax rate t to be equitable or weakly tenure neutral. Many more conditions can be found for the stylised tax system, but they may be much more difficult to implement, if they need complicated calculation of the imputed rent and personalised conditions. They may also have undesirable secondary effects, for instance when supplementary deductions induce inefficient investment in some deductible expenditures or distortions in maintenance. Finally, the consequences of different solutions for public budgets ought to be considered when comparing tax solutions.

One solution frequently advocated and applied in some countries such as Australia is to treat owner-occupied housing as a regular consumption good: no implicit rental income is imputed to the homeowner nor is he allowed to claim any deduction for interest paid or operating costs. In our model, that corresponds to $T^O = 0$ and can also be obtained by imputing income equal to the sum of interest and operating costs: $R^I = K^O$ and $D^O = 0$ (eq. (32)). The user cost differentials for this tax system called (d) are shown in Table 1. It appears that the user cost for rental housing is lowered when the landlord is granted supplementary deductions. The user cost of owner-occupied housing is lowered by the amount of the tax on the implicit return on the homeowner's equity. Indeed, not including housing at all in the taxation of the homeowner's income amounts to exempting the implicit return on his equity, or, equivalently, to allow investment in a tax free good but only for owner-occupants. It is weakly tenure neutral for tenure choice if the supplementary deductions for rental housing are not so large that they more than compensate the tax advantage and the cost advantage of owner-occupied housing. If landlords are not granted any supplementary deductions and the operating costs of owner-occupied housing are lower than those of rental housing, then the tax system is still weakly tenure neutral because it simply makes owner-occupied housing even more advantageous. However, this is not equitable. It can be made equitable to any desired degree by adjusting the supplementary deductions allowed the landlord, but that requires implausible fine-tuning.

Once it is recognised that treating owner-occupied housing like a pure consumption good allows homeowners to shelter equity, compensation can be sought in letting the renter shelter the same amount of equity. Such a proposal was made by Hendershott and Hu (1980). In that case, no supplementary deductions should be granted to rental housing. This tax solution is described in Table 1 under (e). It reduces the user costs of rental and owner-occupied housing equally, by an amount equal to the tax savings on the return on equity. As a consequence, it does not alter the cost differential between the tenures, so it is strongly neutral (and weakly equitable).

In general, the tax system is strongly tenure neutral if $T^O = T^{LL} + T^R$ (eq. (26)). For the stylised tax system (eq. (33)), that condition is equivalent to

$$\begin{aligned} R^I - K^O - D^O &= R - K^{LL} - D^{LL} - D^R \\ &= iW - (1+s)D^{LL} - D^R \end{aligned} \tag{39}$$

The second expression obtains when market rents are equal to costs as in equation (30). Equation (39) shows that strong tenure neutrality is not obtained by simply imputing for the homeowner an income equal to the market rent ($R^I = R$). It is necessary to take into consideration the difference in production costs if the tax system is to preserve that difference. Tax system (f) in Table 1 obtains strong tenure neutrality by imputing the market rent for the homeowner and offering the renter a compensating deduction equal to the differential in operating costs and supplementary deductions.

This last tax system is strongly tenure neutral by offering the same tax rebate in both tenures. However, it does not obtain full neutrality as defined by Haffner (2000), that is also with respect to non-housing investment. Full strong neutrality is obtained when there are no supplementary deductions and when the homeowner is taxed on the implicit return on his equity. This can be obtained by adding that income iW to his other incomes and not imputing any rent nor allowing for any deduction related to housing (in particular, no deduction of mortgage interest), or by imputing a rent equal to the full production costs of owner-occupied housing, including the opportunity cost of equity ($R^I = K^O + iW$). This is illustrated as tax system (g) in Table 1.

Defining the homeowner's taxable income from his housing equal to the implicit return on the locked-in equity, instead of computing an implicit rent and allowing him to deduct costs, is an attractive solution for countries that, unlike Switzerland, have only small or heavily regulated rental markets, as suggested by Hughes (1980). That is also the reference from which Laidler (1969, table 1) computes tax subsidies to homeowners.

7. Conclusions

In the case of housing, testing the equity and the tenure neutrality of the tax system cannot be limited to comparing the taxes paid by the renter and the homeowner. It is necessary to also include the taxes paid by the landlord, as the renter is the only 'consumer' to bear those taxes, through higher rent.¹³ It is equally necessary to take into consideration the costs borne by the homeowner in comparison with those of the renter and especially the landlord. The homeowner can typically 'produce' housing services at a lower cost than the landlord can: smaller management costs, maintenance costs, no loss of rental income. Those cost advantages compound the tax advantages when the implicit rental income is imputed very conservatively to render ownership quite attractive, provided that the landlord and the homeowner purchase the same dwelling at the same price and obtain the same credit terms. A premium for retail sales of dwellings – typically for condominium – and difficulties with financing the purchase can easily wipe out the other economic advantages of home ownership. Shorter holding periods that force homeowners to incur high transaction costs more frequently are also an argument against ownership.

Tenure neutrality and equity do not always accord. For the tax system to be neutral with respect to tenure choice, that tenure which is more advantageous should remain so after taxes. For strong tenure neutrality, the financial advantage should even be preserved exactly. Equity, for its part, requires that those who benefit from cheaper tenure pay more tax, even if part of the advantage is thereby taken away. If households choose the tenure that implies lower user cost, whatever the

¹³ The rent could actually be lower than production costs, if rental housing is a tax shelter.

size of the cost saving, then an equitable tax system is also neutral. Obviously financial advantage is but one argument of tenure choice. A reduced cost advantage lowers the weight of that element of choice and the scale may tip for some households. In that case, the equitable tax system is not tenure neutral.

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Table 1

Tax solution	R^I	D^O	D^{LL}	D^R	$U^R - U^{R*}$	$U^O - U^{O*}$	$T^O - T^{LL} - T^R$
(a) Imputed rent equal to market rent, no supplementary deductions	R	0	0	0	0	$t(K^{LL} - K^O)$	$t(K^{LL} - K^O)$
(b) Imputed rent equal to market rent, same supplementary deductions for homeowner and landlord	R	D^{LL}	any	0	$-sD^{LL}$	$t(K^{LL} - K^O) - sD^{LL}$	$t(K^{LL} - K^O)$
(c) No imputed rent or supplementary deductions for homeowner and landlord; renter is allowed to deduct rent from taxable income	0	0	0	R	$-t(K^{LL} + iW)$	$-t(K^O + iW)$	$t(K^{LL} - K^O)$
(d) No tax on housing for homeowner	K^O	0	any	0	$-sD^{LL}$	$-tiW$	$sD^{LL} - tiW$
(e) No tax on housing for homeowner, tax sheltered equity for renter	K^O	0	0	iW	$-tiw$	$-tiw$	0
(f) Imputed rent equal to market rent with compensation for renter designed to obtain strong neutrality	R	any	any	$K^O - K^{LL} + D^O - D^{LL}$	$t(K^{LL} - K^O - D^O - sD^{LL})$	$t(K^{LL} - K^O - D^O - sD^{LL})$	0
(g) Homeowner taxed on implicit return on equity, no supplementary deductions	$K^O + iW$	0	0	0	0	0	0

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