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**Lack of balance in after-tax returns
– lack of tenure neutrality
The Danish case**

**by
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Lack of balance in after-tax returns – lack of tenure neutrality. The Danish case.

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Abstract.

In Denmark, taxation of residential property returns varies considerably with the type of ownership and type of tenure in terms of the way income is calculated, the types of taxes applied and tax rates, which range from 0 % to above 60 %. Together with other housing subsidies this disparity in taxation contributes to the pronounced lack of tenure neutrality in the Danish housing market.

The paper illustrates how tax rules alone create distortions and imbalances in the housing and residential property markets and discusses as well the magnitude of the imbalances. The method used is the application of a set of return and user cost equations.

The tax aspects of the long-standing rather unequal treatment of private rental dwellings, social rental dwellings, owner-occupied dwellings and private co-operative dwellings, which have drawn decisive tracks in the markets, are discussed.

The lowering of the tax rate for the return of institutional pension savings to 15 % which came into effect in 2001 has created a substantial advantage for pension funds compared with private investors with regard to investments in rental residential properties. The owner-occupiers' user costs and subsidization are shown to depend on their capital structure and to a large extent they depend on whether the owners' most obvious savings alternatives are either personal investments with heavily taxed returns or institutional pension savings with lightly taxed returns.

Also private co-operative associations are tax exempted, and this fact in combination with the prospects of improved legal conditions for raising loans to finance the individual apartments will almost certainly lead to this form of tenure – as "tax free ownership" – capturing part of the market for owner occupation.

Key words: housing taxation, property taxation, property investment return, user costs, tenure neutrality, housing markets.

JEL classifications: D13, H20, H31, R20, R31.

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1. Introduction – purpose of the paper.

There are two sides to every coin. Similarly, all dwellings have – notwithstanding tenure – a dual role as investments and consumption goods, since a residential property must have an owner, who invests to yield a tenant a housing service. This links residential properties to the housing market. Under market conditions this simple connection ensures the balance between rented and owner-occupied dwellings and is an obvious tool for analyzing the lack of tenure neutrality in the housing market.

Of course, subsidization of housing consumption, favoring of one form of tenure based on a political goal, and attempts to remove social and economic inequalities can be achieved by many different means. Each country has its own means of regulating and often supporting housing consumption, and these can destroy tenure neutrality. The means can be categorized as a) rent regulation and other interventions in the housing and residential property markets, b) tax rules, c) mortgage options and rules, d) social benefits (often forms of housing subsidization) and e) planning and other urban regulations.

Nevertheless, taxation of owner-occupied dwellings and rent regulation have dominated economic-policy analysis of the housing sector and the political debate concerning the unequal treatment of housing tenures, also in Denmark. In many countries it comes as a surprise that investing in building private rental properties or renting out an owner-occupied dwelling out is unprofitable. In general it is not recognized that the taxation of the private landlords' return must be reduced on the same scale as is done for owner-occupied dwellings, as it does not suffice to remove rent regulation in order to ensure new construction of private rental dwellings.

The situation is even more complex in Denmark and other countries with social housing and perhaps even more tenures, for example co-operative housing and shared home ownership. Of course, these dwellings must also be seen in a dual perspective as investments and consumption goods.

The purpose of the paper is to illustrate on the basis of the Danish case *how tax rules by themselves create a number of imbalances in the housing and residential property markets and to discuss the magnitude of the imbalances*. A set of return and user cost equations is used. Only rules found in the most common and simple versions of the taxation and housing legislation are applied.¹

Indirectly, identification of imbalances is indeed a critique of a political system that has created and accepted such imbalances for decades. According to Boleat (1997, p. 65): *“The objective of the Government should be to secure parity of treatment between the owner occupied sector and the private rented sector, and increasingly also to remove the unnecessary wide gulf between private renting and social renting.”* In the Danish case, an additional form of tenure must be included: private co-operative housing.

In Section 2 the four main tenures in the Danish housing market are presented and in Section 3, their user costs. Section 4 describes tax rules and rates for the different types of investors' returns on property investments and for other capital income. Besides taxation and subsidies, other

¹ John Muellbauer's very positive perspective on the Danish taxation of owner-occupied housing has been a source of inspiration for this paper (Muellbauer, 2003). I agree with his positive view of the taxation of owner occupation, which seems to be an efficient form of taxation. However, in a thorough analysis, a broader view including the general taxation of residential properties must be taken.

differences between the tenures could influence the balance between them, as is briefly discussed in Section 5. A few prior analyses are mentioned in Section 6. In Section 7 the inseparable connection between the return to investors and the tenants' user costs is presented as the basis for the analysis of imbalance in the subsequent sections. Six types of imbalances between different types of investors and different tenures as well as between owner-occupiers are presented in the last sections. In addition, the well-known imputed rent subsidy afforded owner-occupiers is questioned in Section 13, as it depends on owners' alternative saving options.

2. Tenures in the Danish housing market – a short description.

The types of tenure in Denmark are shown in Table 1. During the past more than 40 years, economic growth and a continuing, but varying subsidization of the tenures has created an excellent housing supply, which at 52 m² per capita may be one of the best in the world. Compared internationally – but not seen with Danish eyes – housing consumption is relatively equally distributed.

The (simplified) submarkets according to housing tenure differ with regard to housing quality and location. Within all tenures, a supply of smaller dwellings – mostly apartments – exists in towns. The larger dwellings are mostly owner-occupied single-family houses, which are especially found in the suburbs and in provincial towns.

Table 1.
Proportions of dwellings distributed by type of tenure.

Per cent	1960	1980	2000
Used by the owner	45.7	52.1	51.3
Private co-operative	n/a	2.1	6.3
Private rental	39.8	22.1	18.0
Social housing	9.8	14.4	19.1
Publicly owned	4.7	3.1	1.4
Not used	n/a	6.2	3.9
	100.0	100.0	100.0
Number, (in 000)	1,463	2,109	2,489

Source: The Economic Council (2001, p. 260) based on data from Statistics Denmark.

As shown on Table 1, substantial shifts between the tenures have taken place during the last 44 years:

- Widespread rent regulation and full taxation of rent incomes have meant that very few private rental properties have been built, and especially the transformation of rental into private co-operative dwellings, urban renewal and demolitions have led to a continual drop in the importance of this form of tenure.
- The more than doubling of social housing is no surprise, since social housings' net rent income has always been exempt from income tax and since the associations have received subsidies for building social housing, which on several occasions have been increased.
- The demand for owner-occupied dwellings was stimulated in the 1960s and 1970s through high inflation and favorable tax rules. However, the liberalization of the capital market, low inflation and three tax reforms have meant the loss of important advantages for this tenure – and its proportion of the stock is stagnating, even when corrected for the ageing of the population.

- In addition, private co-operative associations' net rental incomes are exempt from income tax and the tenants, unlike the owner-occupiers, do not pay a property value tax (or an imputed rent tax). Since 1979 tenants in private rental residential properties have had pre-emptive rights when the landlord of a private rental residential property makes a sales agreement with another buyer, provided that they create a private co-operative association. These old private cooperative properties are bought at the low price level for private rental residential properties. The building of smaller private co-operative dwellings has been directly subsidized.

3. The imbalance between user costs in the tenures.

The total building costs are the same, regardless of whether a house or apartment is to become an owner-occupied, private rental, social housing or private co-operative dwelling. If the price for its use – the housing services – were determined at market conditions, the user costs would not vary with tenure either (see also Section 5). Instead, different housing subsidies through direct public support, favorable taxation, rent regulation and by other means seriously distort the balance between the tenures' user costs.

In Table 2 a set of calculated user costs for the tenures based on current legislation and tax rules is shown. These tenures can feasibly be built in the Danish housing market. The assumptions are: a nominal rate of return of 9 %, a property and consumer price increase rate of 1.5 %, a depreciation rate of 1 %, an operation, maintenance and administration expenditure rate of 2.5 %, plus tax rates for property investment of 53 %, for positive capital income, 59 % and for negative capital income, 32 %. The interest and inflation rates represent a set of steady state assumptions in a low-inflation scenario. In this situation, the interest rates are a little higher and the rise in property prices a little below the actual figures. It must be emphasized that user costs are highly sensitive towards the assumptions used in the calculations. However, no alternatives are calculated in this paper because the purpose is to identify tax-caused imbalances and to estimate their influences.

The annual user costs in Table 2 are for a newly built dwelling costing 1 million DKK and an owner-occupied dwelling with a market value of 1 million DKK. The calculations do not include the much more highly subsidized older private rental dwellings, older social housing or older private co-operative dwellings, where 65 years' rent regulation and maximal prices have lowered the rent far below market rents and the actual property values to a fraction of the market value without regulation. The data necessary to calculate user costs for these older, much cheaper dwellings does not exist.

Table 2.

Annual user costs for the different tenures. (1000 DKK)

(Nominal user costs for a dwelling with year 0 price: 1 million DKK and inflation 1.5 % per year).

Year / 1000 DKK	Owner occupation	Private rental dwellings	Private co-op debt financed	Private co-op equity financed	Social housing
1	92.5	116.1	102.3	68.1	67.1
2	92.7	116.7	102.1	68.5	67.6
3	92.9	117.2	102.0	68.8	68.2
4	93.0	117.8	101.8	69.2	68.8
5	93.1	118.4	101.5	69.5	69.3
6	93.3	119.0	101.2	69.9	69.9
7	93.3	119.6	100.9	70.2	70.5
8	93.4	120.2	100.5	70.6	71.1
9	93.4	120.8	100.1	70.9	71.7
10	93.5	121.4	99.6	71.3	72.3

Source: (Lunde & Hvidt, 1999), revised version.

User costs in Table 2 are estimated *ex ante* by using expected inflation and interest rates just as taxes and other legislation are expected to remain unchanged. However, the market risk for these figures is rather high, which is why user costs *ex post* for owner-occupied dwellings and private co-operative dwellings can differ greatly – upwards or downwards – from the results in Table 2. Based on the last 25 years' very volatile property prices and interest rates, it would be possible to show that user costs for an owner-occupied dwelling *ex post* had varied from a little below 0 % and up to 20 %.

The results in Table 2 show that newly built private rental dwellings built by ordinarily taxed firms or companies and rented out at market rents, are the absolutely most expensive tenure. Also, user costs for a new private co-operative dwelling and for an owner-occupied dwelling, both with an LTV of 95 % in the example, are relatively high. At the inexpensive end of the scale are social housing and private co-operative dwellings that are entirely equity financed, if the tenant is taxed with 59 % of the equity's return.

To a large extent, the differences between the tenures' user costs are caused by the tax rules as outlined in the following and analyzed in greater detail below. The difference between debt and equity financed private co-operative housing is a result of the fact that the association is totally exempt from income tax, whereas the return on the tenants' alternative equity investment would be taxed at a rate of (up to) 59 %. Using the same assumption, an entirely equity financed owner-occupied dwelling is cheaper than the debt financed owner-occupied dwelling shown. But equity financed owner-occupied dwellings are more expensive than equity financed private co-operative dwellings, because owner-occupiers pay the property value tax - in the example, 10,000 DKK in year 1.

The Economic Council has found a similar structure among the tenures' user costs (The Economic Council, 2001). Their results show a conspicuously slight difference between social housing and the other tenures, due especially to the fact that depreciations were not included in user costs for the other tenures.

Not included in the calculation is the fact that tenants in private and social rental dwellings can obtain housing allowances, depending on the tenant's income, number of children, rent and size of dwelling. Pensioners in owner-occupied and co-operative dwellings may also be given allowances in the form of nearly non-subsidized loans.

For each form of tenure, the difference between market determined and actual user costs can be seen as the value of the different housing subsidy and taxation rules, and the difference is therefore equal to the value of the subsidy given to the tenure (Lunde, 1996). However, it is difficult to estimate market determined user costs for a Danish economy without housing support and special tax rules.

4. The Danish tax structure.

4.1. Taxation of investors' returns on investment in residential properties.

The owners of Danish residential properties have been so differently taxed according to the type of ownership that the residential property market is obviously far from neutral. There are variations in, for example, tax liability, the definition of taxable income, types of taxation and tax rates.

In one respect, all properties are taxed according to the same rules: the municipal land tax, a low percentage of the publicly assessed land values. The total land tax proceeds (for 2002) were equal to 0.55 % of all properties' publicly assessed market values.

Table 3.
Effective income tax rates 2004 for owners of residential properties.

Owner and owner's tax rules	Effective tax rate for the annual net rent income	Effective tax rates for the annual capital gains
Private investor landlord, personal income*	about 43 - 63 %	about 43 - 63% to 19.6 - 28.8% *** of real capital gains
Private investor landlord, company taxation**	60.1 %	60.1 % - 27.4 % *** of real capital gains
Pension funds	15 %	15 % of nominal capital gains
Social housing association	0 %	0 %
Owner-occupied dwelling*****	0.01/0.08 % = 12.5 %	0 %
Owner's own residence, small rental residential property*****	0.01/0.08 % = 12.5 %	0 %
Private co-operative housing	0 %	0 %

* By use of so-called firm or capital income tax arrangements the owner's return after tax is quite similar to the shareholder's return after company tax and share income tax, see ** below.

** Combined tax rate, consisting of a company tax rate of 30 % and a tax rate of 43 % for personal share income (dividends and capital gains). Share income is only taxed at a rate of 28 % if the value of the shares is below 133.700 DKK, giving a combined tax rate of 49.6 %.

*** Efficient tax rates for the capital gain are calculated as capital gains tax after 1 year of ownership and after an assumed 20 years' ownership, and is then discounted with a rate after tax of 4 % per year.

**** The property value tax for personal dwellings is recalculated to an efficient flat rate tax on a risk-adjusted return of 8 %.

Few type of institutions and agents are exempt from paying tax on capital and other income in Danish society. Presumably the most important exception is social housing associations – and the associations' funds. Private co-operative associations are also exempted from paying income tax.²

At the other end of the spectrum are the private rental residential properties, whose owners are taxed on their total return, but the definition of taxable income and the tax rate depend on the type of owner. All investor landlords are taxed on the net rent surplus on renting out, i.e. on rent income minus costs (operating, maintenance, property tax, administration). No taxable depreciations are allowed for rental residential properties (only for industrial, farming and some other commercial properties).

Private persons are taxed according to similar rules. When the shareholders' tax on dividends and capital gains are included, as in Table 3, the tax rates are relatively similar for these national investors. Private owners' real capital gains are taxed upon realization and the tax can be "rolled".

² These rules are hardly ever mentioned in housing policy analyses in Denmark.

Institutions with long-term pension savings³ (referred to in the following as pension funds) are taxed with a flat rate of 15 % of the year's income, which includes the net rental income and the nominal capital gain on the properties in the year in question.

Owner-occupiers were formerly taxed on a special imputed rent with the same tax rate that applied to other capital income from 1903 to 1999. Starting in 2000 this tax was translated into the "property value tax" (a simple property tax) at a rate of 0.8 % of the publicly assessed property value for owners who had bought their dwelling before 1 July 1998. The rate became 1 % for owners who bought after this date. The 1 % rate represented slightly heavier taxation than before 2000, while most of the other owners got a minor discount, since the tax was lowered a little. Since 2002 a tax freeze has set a maximum value on this property tax.⁴ In Table 3 the 1 % rule is translated into a flat rate tax of 12.5 % at an annual return of 8 % on the owner-occupied dwelling. If the return had been 6 %, the flat rate would have been 16.7 %. Owner-occupiers' capital gains are not taxed.

4.2. Main rules for personal taxation of different capital incomes.

Persons and companies are not taxed in the same way on the different types of capital income.

The personal capital income is calculated according to a *net principle*, i.e. of capital income minus capital expenditures. In the case of a *positive* net capital income, the tax depends on personal income and ranges on average, depending on the municipality, between 32 % and 59 %.⁵ A high percentage of owner-occupiers are taxed at the highest level because the proportion of owners increases with family income.

The personal taxpayer may deduct net interest expenditures at the income tax rate of the relevant municipality, on average 32.5 % (2003). Both housing and non-housing interest is included.

The imputed rent of the publicly assessed property value for an owner-occupied dwelling is no longer taxed as capital income, but the owner must pay the above-mentioned "property value tax".

The majority of employed persons in Denmark are covered by a labor market agreement, according to which a percentage of their wages is transferred to a pension fund, and many voluntarily pay into pension funds. The returns of these pension savings are only taxed by 15 %, which makes it advantageous in terms of taxation to have savings in pension funds. However, the savings are illiquid until the age of pensioning.⁶ Personal savings outside the pension arrangement are often on a remarkably lower scale and are often maintained for reasons of liquidity.

³ Long-term pension savings are not only deposited in the above-mentioned pension funds but also in life insurance companies, in nation-wide and semi-public funds (ATP, LD), special pension saving deposits in commercial banks and elsewhere. All pension saving returns in these institutions are taxed according to the special pension return tax.

⁴ The property value tax is calculated according to the relevant rate of the 2002 assessed property value + 5 % or of the actual assessed property value if this is lower. With regard to the property value tax as well, only the most common and necessary rules are mentioned.

⁵ The taxpayer pays a gross tax – "a labour market duty" – of 8 % of his or her labour income, but not of capital income. Income tax is calculated on the basis of income minus the labour market duty. The combined highest tax rate of labour income is $(1 - 0.08) \cdot 0.59 + 0.08 = 62.28\%$.

⁶ Payments (deposits) for pension savings are withdrawn from the taxpayer's income, while the pension received is taxed as income when it is paid out. If tax rates in the two phases of life remain the same, this arrangement has no advantages for the individual pensioner. Fluctuations in tax rates may mean that if the taxpayer's tax rate is higher when he withdraws his pension saving than when he receives his pension, the different rates are to his advantage. In the reverse situation, the rates are a disadvantage for him. However, it is difficult to speculate about future tax rates and their significance.

Companies' income is also calculated according to a net principle and this surplus is taxed at a rate of 30 %. The owners' (shareholders') dividends and capital gains are taxed according to different rates depending on whether the owners are private persons (28 % or 43 %), pension funds (15 %), or other companies (30 % or lower).

5. Possible differences between types of tenures, which could influence the balance between market-determined user costs.

Below a) *the property investors' yields in the different housing tenures* and b) *the tenants' user costs in these tenures compared with an alternative housing market solution* are calculated. The differences in taxation as well as other subsidies are included. The presumptions are that the marginal investor demands the same yield after tax when investing in the different tenures, and that the marginal tenant does not accept user costs in the chosen dwelling higher than those in an identical dwelling under a different form of tenure. These presumptions are discussed in brief.

Possibly the worst problem is that tenure choice in practice seems to depend on *housing expenditures* – the *strain on liquidity* – which differs conceptually and in terms of size from user costs⁷ in owner-occupied and private co-operative dwellings. Families and single persons only have information on housing expenditures – mostly for the first year – when they enter the market. It is not only the choice of tenure that is influenced by this problem, but also the choice between different mortgage financed owner-occupied and private co-operative dwellings. The Economic Council has found that in the short run the nominal interest rate after tax explains the house price rises better than the real interest rate after tax (The Economic Council, May 2003, p. 52), an old truth for a real estate agent.

In general, the Danish population has relatively strong *preferences* for owner-occupied dwellings (By forum, 2001, chap. 6), even though they are the most expensive form of the common tenures. Similar strong preferences for owner-occupied dwellings are found in UK and in all probability in many other countries. In a market solution such preferences would increase the proportion of owner occupation but would not influence the balance of identical marginal user costs for owner-occupied dwellings and dwellings under other forms of tenure.

Differences between user costs *ex ante* and *ex post* can be quite sizeable as mentioned above. Since 1993 the strong price rises on owner-occupied houses and apartments have resulted in user costs *ex post* that are lower than user costs *ex ante*, and these price rises seem to have influenced public opinion towards owner-occupied dwellings as the most advantageous tenure. When real house prices fell by one-third from 1987 to 1993, the public found owner-occupied dwellings expensive and unprofitable. Asymmetric expectations seem to be the norm in public memory, as periods with strong price rises overshadow periods with price drops.

Of course different user costs for dwellings can be attributed to differences in property value. However, with free competition in the building sector, identical properties must have *equal building costs* in equilibrium, although local planning can to some extent disturb the equilibrium. If a municipality favors one particular form of tenure by selling plots at discount prices, the discounts are in reality an additional subsidy. At a higher rate of subsidization, as is the case for social

⁷ Calculated housing expenditures matching the user costs in Table 2 are also found in (Lunde & Hvidt, 1999).

housing and in some periods private co-operative dwellings, the subsidies can be capitalized on in higher building costs. Similarly, extraordinarily favorable market conditions can result in higher prices for newly built houses and/or lower quality as seen during the building boom in owner-occupied dwellings in the 1960s. However, given the low numbers of newly built dwellings of the past decades, building costs must be equal for the different tenures.

A common hypothesis is that tenants have fewer *incentives* than owner-occupiers *to maintain* and take care of their dwellings. Accordingly, user costs could be higher for owner-occupied than for rented dwellings. Many papers seem to confirm this hypothesis but also to overlook the fact that dwellings function as homes for the tenants.

Potentially, *differences between tenures in terms of risk* in the property market could create differences between user costs for identical dwellings under different tenures. An investment in a property is always risky.⁸ Under market conditions, the risk is supposed to be equal for the individual dwelling – a house or an apartment – irrespective of tenure. An investor can diversify his or her investment in a portfolio of rented properties, thereby reducing the average risk. In contrast, owner-occupiers cannot diversify their investments in housing.⁹

In principle, transaction costs as well as search and moving costs should be included in user costs. However under market conditions these latter costs must be independent of tenure. All property investors are burdened with transaction costs in connection with turnovers but the burden in the form of average annual costs decreases with the duration of ownership. When the standard assumptions are applied, it is clear that short-term owner occupation is more expensive than renting in the same period, whereas long-term renting is more expensive than owner occupation of the same duration.

6. Previous analyses.

The published partial and total analyses of tenure neutrality must necessarily be tied to the individual country's institutions and legal systems through the housing, tax and social laws. Freeman, for example, provided a descriptive comparison of tax and subsidy systems, the tenure structure and the relationship between them for selected OECD countries (Freeman, 1997). Freeman found that "*the higher the relative expenditure on private renting, the smaller the size of the private rental sector.....*" and "*the larger the size of the owner-occupied sector*". Often the analyses are made for policy targets, as an expression of the government's policy or for lobbying in the area of housing policy, while independent academic analyses are rarer, also in Denmark. The Sisyphean task of trying to summarize, criticize and discuss all of these analyses and their results is not embarked upon here.

Many analyses only include tenants' rents and owner-occupiers' housing expenditures and user costs, while the tax treatment of the different types of investor landlords is neglected. Numerous studies only include the effects of rent regulation and the taxation of owner-occupiers and try to calculate their influence on tenure choice, admission to rental dwellings, property prices, new construction, renovation and maintenance etc. Others try to pinpoint the effects of tax changes for

⁸ The standard assumption is that risks are higher for real estate investment than for bonds but lower than for common stocks (equities), (Brueggeman and Fisher, 1997, chap. 10).

⁹ Chinloy & Man Cho (1997) has shown how an investment in a theoretical portfolio of owner-occupied houses in five of the biggest towns in the US can increase the return and/or lower the risk.

owner-occupied and rental housing; for example, Bruce and Holtz-Eakin (1999) use a framework similar to the one used in this paper to estimate the impact of consumption-based fundamental tax reforms, which would eliminate the tax-favored status of owner-occupied housing. Brownstone and Englund (1991) offer a broad critique of some weaknesses of comparisons and try to investigate the seriousness of these weaknesses in practice.¹⁰ In the analyses, as noted by, for example Poterba (1982) and Englund (2000), a standard result is that housing taxation should be neutral if efficiency and tenure neutrality are to be achieved.

Charles A. Capone Jr. (1995) has used a model including both annual and accumulated user costs to compare owner occupation and renting for low-to-moderate income households (in the US, households within the 15 % federal tax bracket). The model in this paper is partly similar to Capone's, respecting, of course, the differences between the US and Danish housing markets and taxation.¹¹ An important difference is – in accordance with Capone's findings – that both owner-occupiers and investor landlords pay a real estate tax as a percentage of property value. In Denmark owner-occupiers pay this tax, while landlords pay ordinary income tax of rent surplus. US landlords are permitted a straight-line depreciation for 27.5 years, whereas no such allowances are made for Danish landlords.

Capone concludes that *“market rental rates for loan-to-moderate income housing appear to be driven by short average tenures of renting households as much as by current tax considerations afforded to landlords”* and that *“it appears that current tax laws provide a fairly level playing field between investors and owner-occupiers”* (p. 346). The latter finding does not apply to the Danish case.

Another common theme is to compare the return on housing capital with that on business capital for countries, where the implicit rental income from owner-occupied housing is untaxed or taxed with a low rate. Gervais (2002) finds support to the view that the current US tax structure causes housing to crowd out business capital and provides an incentive for individuals to own and to own larger houses. Similar analyses are common in an economic policy framework. For example, the Danish Economic Council (2001, Chap. II) considered how to create the most suitable tax system, why the council compared the different income taxation for residential properties compared with other capital and other sort of income taxation.

7. Property investors' return before and after tax and tenants' user costs.

The example in Table 2 shows the different user costs tenants must pay in the different tenures for identical dwellings built under market conditions, given the assumptions noted above. The set of equations for the returns to investors and user costs for tenants will be used to show some systematic differences between the different tenures. In addition, the residential property investment decision will be based solely on the highest expected return after tax and the tenure choice decision on the lowest user costs.

¹⁰ Brownstone and Englund (1991) is an exception as they include “owner-occupied apartments (coop shares) as a third mode of tenure”. In Denmark the tax differences between owner-occupied apartments, houses and summer cottages is insignificant as all are treated as owner occupation. Instead, the Danish private co-operative housing form, which has special maximum prices for coop shares and special taxation rules, is included in this paper.

¹¹ Perhaps as a consequence of his Net Present Value calculations, Capone uses the effective after-tax discount rates as the alternative interest of equity. In this paper the alternative interest of equity increases when loan-to-value increases, following the Miller-Modigliani concept.

Of course, tenure choice determines allocation in the housing market. As housing serves a dual role as both a consumption and investment good, the latter requires that the investors (families) are indifferent as to whether they invest in a house or apartment or an another asset and that given identical user costs, tenants are indifferent as to whether they own or rent.

A basis is gross return (before tax) Y_{gross} for the period t of an investment in a residential property:

$$Y_{gross} = K_t \cdot (UC_t + (p_{ej} - q)) \quad (1)$$

where K_t is the value of the property, UC_t is user costs for the dwellings on the properties, p_{ej} is the price appreciation rate of constant quality residential properties, and q is the rate of depreciation. The increase in the property's value in the period is equal to $K_t \cdot (p_{ej} - q)$. This formulation of the property value increase has been chosen to illustrate the contrary effects of price rise and depreciation and to make calculations more transparent. The single owner can only observe the increase in his (single) property, not the (average) price rise for identical properties and not the depreciation rate.

As point of departure, only the return on the investment is used and it would be an unnecessary complication to divide the return into the yield from the invested equity and the interest on the debt. Such a split is only necessary in an analysis when the returns on equity and debt are not taxed in the same way.

In the following $K_t = 1$ in order to compare the results directly and in ratios.

Hereafter the investors' net return before tax can be calculated by deducting operating, maintenance and administration expenditures d_t and land tax $a \cdot g T_t$, where a is the land's share of the property value and $g T_t$ is the tax rate:

$$y_{net} = UC_t - d_t - a \cdot g T_t + (p_{ej} - q) \quad (2)$$

The net return must equal at least the alternative return on an equally risky investment with the risk adjusted interest rate i_t , i.e. $y_{net} > i_t$ (or $= i_t$).

In equilibrium $y_{net} = i_t$ and:

$$i_t = UC_t - d_t - a \cdot g T_t + (p_{ej} - q) \quad (3)$$

then
$$UC_t = i_t + d_t + a \cdot g T_t - (p_{ej} - q) \quad (4)$$

which is user costs for a rental dwelling. The rent covers operation, maintenance and administration expenditures and the owner's return must cover the alternative return on capital and the "compensation" for depreciation and ageing of the properties.¹²

After *full taxation* the investors' return after tax is

$$i_t \cdot (1 - T) = (UC_t - d_t - a \cdot g T_t + (p_{ej} - q)) \cdot (1 - T) \quad (5)$$

¹² This derivation of user costs is common in the literature, see, for example Poterba (1992). Miles uses a utility maximizing model instead, but the result is the same (Miles, 1994, chap. 2).

where the investor is taxed on the year's net return and on the year's capital gains (or losses).

If the owner is fully taxed, he must collect the rent UC^{PR}_t from the tenant as determined by (4). However, if the owner is taxed favorably compared to the taxation on an alternative investment, the investor could collect a lower rent than UC^{PR}_t from the tenant.

8. First imbalance: Different capital gains taxation and combined, efficient tax rates.

Full taxation of the return on a property investment means as shown in (5) that the nominal capital gain is taxed at the same tax rate as the year's surplus. This is part of nominal capital income taxation, where the nominal interest incomes are taxed and nominal interest expenditures can be deducted. If a real capital income taxation system with real capital gains taxation is implemented instead, the result is, after correction for inflation, the same yield after tax in the nominal and in the real taxation cases when a 100 % debt financing or an opportunity cost perspective is included (Hendershott & White, 2000, p. 259).

Some EU countries tax owner-occupiers' capital gains after a short ownership period. Only Sweden has a proper (low) capital gains tax (ECB, 2003). In Europe outside the EU, Switzerland taxes capital gains (Werczberger, 1997). The US has also had capital gains taxation for half a century (see, for example, Bier et.al. 2000). Almost always only taxes on real realized capital gains are collected, as pure inflationary gains are deducted in realized nominal gains. It might be expected that the countries' capital gains tax on rental residential and commercial properties would have similar features. In practice, it seems necessary to organize capital gains taxation in this way because property prices and the capital gains arising from them are highly volatile and illiquid until realization.

According to Danish tax legislation for institutional pension savings, the pension funds are taxed on the *year's net rent income* and *capital gains* and can deduct negative gains. The pension funds' return after tax on property investment is calculated as in (5). Typically, this group of investors will own their properties for many years and could easily reinvest in properties. A capital gains tax upon realization and with potential "rolling" of gains would erase the significance of such a tax for these investors. Moreover, the tax rate of 15 % is low.

Private investors and companies are covered by a *special capital gains tax law* when they invest in rental residential and commercial properties. The investor is taxed when he realizes the real capital gain, which is calculated as the increase in the property's value after correction for inflation. A real capital loss upon realization can be set off against the year's or later years' capital gains on other properties, and the capital gains tax can be rolled over when another property is bought.

For common private investors and companies equation (5) can be transformed to

$$i_t \cdot (1 - T^\wedge) = (UC^{PR}_t - d_t - a \cdot g \cdot T_t) \cdot (1 - T) + (p_{ej} - q) - (p_{ej} - p_c - q) \cdot T^* \quad (6)$$

where T^\wedge is the combined, efficient tax rate (see below), p_c is the increase in the consumer price index (as an inflation measure), and T^* is the efficient capital gain tax rate, which when discounted with the rate k over the expected owner period t can be calculated as

$$T^* = T / (1 + k)^t$$

For investors taxed as companies the efficient capital gains tax rate T^* is calculated to be 27 % after 20 years' ownership and a real discount rate after tax of 4 %, (see Table 3).

In this model, real capital gains are taxed upon realization and it is obvious that the owner's payment of capital gains tax and consequently, the state's proceed will decrease as the length of the ownership period increases. If property prices in the long run follow consumer prices, the result of the real capital gains tax is that the investors benefit from a form of tax relief as a result of the implicit depreciations and the deduction of operational expenditures.

At the same tax rate it is possible to determine the difference in tax payments and proceeds between an annual tax on nominal capital gains and a tax on real capital gains upon realization. The difference is:

$$T \cdot (p_{ej} - q) - (p_{ej} - p_c - q) \cdot T^*$$

or:
$$T \cdot (p_{ej} - q) - (p_{ej} - p_c - q) \cdot T / (1 + k)^t$$

Gradually the difference will approach the nominal capital gains tax with increasing duration of the ownership period.

Depending on the tax policy philosophy, the difference could be seen as an implicit tax subsidy to property owners, who are taxed on capital gains upon realization, or as an over-taxation of owners who are taxed on annual, nominal capital gains.

In sum, the general model for the capital gains tax upon realization results in a: *the combined, efficient tax rate T^\wedge* of the return, which is lower than the tax rate used otherwise for the year's net rent surplus:

$$T^\wedge = ((UC_t^{PR} - d_t - a \cdot g T_t) \cdot T + (p_{ej} - p_c - q) \cdot T^*) : (UC_t^{PR} - d_t - a \cdot g T_t + (p_{ej} - q)) \quad (7)$$

The great volatility of property prices will be transmitted to T^\wedge , which will be even more volatile. These oscillations will not be seen in the property investor's annual tax payments, which are generated by the taxation of net rents.

How large T^\wedge is in the long run depends on the balance between the annual returns and the capital gains. It is also influenced by the general inflationary level. An example can shed light on the size of T^\wedge . Given the assumptions listed in Box 1, when $T = 60.1\%$ and $T^* = 27\%$, the efficient tax rate $T^\wedge = 50.4\%$. Because $p_{ej} = p_c$ in the example, the capital gains taxation upon realization results in negative proceeds due to a form of tax relief arising from the depreciation of the property's value.

Box 1. Assumptions for calculations.

$i_t = 9\%$
$UC_t^{PR} = 11.05\%$
$d_t = 2.5\%$
$p_{ej} = p_c = 2\%$
$a \cdot g T_t = 0.55\%$
$q = 1\%$
$T^* = 27\%$

9. Second imbalance: Lack of balance between the potential investors in private rental dwellings. The clientele effect: pension funds will take the lead.

Typically, investors in private rental residential properties can be categorized as a) private landlords, i.e. individuals and especially privately owned firms, taxed on their personal income according to special "firm rules", 2) companies and 3) pension funds. The first two groups' taxation follows similar rules and almost the same tax rates are applied. The formal tax rate can be expressed as the shareholders' combined tax rate after company tax and shareholder tax at a level of 60.1 % as a rule (see Table 3).

"The law of one price" also operates on the rental housing market. Without rent regulation the rent for identical rented dwellings must be the same and not vary according to the type of investors and how they are taxed. Rents for dwellings in residential properties built after 1991 are allowed to be set at a level corresponding to market levels. The rent regulation for thoroughly renovated dwellings has been relaxed, and rents in this segment are approaching market levels. Moreover, dismantling of properties, conversion into private co-operative housing etc. has reduced the number of private rental dwellings. The group of investors paying the lowest taxes or having special tax advantages will be able to reduce the rent level, buy the properties at higher prices and take the market from the more heavily taxed investors. In this case, as the rental market moves towards equilibrium in the long run, the investors' tax advantages are partly passed on to tenants as lower rents.

When additional assumptions are applied it is possible to estimate which group of investors will receive the highest after-tax return on investments in private residential properties.

In the case of long-term investments the natural assumption could be that $p_{ej} = p_c$ and applying additional assumptions, an *annual balance property price rise* or *balance inflation* can be calculated, where the above-mentioned differently taxed investors can invest in private rental residential properties with the same after-tax return. The duration of the ownership period may also influence the result.

Using equations (5) and (6) and the assumptions listed in Box 1, the return after tax for pension funds, i_t^{*PF} , and for shareholders, i_t^{*PSR} in the example would vary by p_{ej} :

$$\begin{aligned}i_t^{*PF} &= 0.05950 + p_{ej} \cdot 0.85 \\i_t^{*PSR} &= 0.02462 + p_{ej}\end{aligned}$$

and the annual balance property price rise is:

$$p_{ej} = 23.3 \%$$

and in such an inflationary case, both types of investors would receive a nominal return after tax at 25.8 %. Any government would in effect be forced to stop such a widespread inflationary economy through economic policy intervention. A property market boom with a yearly property price rise above 20 % cannot last long.

Thus at the actual low inflation it will be much more profitable for pension funds than for other private investors to invest in rental residential properties and the advantage will decline quite slowly with rising property price rates. In accordance with the assumptions listed in Box 1, the rates of return are

for pension funds: $i_t^{PFR*} = 7.65\%$ and for shareholders: $i_t^{PSR*} = 4.462\%$, i.e. the returns to pension funds are 71 % larger than for ordinary private owners.

If instead the actual low inflation level is mirrored in a moderate real price increase for properties, as expressed in the assumption $p_{ej} = 3\%$ and $p_c = 2\%$, and the other assumptions are held constant – the results from (5) and (6) are: $i_t^{PFR*} = 8.50\%$ and $i_t^{PSR*} = 5.192\%$, i.e. the returns to pension funds are 64 % larger than for ordinary private owners. The pension funds' advantage seems comfortable, at least until the government raises the tax rate.

Over the last decade prices for rental residential properties have increased more than general inflation whereas previously, these prices followed inflation. Even though it is difficult to argue that high real price rises on properties will continue in the long run, periods with real property price rises – as well as with real price drops – will happen again. The private investor will be taxed on capital gains upon realization, but will to a large extent be unable to utilize capital losses in future capital gains.

Pension funds seem to be in another position. Pension funds' capital tax payments can be rather volatile but for the most part they have a solid capital base to counterbalance volatile taxes. Moreover, capital gains taxes seem to be able to smooth the pension funds tax payments, because there is only a partial (positive) correlation between the rates of return on shares and on properties. In years with high returns on properties and losses/low returns on shares, the capital gains will be relatively high and could possibly even counterbalance negative share income. In contrast, in years with poor returns on properties and high returns on shares, the capital gains could even be negative and thereby reduce tax payments.

If the pension funds are to be able to utilize their tax advantages and invest in rental residential and some commercial properties, they must have a greater capacity for investing in properties. Their returns on bonds and shares are also taxed at a rate of 15 %. This rate, set in 2001, represented a further reduction of the levels of the 1998 tax reform (The Whitsun Package), according to which taxation on pension savings was changed from real capital income taxation to a flat rate tax of 26 %.

A possible scenario for coming years could be that pension funds will lower their proportion of shares and increase their proportion of properties in their portfolios irrespective of actual share price increases. The companies' annual incomes are taxed before dividends are paid out to shareholders. Pension funds were exempt from taxation on all dividends and capital gains until 1998, but the companies - and indirectly, the funds - paid corporate taxes on the surplus. As a result of another reform in 2001, pension funds' share income is also taxed at a rate of 15 % and is in reality "double taxed" at an efficient tax rate of 40.5 %¹³, while the tax rate on other returns has been reduced.

Moreover, pension savings are expected to increase. In accordance with labor market agreements, long-term pension savings are automatically deducted from wages, while pension income is taxed. This taxation policy and the 15 % tax rate on the pension fund returns act as incentives for renewing or improving such agreements. In addition, voluntary pension savings could be increased by the fact that a pension target demands higher savings at the current low level of interest rates.

¹³ $(1 - 0.30) \cdot (1 - 0.15) = (1 - 0.405)$.

The reduction of the tax rate to 15 % in 2001 rapidly led to the sale by private companies of a number of big blocks of rental residential and commercial properties to pension funds.¹⁴ Until 1982 interest on pension savings in pension funds was untaxed and the funds showed no great interest in property investments. However, even taking this fact into consideration, the pension funds' reallocation of assets in the form of more residential and other properties seems slow. In the case of rental residential properties a partial explanation is that the supply of such properties for sale is low and many large rental properties are bought by the tenants, exercising their right of pre-emption and creating a co-operative housing association. Also, the current low numbers of private residential buildings indicates that investment in the construction of new owner-occupied dwellings and the investment by pension funds in new rental dwellings do not yet seem profitable.¹⁵

However, the persistent imbalance in capital taxation seems to indicate that an important proportion of the market for rental residential properties is expected to be transferred gradually to the pension funds. In the first round, members of the funds will be the first to be offered a rental dwelling. In the long run this "preferred customer" treatment will lose importance as the rental stock will be adjusted to meet demand and the dwellings – built after 1991 or renovated – will be rented out at market rents.

If tax rules remain unchanged in future, other private investors will in general find it unprofitable to invest in or even to build rental residential properties, as the necessary rent level would be too high compared with rents in properties owned by pension funds, or the user costs in owner-occupied dwellings (see Section 11 below).

10. Third imbalance: Social housing versus privately owned rental dwellings – user costs and returns.

Under market conditions investors on the rental residential property market will compete and unless there are tax advantages for the investors, the market will move towards long-run equilibrium and yield the minimum risk-adjusted return that investors expect. This approach was used to form equation (4), where user costs UC_t for a rented dwelling at a price of 1 DKK is shown. For a dwelling with capital value K_t user costs will be:

$$UC_t \cdot K_t = K_t \cdot (i_t + d_t + a \cdot g \cdot T_t - (p_{ej} - q)) \quad (4')$$

Decades of political decisions have resulted in strong regulation of the conditions for social housing and the market is far from competitive. The rent – or user cost – for a new social apartment is tied to the building costs. In principle the rent is *cost based* in accordance with the legal framework. The rules for rent setting have remained for the most part unchanged since 1982, whereas the mortgage financing of and direct subsidy system for newly built social housing properties has been changed continuously throughout these years.

¹⁴ These effects were predicted in the first analysis of the consequences for the property market of the new taxation laws on pension savings (Lunde, 2001b).

¹⁵ Tobin's Q has remained below 1 for Danish owner-occupied dwellings since 1986 (or perhaps 1980) and despite even the steep rise in prices for houses and apartments since 1993, private building activity has remained well below 1 % of the stock (Ball, 2003).

Rents must cover expenditures on operation, maintenance and administration, d_t , and the applied figure of 2.5 % has been estimated on the basis of accounting statistics for social housing.¹⁶ In addition, land taxes, the only income- and wealth taxes housing associations pay, and a capital cost, z_t are included. The capital cost for the first year of 3.4 % of the building costs is determined by law and is in subsequent years inflated with $\frac{3}{4}$ of the development in a consumer price index. Therefore the capital cost rate is not a debt service. Hereafter the rent at time t for a social apartment is:

$$UC_t^{SR} \cdot K_t = K_t \cdot (d_t + a \cdot g \cdot T_t) + K_0 \cdot z_0 \cdot (1 + \frac{3}{4} \cdot p_{c,t})^t \quad (8)$$

Elements of the rents are payments to specific special funds in the sector. Most of these savings are returned later in the form of, for example, renovation and modernization of the same apartments and property, and some are redistributed within the sector according to principles of solidarity or are used to finance parts of the building costs of new social housing. The funds' returns are not taxed – in sharp contrast to the general fund income taxation. This tax relief reduces the necessary savings for future maintenance and renovation – or results in better standards. Payments to the funds are savings and are not included in the user costs in (8), just as savings for future renovation and modernization are not included in the user costs for private rental dwellings. However, in principle, the special payments made as part of an apartment's rent, which are used for outside purposes, could be seen as a special tax. In practice, the amounts are difficult to estimate accurately but seem to be minute; therefore, this complication is omitted from the calculations presented here.

In year 0 the difference between (4') and (8) is:

$$(q + i_t - p_{ej} - z_0) \cdot K_0$$

When the selected assumptions (see Box 1) are applied, the rent percentages in year 0 for private rental dwellings (4') and for social housing (8) are calculated to:

$$UC_t^{PR} = 11.05 \% \quad \text{and} \quad UC_t^{SR} = 6.45 \%$$

and the difference is: 4.6 %

Further, it is possible to calculate *a rent relation* for the directly subsidized rent in social housing divided by the market rent at 58 % – or a discount of 42 % for tenants in social housing.

In subsequent years, the development in the properties' value is influenced by both the property price increase and by wear and tear (depreciation). If consumer prices, property prices and market rents increase at the same rate, the future rent relation can be estimated.

For example in year 20 the rent for the social dwelling is close to 62 % of the market rent. The weak equalization of the rent differences is due to the low inflation rate applied.

Social housing associations have the advantage of being exempt from income tax and capital gains tax. Each association has an annual account with a surplus (rents minus expenditures), which may be taxed. Even the associations are forbidden by law to sell their properties and thereby realize a potential capital gain; indeed, they may very well end up paying a tax on their annual capital gains

¹⁶ The lack of return on the equity invested in social housing properties can have reduced the incentive to ensure rational administration and lead to inefficiency. No attempt is made here to test the validity of this argument, but if d_t is too high in the calculations, the same effect will be found for the other tenures.

like the pension funds. Compared with private investors the housing associations avoid paying about half of the surplus to the state, but only 15 % compared with returns on pension funds.

In the case of a newly built social property, 84 % of the building costs are financed through mortgages; since 2000 loans on which the interest is adjusted annually have been used. The local municipality finances 14 % of the costs with an interest-free loan, on which no installments are made for up to 50 years. The last 2 % is the tenants' deposit.

In reality the municipality's loan is a subsidy, as the NPV of the debt services approaches 0. The state pays the difference between the debt services on the mortgage loan and the tenants' capital cost payments $(z_0 \cdot (1 + \frac{3}{4} p_{c,t})^t)$ as a *direct debt service subsidy* and the state carries as well the interest rate risk on the mortgage loan. The tenants' deposit does not carry interest.¹⁷

The equity in the property is gradually transferred to the housing association owning the property, in the following ways: First, in reality, the amortization of the loans is a transformation of debt into equity; second, annual untaxed net rent income is included; and third, property prices can in principle increase and add to the equity. However, because rent regulation has lowered the price level for older rental residential properties, newly built social properties have building costs well above this level. An enormous capital loss would ensue from the first several years if ordinary accounting rules were applied. In reality, the state and the municipality pay the investment in the social housing property.

The *total public subsidy* of a housing association property (or the dwellings) for year t is equal to the alternative risk adjusted return of the investment i_t and the depreciation q minus the tenants' capital cost payments:

$$(i_t + q - z_0 \cdot (1 + \frac{3}{4} p_{c,t})^t) \cdot K_t \quad (9)$$

Lost income tax and the public debt service support are included.

It should be noted that there is considerable variation in the rules and rent regulation applied to older social housing, but this factor is not taken into account here.

The housing associations' exemption from income and capital gains taxes may arise from their function as *charitable organizations*. Dwellings in the sector are distributed according to social criteria and a waiting list system. However, many tenants enter the sector from the waiting lists, and families with social problems do not necessarily continue to have social problems. Therefore, social housing is not exclusively a sector for otherwise homeless people. Many persons and families with low incomes or with social problems reside in the other tenures and tenants in private rental dwellings may be eligible to receive housing allowances, too. The question is whether social housing associations should continue to be exempt from income taxation and whether the transferring of public savings to – in a legal sense – private organizations should continue.

¹⁷ The lost interest income is rather low and is therefore not included in the calculated user cost for tenants.

11. Fourth imbalance: Owner-occupied housing versus privately owned rental dwellings – returns and user costs.

Investor landlords realize their returns $i_t \cdot (1 - T)$ in a nominal income tax system with full taxation of capital gains, (see (5)). The combined effective tax rate is lowered to T^\wedge (see (7)) and the return after tax is similarly increased to $i_t \cdot (1 - T^\wedge)$, when real capital gains alone are taxed upon realization. Both tax models allow investors indirectly to depreciate their investment through capital gains taxation. Private investors' formal tax rate on the return of a property is about $T = 60\%$, but is in reality a somewhat lower combined efficient tax rate, and after 20 years, $T^\wedge = 50.4\%$ in the example in Section 8. – If the return on housing capital with that on business capital was compared instead, the rate $T = 60\%$ would be relevant but again some downward corrections should be made depending on the further circumstances.

The owner-occupier's return on the investment is only taxed according to the property value tax of, as a rule, 1 % of the publicly assessed property value, and there are no directly or indirectly taxable depreciations.

An example can be used to illustrate the significance of this. At a nominal return of 9 %, the investor landlord's return after personal or company efficient tax rates of around 50 % is 4.5 %, while owner-occupiers get 8 % after tax. The total nominal return must be as low as 2 % to result in an equal return after tax.

However, pensions funds' and owner-occupiers' returns after tax are almost in balance. In the example, a pension fund will receive 7.65 % in returns after tax compared with an owner-occupier's 8 %.

If the tax rate of 15 % for pension funds or if the property value tax for owner-occupiers determined the tenure balance and if private rental dwellings not were rent regulated, the Danish housing market today would have had the same housing consumption level without most of the destroying imbalances, (see Section 13 below).

The inequality that has existed for over half a century between private investor landlords' and owner-occupiers' returns after tax has evidently resulted in the disruption of the "the law of one price". The result has been capitalized on in the form of low prices for rental residential properties, very much below the market price level for owner-occupied properties, when the effect of effective maximum rents as a reduction of renters' user costs are included. The more than doubling of income tax levels during the 1960s and 1970s created a further decrease in the price level for rental properties, in contrast to temporary price increases for owner-occupied dwellings. Both price effects greatly increased the supply of owner-occupied housing in the long run. The property price levels for rental and owner-occupied dwellings still differ considerably, but this cannot be proven by current statistics.

For a couple of years in the 1960s, private rental multi-family properties could be split up. The separate apartments were registered as properties and later sold as owner-occupied flats. The difference in the price levels was realized by the investor landlords as large windfall capital gains and needless to say, created turbulence in the housing market as well as in the general political climate. Today, the difference between the price levels creates great advantages for tenants who exercise their rights of pre-emption and create private co-operative associations as required by law, thereby becoming owners of the property.

However, the imbalance in return also reduces the value of an owner-occupier's option to rent his property out for a period. Therefore, in practice privately owned houses and apartments are only offered for rent for rather short periods and no investors try to collect a portfolio of such houses and apartments. Flexibility in the property market has been lost.

Private rental dwellings built after 1991 are beyond the framework of rent regulation and would in principle yield investors a market determined return *before* tax. However, even the after-tax return is much lower for ordinarily taxed private investor landlords than for owner-occupiers and pension fund investors (since 2001). Therefore, very few rental residential properties have been built since 1991 and moreover, in general, the property price level has been below the required prices for newly built owner-occupied houses and apartments.¹⁸ The few private dwellings built during the period were targeted at a luxury segment of the market and were mostly rented on a short-term basis.

User costs for owner-occupied dwellings UC^{OW}_t can be formulated by changing equation (5) above. The owner-occupier's return $i_t \cdot (1 - T)$ on the investment in a owner-occupied dwelling may be read as the return after tax of an alternative investment with same risk. Moreover, the owner-occupier is only taxed according to the property value tax rate e . Hereafter the owner-occupier's return after tax is:

$$i_t \cdot (1 - T) = UC^{OW}_t - d_t - a \cdot g T_t - e + (p_{ej} - q) \quad (10)$$

and the owner-occupier's user costs are:

$$UC^{OW}_t = i_t \cdot (1 - T) + d_t + a \cdot g T_t + e - (p_{ej} - q) \quad (11)$$

where $(i_t \cdot (1 - T) + q)$ is the nominal capital cost of owning the dwelling and $i_t \cdot (1 - T) - (p_{ej} - q)$ is the real capital cost.

If the housing market functions under market conditions and if the landlord and the owner-occupier are to receive the same returns after tax, the tenant's and owner-occupier's user costs should be the same in accordance with the "law of one price". In this case, the right sides of equations (5) and (10) must be equal and

$$e = (UC_t - d_t - a \cdot g T_t + (p_{ej} - q)) \cdot T \quad (12)$$

This condition is more or less only fulfilled in the case of pension funds and only applies when investments are made in rental residential properties built after 1991 (see also Table 3). Until taxation is reduced, the imbalance of returns would hurt other private investors in newly built rental dwellings, as the rents they demand must be higher than the user costs in similar owner-occupied dwellings.

This imbalance is a result of the Danish tax legislation. Moreover, if rent regulation for the older private rental dwellings is abolished or removed through dilution, the rents for private rental dwellings would be moved from below to above the user cost levels for owner occupation. A

¹⁸ See note 15 above.

balance between the two tenures can only be approached if the tax on rental income is lowered to the owner occupation level.

National legislation on this point can vary considerably between countries. The situation in Australia, for example, differs greatly from the Danish case presented here, in that in Australia, there are opportunities for tax arbitrage, as high bracket taxpayers can exploit the tax shelter and offer low bracket taxpayers rental housing at a cost lower than if the same quantity of housing were purchased for owner occupation, (Wood, 2001).

12. Fifth imbalance: Owner-occupiers' user costs depend on the capital structure.

In an income tax regime with increasing marginal tax rates, where low imputed rents on owner-occupied dwellings are taxed and interest expenditures deducted at the margin, owner-occupiers' user costs decrease with increasing income. This coherence is found in the US (Poterba, 1992) and was in effect in Denmark until 1987. Now, as the individual owner-occupier's imputed rent tax has been changed to a property tax rate depending on property value and as interest expenditures can only be deducted from the local flat rate tax, (with equal property value tax rates and equal tax rates for interest deductions,) Danish owner occupier's user costs no longer vary with income. Therefore, with regard to income, clientele effects no longer exist in the rules for the Danish housing market, although previously, in both Denmark and Sweden, low-income groups tended to rent and high-income households tended to own their homes (Englund and Persson, 1982).

Instead, a wealth connection was introduced through the tax reform in 1998 for Danish owner-occupiers with positive equity, as – at a certain property value – full indebted owners pay the highest user costs, which decrease with increasing equity. This implies that the owner-occupier's alternative to the investment of equity in a house or apartment is to place a similar amount in liquid savings – for example bonds, deposits, firms – with a liquid return at the investor's disposition, which is taxed as personal (capital) income. The same relation is found for owner-occupiers in countries where interest expenses are not deductible¹⁹ or are not fully deductible²⁰.

However, if the owner-occupier's alternative were to invest in pension funds, his user costs would *increase* with an increase in the equity ratio or decrease with an increase in the debt ratio.

The fact that owner-occupied dwellings are financed through a combination of equity (E) and debt (D) can be used to illustrate the importance of the capital structure's influence on user costs. The interest rate on the debt is i_D , while the equity's alternative rate of return given the same risk is i_E . For owner-occupiers the tax rate for negative capital income is on average about 32 % and positive capital income from ordinary personal savings is taxed at a rate of up to 59 %, while the alternative tax rate for pension savings is 15 %. Accordingly, owner-occupiers' user costs in (11) can be reformulated to:

$$UC_t^{OW} \cdot K_t = E_t \cdot i_{E,t} \cdot (1 - T_E) + D_t \cdot i_{D,t} \cdot (1 - T_D) + K_t \cdot (d_t + a \cdot g \cdot T_t + e - (p_{ej} - q)) \quad (13)$$

¹⁹ Wood, in the Australian example, calls it "tax penalty on debt-financed purchases" (2001, p.6)

²⁰ For US, Gervais mentions the borrowing penalty too and shows "that the net benefit from homeownership is strictly increasing in the equity fraction of the house when mortgage interest payments are not fully deductible." (2002, p. 1471)

The connection between the return i_t in (10), the rate of return on the equity i_E and the interest rate on the debt i_D is calculated on the basis of Miller–Modigliani’s proposition 2:

$$i_{E,t} = i_t + D/E \cdot (i_t - i_{D,t}) \quad (14)$$

and when an investment is profitable, the returns exceed the interest rate on the debt, i.e. $i_t > i_{D,t}$. $i_{E,t}$ will rise with increasing debt in the property.

An example can be used to illustrate the effect. The rate of return applied is again 9 %, the interest rate on debt is 7 % and the rest of assumptions are the same as in Box 1. In Table 4 below, user costs are calculated for owner-occupiers with different capital structures, whose alternatives are ordinary direct savings on which a personal income tax of 59 % is applied or illiquid pension savings, which are taxed at a rate of 15 %. The calculations are made as a percentage of user costs for a house costing 2 million DKK, a price slightly below the average house price in the Copenhagen region.

Table 4.

User costs based on owner-occupiers’ different capital structures and alternative tax rates.

	$K_t = 1$		$K_t = 2 \text{ mill. DKK}$	
	$D_t / K_t = 10 \%$	$D_t / K_t = 90 \%$	$D_t / K_t = 10 \%$	$D_t / K_t = 90 \%$
$T_{E,t} = 59 \%$	0.069	0.084	138,580 DKK	168,820 DKK
$T_{E,t} = 15 \%$	0.106	0.096	211,620 DKK	192,580 DKK

The results in Table 4 illustrate the strong dependence of user costs on tax rates and thereby on the owners’ capital structure in the case of owner occupation. The answer to the open tax philosophical question: what is the owner-occupier’s savings alternative to investing equity in his house or apartment, can influence user costs by more than one-third. “The law of one price” is thus valid for property prices on purchase, but not when the individual owner’s user costs are calculated. The costs of remaining in owner occupation depend on the owner’s wealth.

An owner-occupier has no advantages on the capital market when he takes out loans or buys bonds with same return and duration. The net capital income principle in taxation ensures this. In fact, an owner-occupier has an incentive to use his savings to prepay loans in order to avoid paying the spread to a mortgage or a commercial bank.

Apparently, owner-occupiers have an incentive to engage in tax arbitrage by raising mortgage loans in order to invest the proceeds in institutional pension savings. Interest expenditures are then deducted at a tax rate of about 32 % and capital income in the pension fund is taxed at a rate of 15 %. However, at the current interest level, this advantage becomes a disadvantage when the fees to the mortgage bank and to the pension fund are included in the calculation. Furthermore, the owner-occupier must pay debt services without a liquid positive cash flow from savings.

However tempting it might be to calculate user costs for different mortgage loan types, it would be meaningless to do so. After necessary corrections for differences in the characteristics of the loan products and for differences in the risks on the loans, user costs would be the same.

13. The imputed rent subsidy?

Under market conditions a fundamental decision in the housing market is whether to buy a dwelling or to rent a similar dwelling and find an alternative investment for the equity otherwise invested in the owner-occupied dwelling.

It was argued (in Section 10) that owner-occupiers are favored through the low property value tax compared with the full taxation of investor landlords on their property return. The favorable taxation could also be seen through the lower tax payment if they use their house or apartment themselves compared with the full taxation if they rent it out to other persons. This tax reduction is the well-known imputed rent subsidy for owner-occupiers. Since 1903 changing rules, increasing tax rates, better property assessments and tax reforms (taking effect in 1987, 1994 and 1999) have influenced the tax on imputed rent for Danish owner-occupiers and thereby the value of the imputed rent subsidy.²¹

As capital returns on social housing and private co-operative housing properties are totally untaxed, tax subsidization of these tenures is even higher than it is in the case of owner occupation. Since the capital income taxation of the investor landlords in private residential and commercial properties is equal, this taxation level must be perceived as unsubsidized. No political decision has been made determining that property taxation on residential property in general should be lower than on private commercial properties. However, such a leveling of property income taxation is not obvious (see Miles, 1994, chap. 9). Instead, in a general reform of housing taxation, owner occupation could be chosen as a “natural balance” level. Under such circumstances, owner occupation would be unsubsidized, while private rental residential dwellings were “overtaxed” and both social housing and private co-operative dwellings were “undertaxed”.

Another fundamental decision after choosing owner occupation is how much capital should be invested in the house or apartment and how much should be saved as a supplement to pension, liquidity and other purposes. Again, the owner must choose between savings with interest income tax rates of up to 59 %, and pension savings with interest income tax rates of 15 %.

On this background, the question since 2001 has been whether owner-occupied dwellings are subsidized, and if so, by how much?

During the years with income tax on the owners' taxable imputed rent, the *imputed rent subsidy* was defined as:

$$K_t \cdot (l' - s) \cdot T$$

where l' is the “true” imputed rent and s is the taxable rate.

Given the current property value tax the similar “*property value tax subsidy*” can be defined as:

$$K_t \cdot (l' \cdot T - e) \tag{15}$$

The subsidies for “true” imputed rents of 6 and 8 % and for the tax rates of 15 % and 59 % are calculated in Table 5 in per cent and for an owner-occupied dwelling with a property value of 2 million DKK.

²¹ The fact that cars, boats, carpets, diamonds etc. do not carry an imputed rent tax is frequently brought up in discussions on imputed rent taxation on housing. The obvious explanation is that these items' values are much lower in total and that especially cars are heavily taxed with other duties.

Table 5.

The “property value tax subsidy” – in per cent and for a house valued at 2 million DKK.

T	$i' = 6\%$	$i' = 8\%$
Per cent:		
59 %	2.54 %	3.72 %
15 %	-0.10 %	0.20 %
Amount:		
59 %	50800 DKK	74400 DKK
15 %	- 2000 DKK	4000 DKK

It seems impossible under the present capital income tax conditions to decide whether owner-occupied dwellings are subsidized. The answer must depend on the open tax philosophical question of the owners’ saving alternatives. The political determination of a tax philosophy for the future can have far-reaching consequences not only for the owner-occupiers’ tax payments but also for the owner-occupied property markets and for the housing market in general.

14. Sixth imbalance: Private co-operative dwellings versus owner-occupied dwellings – user costs and returns.

Private co-operative housing associations who own their own properties do not pay tax on net rent income or on capital gains and can therefore not be granted interest payment relief. The tenants in the properties individually and jointly as owners in the associations do not pay capital income tax on their equity in the associations. On the contrary: they can deduct interest expenditures from their personal income taxation on any personal loans they have taken out in order to buy into the association.

Compared with owner-occupiers, the tenants’ lack of property value tax reduces their user costs by about 1 percentage point.

Private co-operative housing associations can raise mortgage loans by using the properties as collateral. The tenants cannot provide this security and therefore, the interest rates on their personal loans become higher. The tenants might not use their ownership document as collateral for loans, because up till now it has been politically unacceptable to evict tenants from their home if they did not make payments on a loan. A new law has created some options for security, which are expected to lower the tenants’ loan interest rates considerably.

- newly built private co-operatives

Since 1981 private co-operative dwellings have been built with direct public support, limited by an annual ratio and rules on maximum building costs and maximum dwelling size, and debt financing with a politically determined loan type was mandatory. This direct support will be phased out in 2005. This special tenure is not included below but the taxation conditions are identical.

Instead, the construction of new private co-operative dwellings without direct subsidies and without the other limitations, the so-called “unsubsidized private co-operatives”, have been common since the mandatory mortgage financing was cancelled in 2000. An inexpensive housing alternative was created for persons, often former owner-occupiers, who to a large extent are able to invest equity. This tenure comprises a remarkable, but statistically unknown, share of current house construction.

The user costs for a private co-operative dwelling UC^{COO}_t can be derived from the user costs for owner-occupied dwellings (equation (13)). Without property value tax and interest tax relief for the association the result is:

$$UC^{COO}_t \cdot K_t = E_t \cdot i_{E,t} \cdot (1 - T_E) + D_t \cdot i_{D,t} + K_t \cdot (d_t + a \cdot g \cdot T_t - (p_{ej} - q)) \quad (16)$$

The calculations in Table 2 showed the rather large differences between the user costs for private co-operative dwellings depending on whether the association was mostly financed through equity, i.e. through deposits from the tenants/owners. These differences are not dependent on whether the single tenant/owner has financed his equity through personal savings or personal debt. However, the costs for the individual depend on his capital structure in the same way as they do for owner-occupiers.

In practice, older owner-occupiers often sell their house or apartment with a large equity and buy a private co-operative dwelling. In some cases this new co-operative form has been targeted towards older owners as a form of community for pensioners.

In Table 2 the tax rate 59 % for positive capital income was used. For older former owners the pension savings alternative is not obvious in general. However, if the relevant tax rate for equity was 15 % most of the tax subsidy for private co-operative dwellings would disappear.

Newly built private co-operative dwellings may also be targeted towards young people and families, who thus can avoid the property value tax of owner occupation. It is likely that in the near future a sort of project financing will be made available so that buyers will be able to obtain an outside personal debt to deposit in the association as tenants' equity. Also, at the current low interest level the focus can be shifted from the fact that associations do not have the right to deduct interest expenses, especially as interest-adjusted interest-only loans are raised in many new projects.

Under conditions of unchanged tax rules and legal improvement of security for loans, the new "unsubsidized" private co-operative dwellings may end up dominating newly built dwellings and crowd out owner-occupied dwellings, where several apartments or houses must be built simultaneously in order to create an association. This new tenure will – as "tax free ownership" – capture a certain part of the market for owner occupation and create a new imbalance.

- old private co-operatives, former private rental dwellings

Since 1979 tenants in private rental residential properties have been allowed to buy the property at the agreed property sale price when the landlord was ready to sell the property to a new owner, if the tenants created a private co-operative association. Accounting for one-third of the dwellings, this is the most common form of tenure in the municipality of Copenhagen.

The older private co-operative dwellings have the same tax rules and financing options as the new ones. The main difference is that rent regulation and full taxation on returns for owners of private rental residential properties has resulted in property values far below market values. This low price level comes into effect when the tenants exercise their right of pre-emption to buy the property as co-operative housing when it would otherwise turn over to a new landlord.²² This difference is

²² Informal questioning of many students living in older private cooperative dwellings indicates that the property price (equity + debt) of such an apartment lies for the most part within the range of one-fifth to one-third of the price of a similar owner-occupied apartment.

maintained through a set of maximum prices in the law for private cooperative dwellings.²³ Not surprisingly, a topic in relation to this tenure is “money under the table”, i.e. illegal payments.

In principle, the older private co-operative dwellings have the same user costs as shown in (16) above but the rules on maximum prices require that the equation be adapted before being used for estimation. Interests on debt, the alternative return on the equity, the depreciation and the expected property price rise may be calculated for the maximum property price allowed. However, expenditures on operation, maintenance and administration are not lowered because of the effective maximum prices for the dwellings’ equities.

The special annual subsidy to tenants in the older private co-operative dwellings can be written as

$$(K_t - K'_t) \cdot i_t \cdot (1 - T) \quad (17)$$

where K'_t is the maximal legal price for the private co-operative dwelling (not the equity) and i_t is the return of the alternative investment. The tenants/owners claim this subsidy in addition to the value of the association’s tax advantage.

15. Conclusion – Taxation of residential properties in the future?

This paper has clearly demonstrated that the unequal tax treatment of the return on investment in the different tenures has created significant imbalances in the housing- and the residential property markets.

For decades, rent regulation has lowered private landlords’ rental income, which has moreover been fully taxed. At the same time, social housing associations have been exempt from income tax and have received high direct subsidies to build new social housing. Owner-occupied dwellings have been favored by low imputed rent taxation. The tenants in larger private rental residential properties have been allowed to buy the property at the low property price determined by rent regulation when the landlord is prepared to sell. The only stipulation is that the tenants in the property create a private co-operative association. At the same time, the association is exempt from income tax.

Certainly, the decades of support for housing has created one of the best housing consumption levels in the world, quantitatively, 52 m² per capita. On the other hand, the unequal taxation and subsidization have had profound and unfortunate influences on the housing and property markets affecting possibilities for entrance into the market, creating disparities in housing- as well as non-housing consumption, and periodically creating windfall capital gains and losses.

New as well as well-known imbalances are presented in six groups. The first is created by differences in the taxation of capital gains. Pension funds are taxed on the annual nominal capital gain, but at a rate of only 15 %. Other private investors in rental residential properties are taxed at a rate of approximately 60 % on the *real* capital gain upon realization; therefore this tax is to a large extent insignificant and the investors’ combined efficient tax rate is reduced. Owners in the other tenures do not pay capital gains tax.

²³ These maximum prices are defined as the difference between the accepted property prices and the value of the debt, i.e. as maximum prices for the equity.

The second, relatively new tax imbalance arising in the housing and the property markets is mostly caused by the reduction of the flat-rate tax on the return of pension savings in pension funds to 15 % in 2001. As a result of that change, the return on pension funds is around 2/3 higher than on the returns for other private investors investing in rental residential properties, unless the inflation rises above 20 %. In the long run, a clientele effect can only be expected to appear.

Also, the low tax rate on the capital income of pension funds has possibly eliminated the owner-occupiers' imputed rent subsidy (or "property value tax subsidy"), because pension savings in pension funds comprise the most obvious savings alternative to investment in owner occupation.

A third and rather long-lasting imbalance is between social housing and private rental dwellings. The tax free status of social housing associations and direct subsidies on building and rents has a formidable effect on rents, which are calculated to be around 60 % of the rent for a similar dwelling in private rental housing.

The fourth imbalance is possibly the most well known: the low property value tax on owner-occupied dwellings compared with the tax of 60 % on the net rent income that private investor landlords (excluding pension funds) are burdened with. Even the lower efficient tax rate at a level at 50 % is far above the tax on owner occupation. However, the taxation of owner-occupiers and pension funds as property investors are in balance.

The fifth imbalance exists among the owner-occupiers as their user costs depend on the capital structure. When the equity ratio increases from 10 to 90 %, for example, user costs became 18 % lower. However, if the owner-occupiers' alternative to investing in the own dwelling is pension savings, the owner's user costs would rise a little with increasing equity. In this case, the new 15 % tax rate on pension funds' income again affects the housing market.

The sixth imbalance arises from the private co-operative housing associations' tax free status. In addition, owners of these dwellings are exempt from paying property value tax, unlike owner-occupiers. The conversion of private rental properties into this tenure occurs at the low price level of these properties and this fact, in combination with rules for maximum prices for buying and selling the dwellings, leads to a considerable reduction of the tenants' user costs. Contributing to this final imbalance is that newly built – so-called "unsubsidized" – private co-operative dwellings will in coming years – as "tax free ownership" – capture a certain share of the market for owner occupation.

An issue in the national debate on housing taxation in Denmark that should be mentioned in this context is that the former government, the Economic Council and many independent economists have argued that the immobile tax sources should be taxed into a greater extent in order to reduce the high income tax pressure. However, a reallocation of a little more than 10 % of all taxes means that the property value tax on owner occupation must be increased to 6 % or all properties must be charged a property tax of 2.6 % of the assessed property value, and the tax relief of private interest expenses must be removed (Lunde, 2001a). Such a reallocation could easily imply significant consequences for price and quantity in the housing and property markets, without reducing the Danish tax level.

In an analysis of the Danish tax system and of capital income taxation, the Economic Council has proposed that all capital income should be taxed at a rate of 20-25 % and has found this would be

similar to a property value tax on owner-occupied dwellings of 1.2 – 1.5 % (The Economic Council 2001, p. 206). However, the property value tax rate should, in fact, be 2 % if it is to equal a flat rate of 25 %.

A more significant increase in the property value tax bears the risk of creating a shock effect on demand in the market for owner-occupied dwellings and indeed, on the entire housing market, because owner-occupation is the "largest" housing submarket, accounting for more than 50 % of the dwellings and 60 % of the population. It would be more appropriate to create a balance in the residential property market and thereby in the housing market in a future "housing reform" on the basis of the tax-level for owner occupation.

This paper has revealed significant imbalances and inequalities in the housing and property markets, some of which have existed for many years and some of which have appeared more recently. Such inequalities must be removed – first and foremost, because of their negative impact on housing demand. However, a pronounced aversion towards changes in the regulation of the housing market and especially in the area of housing taxation is evident in the political scene in Denmark.

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