Price and efficiency effects of taxes and subsidies for Australian housing

By

Peter Abelson* and Roselyn Joyeux** ***

This paper quantifies the major subsidies and taxes that affect housing, the impacts on house prices and housing consumption, and the efficiency effects. Private housing receives an estimated net subsidy of $6.3 billion per annum. Most of this subsidy accrues to homeowners, who as a group receive about an 8 per cent subsidy on imputed gross rentals. The rental sector receives a subsidy of approximately 0.4 per cent of rents. On plausible (unitary elasticity) demand and supply assumptions, the homeowner subsidy increases all housing prices by about 2 per cent and total housing consumption by about 2 per cent, with the rise in consumption by home owners more than offsetting the fall in consumption by renters. The housing subsidy produces an estimated deadweight loss from expenditure on renovations of about $100 million per annum. However, contrary to previous work, the paper finds that the housing subsidy produces *welfare gains* from expenditure on new housing in the order of $187 million a year. This arises because the subsidy offsets the over-regulated supply of new housing. Transaction taxes on housing have a separate deadweight loss of $375 million per annum. Also, the unequal treatment of homeowners and renters creates a small annual deadweight loss.

JEL classification H20, H21, R31

1 Introduction

Housing presents a paradox in that it attracts concurrently numerous taxes and substantial subsidies. It attracts taxes partly because it is an easy tax target. On the other hand it attracts subsidies because, despite the taxes, governments generally want to make housing more affordable. Thus, in Australia, taxes on housing include land taxes, local council rates, stamp duties on property transfers, developer charges, the goods and services tax (GST) on sales of new dwellings and renovations of existing dwellings, and capital gains taxes on rental property and second homes. On the other hand, there is no income taxation of imputed rent, no consumption taxes on rents, and no capital gains tax for owner-occupied housing. There are grants to assist first home buyers and rent subsidies for low income households in private and public housing.

These fiscal measures are much criticised. One set of critics argues that the taxes make housing unaffordable. For example the Housing Industry Association (HIA, 2003), along with the Australian Treasurer, contend that developer charges are in effect taxes on inputs to new housing on new housing that significantly raise house prices. Other critics argue that the subsidies create inefficient allocation of resources. For example, Henderson and Bourassa (1992) contend that the subsidies result in significant over-investment in owner-occupied housing. The Reserve Bank (2003, p.5) expressed concern that tax arrangements were causing finance and resources to be 'disproportionately channelled' into rental housing.

* Faculty of Economics and Business, Sydney University
** Department of Economics, Macquarie University.
*** The authors are grateful for the comments of two referees. Any errors or omissions remain our responsibility.

In this paper we analyse the price (affordability) and efficiency effects (deadweight losses) of these fiscal measures. We conclude that all of the views quoted above are wrong. Section 2 describes and quantifies the national impact of the main taxes and subsidies that affect housing. Section 3 shows the impacts on housing user costs. Section 4 analyses the impacts of these fiscal provisions on housing prices and consumption in the owner-occupier and investor/renter sectors. Section 5 estimates the efficiency effects.

2 Housing Taxes and Subsidies in Australia

Table 1 shows the main housing-related taxes and subsidies (including tax concessions and public expenditure subsidies) in Australia. We note three general points about the tax concessions. First, although some concessions (for example the tax treatment of negative gearing) are economy-wide concessions, we include them here because they have a particularly strong impact on housing. Second, the notion and size of a tax concession depends critically on the definition of an appropriate tax benchmark (tax base and tax rate). In this paper the appropriate tax base is taken be an individual's full real income as per the standard Haig-Simons definition (the amount of goods and services that an individual can enjoy in any period with no change in their net wealth).[1] The benchmark tax rate is the average charged for similar income or goods. Third, the value of the tax concessions varies with personal and economic circumstances. Specifically, the value rises with higher equity in housing, higher marginal tax rates, and higher rates of inflation.

Insert Table 1 here

2.1 Major tax concessions that assist housing

The four major tax concessions that substantially assist housing are the exclusion of imputed rents from the income tax base, the exclusion of all housing from any consumption tax base, the exemption of owner-occupied housing from the capital gains tax (CGT) and the asymmetric income tax treatment of losses and gains by investors in rental housing.

The exclusion of imputed (owner-occupied) housing rents from the income tax base is part of the general exclusion of imputed rents from consumer durables from the tax base. However, housing is by far the most important exclusion. Also, the rental income of landlords is taxed. Wang et al. (2004) and the Productivity Commission (PC, 2004) estimated that the non-taxation of imputed rents was worth net $8 billion per annum to homeowners in 2001 and 2003 respectively. Wang et al. (2004) provide more detail. They estimated that with household equity averaging 81 per cent and a marginal tax rate on average income of 31.5 per cent, the non-taxation of gross imputed rent less housing expenses provided an *after-tax* benefit of $13 billion to owner-occupier households. Partly offsetting this, the non-deductibility of mortgage interest payments cost homeowners an estimated $5.0 billion.[2]

Secondly, existing housing services are not part of the consumption tax base. While nearly 60 per cent of goods and services in Australia attract a 10 per cent value-added tax (the GST), there is no GST on imputed or actual rents.[3] Given an estimated gross annual rental of $99 billion on housing stock in 2004 (see Table 2 below), a 10 per cent GST would raise tax revenues of $9.9 billion per annum (assuming unchanged quantity, price or rental of the

[1] This tax base differs from that employed by Treasury (2006) in its annual estimates of tax concessions, which are based on an arbitrary, politically feasible, tax regime. For example, Treasury excludes taxation of imputed rents from its calculations.

[2] Wang et al (*ibid*) also show how the subsidy rises with increases in the marginal tax rate.

[3] If imputed rents were taxed as income, then taxing them as consumption would be double taxation of rents. However, this is a standard feature of a tax system that taxes income and consumption. Because of the importance of the GST (value-added) tax in Australia (as in many other countries), the exclusion of housing from the GST is effectively a tax concession.

housing stock). This is partly offset by GST of $6.0 billion charged on new houses and on inputs to house renovations and maintenance.

Thirdly, home owners are exempt from CGT. Wang et al (2004) estimate that, between 1990 and 2001, the value of this concession compared with a tax on real capital gains averaged $10.0 billion. However, real capital gains over this period were high. With the estimated value of owner-occupied stock equal to $1813 billion in 2004 (see below), and an estimated real price increase (after allowing for owner improvements) of 1 per cent per annum, gross capital gains would be $18.1 billion per annum. With a marginal tax rate of 40 per cent, the CGT concession would equate to a subsidy of $7.2 billion after tax.

Unlike homeowners, investors in rental housing pay CGT on half the nominal capital gains. Thus they pay tax on $0.5(\pi + rg)$, where π is the general inflation rate and rg the real gain in house prices. This tax is often regarded as concessionary. However, compared with a 100 per cent tax only on rg, it is concessionary only when the general inflation rate (π) is less than rg. If $\pi > rg$, it is not concessionary (indeed it may be regarded as an excess tax). This is commonly the case, with inflation rates currently about 2 to 3 per cent per annum and the long run real house price increase about one per cent per annum.

However, matters are complicated by the tax treatment of borrowing costs for renters. Investors are allowed to deduct losses, inclusive of borrowing costs, against income from other activities in the same period.[4] The *combination* of allowing investors to deduct 100 per cent of the cost of borrowing while taxing only 50 per cent of the capital gains *is* a tax concession. Suppose that an investor borrows $100,000 at 7 per cent, that inflation is 3 per cent per annum, and his marginal tax rate is 40 per cent. Given a four per cent real return, the investor records an operating loss of $3000 on this investment, which reduces his tax payment by $1200. On the other hand, if he realises the nominal capital gain of $3000, he pays tax on only half of this (i.e. a tax of $600). His net gain is $600 or 0.6 per cent of the capital value. If the capital gain is deferred, the present value of the gain increases. The *asymmetrical treatment of nominal costs and gains* provides investors with an annual tax concession that equals (the amount of the loan outstanding × the inflation rate × the marginal tax rate) less the present value of the tax on realised nominal capital gains. Allowing for an estimated capital value of rental stock of $657 billion (see Table 2) and average investor gearing of 40 per cent, loans to rental investors are currently about $262 billion. Working with the same parameters as above, the tax concession is worth $1.57 billion (0.006 × $262 billion). The real value of the concession is larger in so far as capital gain tax is deferred.[5]

2.2 Other housing subsidies

Governments support home purchase and rental in various ways (see Australian Institute of Health and Welfare, 2005a, 2005b). Easily the largest schemes are the first home owner grant (FHOG) scheme and the provision of private rental assistance. Between its inception in July 2000 and January 2004, the Australian government provided $4.3 billion to over 550,000 first home owners (PC, 2004), a subsidy of $1.2 billion per annum. The Australian Government provides rental assistance directly to about one-quarter of all renters via means tested cash benefits. Wang et al. (2004) report that, in 2001-02, the Commonwealth provided over $1.8 billion in rent assistance to 698,000 households for an average benefit of $2470 per household in the year.

---

[4] When the losses arise from borrowing costs, the practice is known as negative gearing. The Productivity Commission (2004) noted that, of the 17 per cent of taxpayers who report rental income, nearly half report losses on rental investment and in some years reported losses from rental property exceed reported incomes. Because negative gearing is a general business practice, the Treasury (2006) does not consider it to be a tax concession and the Productivity Commission (2004) did not estimate a tax concession figure.

[5] The estimated value of this tax concession is based on the benchmark assumption that only real income should be taxed and only real costs should be tax deductible. A similar asymmetry of tax treatment occurs with depreciation allowances, but the effects are much smaller and not estimated here.

Public housing is a third major vehicle of housing assistance. About 5 per cent of households in Australia live in public housing with most receiving a rental subsidy. Wang et al. (2004) estimate that just over 300,000 households receives a subsidy of $1.25 billion per annum, which equates to about $4150 per household per annum.

2.3 Taxes on land and housing

The main taxes on housing are land taxes, stamp duties and GST on land and new houses and on renovations. State and territory taxes on residential land yield nearly $2 billion per annum (PC, 2004). Given our real income benchmark for tax (and because other forms of household wealth are not taxed), these land taxes are viewed as an excess tax in this paper.[6]

In addition, in 2004 local government in Australia raised about $8.0 billion in land taxes (rates). These revenues are also regarded here as taxes because they have no direct relationship to services provided and are widely viewed as taxes by Australian households. However investors can deduct land taxes, whether levied by the states or local jurisdictions, from their taxable rental income. Thus the effective cost of land taxes (LT) to investors is LT $\times$ (1-*mtr*), where *mtr* is their marginal tax rate which we assume is 40 per cent in this analysis.

Turning to stamp duties collected by the states, total stamp duty on conveyancing of residential properties is about $9 billion per annum (PC, 2004).[7] These stamp duties are regarded as part of the capital price and reduce any long-term CGT liability for investors, but they are not tax deductible against income.

GST is imposed on vacant land sold by registered enterprises, new dwellings, renovation expenditures, and inputs to home maintenance. Gross capital formation for private dwellings is about $50 billion per annum, including some $30 billion on new dwellings and $20 billion on renovations. This expenditure attracts GST of about $5.0 billion per annum. Including another $1.0 billion of GST per annum on land development and repairs and maintenance (PC, 2004), total GST on housing is about $6.0 billion per annum.

Finally, most state and local governments levy developers of new housing for public provision of related economic and social infrastructure. The charges (see Housing Industry Association, 2003) vary greatly with jurisdiction and are usually much higher for houses on the urban fringe than for units in established areas. Allowing an average developer charge of $20 000 per 150 000 new dwelling units in a year, developer charges total some $3.0 billion per annum. However, although the levies are a capital charge on developers rather than a recurrent charge on homeowners, they are generally designed to reflect the costs of services and to be payments for services provided. Accordingly, although we analyse the effects of the developer charges below, we do not include them as a tax in Table 3.

2.4 Housing subsidies and taxes: a summary

Table 2 provides estimated capital and annual values of the housing stock in 2004 in the owner-occupied and investor/rental sectors. The estimates of privately-owned stock are based on Household Census figures for 2001 (Kennedy and Robertson, ABS, 2003) plus a net increase of 100,000 dwellings per annum to 2004 that allows for demolitions. The same ABS report shows that 70 per cent of occupied stock is owner-occupied.[8] The Reserve Bank of Australia (RBA, *Bulletin*) estimates that the total value of the private housing stock in mid-2004 was $2558 billion. This implies a mean value of $325,000 per dwelling unit.[9] To estimate the value of the capital stock, the RBA uses privately purchased and unpublished dwelling price information. Drawing on data in Abelson and Chung (2004), our estimates are marginally lower. As far as we are aware, there are no separate estimates of the value of

[6] On the other hand, the Productivity Commission (2004) viewed the home owner exemption from land taxes on their principal homes as a subsidy with an estimated value of $7 billion per annum.
[7] These figures do not include stamp duties on mortgages associated with property purchase.
[8] Ten per cent of the total privately owned housing stock was unoccupied at the 2001 Census date.
[9] Mean capital city values are typically about 8 per cent higher than median values.

owner-occupied and rental stock. According to the 2001 Census, owner-occupiers occupy 81 per cent of separate houses and 30 per cent of units (with the balances rented). However, with two-thirds of units in Australia within 25 km of the Sydney and Melbourne CBDs, average house prices are not much higher than average unit prices. For the estimates below, we take owner-occupied dwellings to have a mean value of $325,000 and investor dwellings to have a mean value of $275,000. Imputed and actual rental values are based on rentals at 4 per cent of capital values (Reserve Bank, 2003). Turning to publicly-owned rented housing, Wang et al (2004) report nearly 390,000 such dwelling units. An assumed mean value of $200,000 for these dwellings is adopted here for illustrative purposes.

Insert Table 2 here

Based on these data and assumptions, the capital value of the private housing stock in mid-2004 was $2470 billion, including $1813 billion in owner-occupied housing and $657 billion in private rental housing. Annual investment in housing (including land development, building and renovations) is about $60 billion per annum. Allowing a 4 per cent gross rental rate, the gross rental value of all private housing is $99 billion per annum, including $73 billion in imputed rent for owner-occupied housing and $26 billion in private rental housing.

Table 3 summarises the estimated annual values of housing subsidies and taxes for the private owner-occupied and rental sectors based on the above assumptions. The table includes estimates of GST foregone by the lack of a consumption tax on rents, but these are offset partly by GST on capital improvements and maintenance. Local government rates are included because they are viewed here as a tax rather than a user charge. Developer charges are excluded because they are primarily user charges. Where a tax (such as stamp duty) applies to both sectors, it is attributed proportionally to the value of the stock in each sector except for GST on new homes which is assumed to be borne mostly by the home owing sector. Note also that investors can deduct land taxes in their income tax return.

For all private housing, based on 2004 data, estimated subsidies total $29.7 billion per annum and taxes total $23.4 billion per annum, making a net subsidy of $6.3 billion per annum.[10] This net subsidy is equivalent to 6.4 per cent of estimated gross annual rental value of housing and about 0.8 per cent of GDP. Most of the subsidy accrues to the homeowner sector, which inclusive of landowners receives an estimated net subsidy of $5.9 billion per annum. If, as argued below, most of the $3.0 billion GST on new homes is borne by landowners, homeowners receive a subsidy of nearly $8.9 billion per annum. Including second homes, this is equivalent to about $1600 per owner dwelling per annum. Investors and renters of private rental properties jointly receive an estimated net subsidy of only $0.4 billion per annum. This rises to $0.9 billion if GST on new homes is borne by the landowner, which equates to an estimated net subsidy of $375 per rental property per annum.

Insert Table 3 here

3 Subsidies, Taxes and Housing User Costs

The macro-analysis above suggests that homeowners receive an *average* subsidy equivalent to about 8 per cent of their imputed gross rents (rising to 12 per cent of gross rent if the GST on new homes is borne by landowners). To assess how this subsidy may affect the demand of housing, it is instructive to consider how the subsidy affects individual housing user costs.[11] Housing user cost (H_{uc}) can be expressed as:

[10] It should not be inferred that if the subsidies were withdrawn, the Government would necessarily gain $6.3 billion in revenue because households could reduce their housing consumption.

[11] We agree with the reviewer who noted that housing user costs may at times be strongly influenced by capital gains and that, at such times, user costs may be negative and a poor guide to house prices.

$$H_{uc} = P_h\,(r + m + t_h - \pi_h) \quad (1)$$

where P_h is the house price, r is the weighted nominal interest rate after tax, m is house maintenance cost as a percentage of house price, t_h is taxes on housing as a percentage of house price, and π_h is the nominal rate of house price inflation (which is not taxed). The weighted nominal rate of interest after tax to the homeowner is:

$$r = \alpha i(1-t_r) + (1-\alpha)mr \quad (2)$$

where α is the owner's equity in his house, i is the before-tax rate of interest on this equity foregone, t_r is the owner's marginal tax rate, and mr is the mortgage rate on a housing loan.[12] Thus actual housing user costs, inclusive of opportunity costs, can be expressed more fully as:

$$H_{uc} = P_h\,[\alpha i(1-t_r) + (1-\alpha)mr + m + t_h - \pi_h] \quad (3)$$

On the other hand, with a real income tax regime, the homeowner would pay tax on imputed rents from his equity in the home and on real capital gains, but would not pay other property taxes. Thus real housing user costs (H_{ruc}) would be:

$$H_{ruc} = P_h\,[\alpha i + (1-\alpha)mr + m - \pi_h + rg.t_r) \quad (4)$$

where the terms are as above, including rg which is the real percentage gain in house prices.

For our base case estimates of user costs, we assume the following values: $\alpha = 0.50$, $i = 6.0$, $mr = 7.0$, $t_r = 0.30$, $m = 1.5$, $t_h = 0.66$, $\pi_h = 3.0$, $rg = 1.0$, and $P_h = \$300{,}000$. In the results reported in Table 4, we also consider three main variations in assumptions (one at a time relative to the base case). We vary the home equity rate (α) to 20 per cent and 100 per cent; we examine the effect of an increase of one per cent in the interest rates (i and mr); and we consider the impacts of marginal tax rates (t_r) of 20 and 40 per cent. Changing the house price affects the size of the subsidy but not the relative rates of return. We note also that the results below are sensitive to the rate of nominal inflation, assumed here to be 3 per cent, which reduces both actual and real housing costs by 3 per cent.

Drawing on the base case assumptions, real housing user costs for homeowners are 5.30 per cent of house price, compared with actual user costs after subsidies of 4.76 per cent of house price. This produces an annual saving of $1620 for a $300,000 house (which is similar to the average of $1600 estimated above). The final column shows the savings as a percentage of estimated real housing user costs. In the base case, this is 10.2 per cent. These savings rise substantially with the proportion of equity in the home and higher marginal tax rates. They also rise though by a smaller amount with an increase in interest rates (holding other variables constant). Conversely the savings are small for a homeowner who is heavily geared or who has a low marginal tax rate.

Insert Table 4 here

Evidently the present value of the housing user cost subsidy for home owners depends on market conditions such as interest rates and, for each household, on the initial level of gearing and the rate at which this is reduced, applicable tax rates, and private discount rates. However, a profile starting with high gearing and modest tax rates and finishing with high equity and high tax rates, and with a discount rate of say 5 per cent per annum, typically generates a present value of savings that is around 7-8 per cent of house price.

[12] Equation (2) reflects the fact that if the homeowner invested his equity outside the home, he would have to pay tax on the return.

4 Fiscal Measures and Housing Prices and Consumption

We now examine how these fiscal measures affect housing prices and consumption in the owner-occupied and rental sectors. A major issue, as in most analyses of housing markets, is the choice of unit. Given the many attributes of a house, there is no simple way to define a unit of housing services or the price of housing. In the analysis below, we assume there is a standard dwelling unit, which may be purchased by homeowners or investors, and which would have an equilibrium price of $300,000 in the absence of taxes or subsidies. We then examine how taxes or subsidies affect the price of this dwelling unit and the numbers of home owning and renting households.

In Abelson and Joyeux (2006) we provide an alternative approach based on a standard dwelling metric, a square metre, with a price of $150 per unit. We allow that homeowners may purchase more units per dwelling than investors do, and estimate again how fiscal measures affect house prices and consumption. Despite small differences in empirical assumptions, the results of the two approaches are similar.

4.1 Effects of fiscal measures affecting owner occupied housing

As investors, homeowners must expect to earn the same rate of return on their own housing as on other possible investments in the same risk group. This equilibrium relationship can be expressed as:

$$R_h / P_h = \rho = r + m + t_h - \pi_h \qquad (5)$$

where R_h is the value of the rental services per period in owner-occupied homes, ρ is the nominal after-tax rate of return on non-housing investment, and the other terms as before. In this equation, R_h is determined by household demand in conjunction with the housing stock. The right-hand side variables are assumed exogenous.[13]

Thus the price of housing has to adjust so that the return to owner-occupier housing is in equilibrium with other assets. This implies:

$$P_h = R_h / (r + m + t_h - \pi_h) \qquad (6)$$

If the owner-occupied housing stock is constant and independent of the rental market, house prices would rise/fall pro rata with changes in the proportion of subsidies/taxes to gross (imputed) rental values.

Figure 1 shows an initial equilibrium in homeowner and rental markets with a dwelling unit price of $300,000. To illustrate the effects, we work with the dwellings in 2004, namely 5.58 million owner-occupied dwellings and 2.39 million private renter dwellings. A homeowner subsidy of 10 per cent of gross rent raises homeowner demand curve from D_o to D_{os}. Absent any interaction with the rental market, dwelling prices would rise by 10 per cent to $330,000.

Insert Figure 1 here

However, this price is not sustainable. The new equilibrium price has to fall below $330,000 to allow for the fall in investor demand as dwelling prices rise (holding rents constant). In addition, as some renters switch to owner occupied housing, the investor demand curve will shift down. As a base case for this analysis, we assume that if owner occupied demand rises by 10 per cent, there will be a 10 per cent decline in investor demand. This implies that approximately two-thirds of the increase in demand for owner housing derives from existing home owners (for example by reducing average household size) and one-third

[13] If Equation (5) is expressed in terms of consumption instead of investment: $R_h = (r + m + t_h - \pi_h) P_h$. In this case, the real value of consumption in any period must equal the *user cost* of the asset.

from renters. If, following international evidence (see below), we also assume unitary demand price elasticities of -1.0 in the home owner and investor markets, house prices would rise by 4 per cent to $312,000 per dwelling unit as shown in Figure 1. Owner-occupier dwellings increase by 5.8 per cent to 5.90 million dwellings and renter dwellings fall by 13.5 per cent to 2.07 million dwellings.

Figure 2 introduces a housing supply response. It shows the initial and new total market demand curve for owner-occupiers and renters ($D_o + D_R$) along with the market supply curve. With unitary demand and supply elasticities, the new equilibrium price would rise by 2 per cent to $305,940. The total housing stock also increases by 2.0 per cent to 8.13 million dwellings. In this scenario, owner-occupier dwellings increase by 7.9 per cent and renter dwellings fall by 11.7 per cent.

Insert Figure 2 here

The above estimates are derived by solving for the following five equations, which are designed to fit current observed data on home ownership and rentals, and where the (the β coefficient (the demand or supply price elasticity) is assumed to be unitary in these cases.

Initial owner housing demand:	$lnH_{od1} = 7.42 - \beta lnP$	(7)
Subsidised owner housing demand[a]:	$lnH_{0d2} = 7.52 - \beta lnP$	(8)
Investor housing demand:	$lnH_{id1} = 6.58 - \beta lnP$	(9)
Shifted investor housing demand	$lnH_{id2} = 6.47 - \beta lnP$	(10)
Housing supply:	$lnH_s = -3.63 + \beta lnP$	(11)

(a) Allowing for a 10 per cent homeowner subsidy.

The outcomes depend of course on assumptions about price elasticities and the shift in rental demand. We do not know any authoritative estimate of Australian demand price elasticity. However, the international evidence points quite strongly towards unitary demand price elasticity (Rosen, 1985; O'Sullivan, 2003). Supply price elasticities are more problematic. Much tax incidence literature assumes that the supply price elasticity for commodities is high because capital is mobile. This may well apply to housing renovations and to new houses in marginal urban areas where land values for housing are close to values for other uses. However, most new houses in Australia are constructed in or adjacent to urban areas where housing land values far exceed other land values. Here, the supply of land for new housing and the number of new houses constructed are determined by planning regulations, with planners influenced only weakly by house prices. Berger-Thompson and Ellis (2004) suggest that the price elasticity of new Australian housing supply is low.

Table 5 shows estimated housing price and consumption outcomes with various homeowner subsidies, demand and supply elasticities, and shifts in the investor demand curve. The first two columns show the results for the two scenarios described above. The third column shows the results for an 8 per cent housing subsidy as per our subsidy estimate in Table 3 along with unitary elasticities. The fourth column assumes no shift in rental demand with the homeowner subsidy. As expected, this results in a higher new equilibrium house price and housing consumption. The last two columns allow for higher demand and supply elasticities respectively. In both cases the direct comparator is scenario 2 (the S2 column). The higher demand elasticity results in a slightly higher new equilibrium house price and an increase in housing consumption. The higher supply elasticity also results in an increase in housing consumption but in a lower new equilibrium house price.

Insert Table 5 here

4.2 Effects of fiscal measures affecting investor / rental housing

The effects of fiscal measures in the rental market depend on whether the subsidy or tax is targeted on investors or renters. Investors face a similar asset choice to homeowners. In equilibrium the return from housing must equal the return on other assets in the same risk group. Figure 3 depicts the effect of a 10 per cent tax on rental incomes. This causes the investor demand for housing to fall from D_I to D_{It}. Given that investors own 30 per cent of dwellings and a price elasticity of demand in homeowner and investor markets of -1, the price for houses would fall by 3 per cent to $291,000. To recover the 10 per cent increase in costs, investors raise rents by 7 per cent and pay 3 per cent less for the properties. The rise in rentals reduces rental property consumption by 7.2 per cent. On the other hand, owner-occupied dwellings increase by 3.1 per cent. This assumes no shift in the owner demand curve or contraction of housing supply.

Insert Figure 3 here

Table 6 summarise these outcomes along with those for a 10 per cent investor subsidy. Such a subsidy would initially increase house prices by 3 per cent, but this would induce an increase in supply. With unitary demand and supply price elasticities, the estimated final equilibrium price would be $304,460. Rental property consumption would rise by 8.4 per cent and owner-occupied housing would fall by 1.5 per cent.

Turning to subsidies for renter households, the key point is that the average subsidy of $2500 per annum per household ($50 per week) for private rented accommodation is *less than* the rent that most households pay. In these circumstances the rent subsidy becomes in effect an untied income benefit. If all households spend a quarter of this income benefit on housing, a subsidy of $1.8 billion to private renters increases expenditure on private rental housing by $0.45 billion, which is only 1.9 per cent of estimated gross private rentals of $24 billion. With unitary demand and supply elasticities, the estimated equilibrium house price across the market would rise by only 0.28 per cent and there would be a similar rise in gross rents. Renter dwellings would rise from 2.39 million to 2.43 million and there would be a small fall in owner-occupier dwellings from 5.58 million to 5.56 million dwellings.

Insert Table 6 here

4.3 Effects of fiscal measures for new houses

The Housing Industry Association (HIA, 2003) argues that all taxes on new houses, which can be up to $70,000 per new house, are passed forward to the consumer. This would occur if the demand for new housing were perfectly inelastic and supply perfectly elastic. Actually, market conditions at most points in time are almost the exact opposite. The demand for new houses is highly price elastic because existing houses are a close substitute. Also, sales of existing houses generally far outnumber sales of new houses. On the other hand, the supply of new houses is determined principally by planning regulation and is price inelastic. The HIA (2003) reported that, even with developer charges, the raw land price for a greenfield house site ranged from $25,000 in Perth to $60,000 in Melbourne, $67,500 in Brisbane, and $110,000 in Sydney. The large differences between these land prices and the prices of land for other uses indicate that market forces have little effect on the supply of new houses.

The outcome is illustrated in Figure 4. A tax on new housing would shift the supply curve only marginally to the left. Thus, there would be would be only a small increase in the price of new houses. In these conditions, most taxes are passed backward to land owners rather than forward to consumers. Taxes and subsidies affect new house prices only when land prices for housing are close to opportunity cost and fiscal measures affect the supply of housing.

Insert Figure 4 here

5 Fiscal Measures and Economic Efficiency

There are various concerns about the possible efficiency effects of fiscal measures on the housing market. A major concern is that subsidies cause excess resources to be allocated to housing at the expenses of allegedly more productive activities. A second concern relates to use of the housing stock. Transaction taxes may affect not only the amount of housing but also how it is used. Thirdly, unequal fiscal treatment between owned and rented property may distort tenure choice decisions.

We examine below the possible deadweight losses for each of these issues, inclusive of some important second best considerations. However, the paper does not attempt to estimate the value of possible positive externalities of house ownership or occupation (see, for example, Rosen 1985).

5.1 Efficiency effects of fiscal measures affecting investment in housing

To estimate the effects of fiscal measures on housing investment, we follow the classic public finance approach and compare the marginal benefits of housing based on the demand curve with the real opportunity costs of housing supply. Figure 5 shows a competitive housing market, where the supply curve is also a marginal cost schedule. Subsidies shift the demand curve for new housing from D to D_s. Housing supplied increases from Q_1 to Q_2 and the price of housing rises from P_1 to P_s. In the absence of positive externalities, the deadweight loss equals area BCF.

Insert Figure 5 here

The deadweight loss (DWL) can be estimated approximately[14] by:

$$\text{DWL} = 0.5 t_h^2 Q_h P_h / ((1/\eta_d) + (1/\eta_s)) \quad (11)$$

where t_h = the marginal tax (or subsidy) rate on housing
Q_h = the number of new dwellings constructed with no subsidy
P_h = the price of housing before taxes or subsidies
η_d = the demand price elasticity for housing
η_s = the supply price elasticity for housing

If Q_h equals 150,000 new dwellings per annum (including units), P_h is \$300,000, the subsidy is 10 per cent, and there are unitary demand and supply elasticities, the deadweight loss from construction of new housing would be \$225 million per annum.

$$\text{DWL}_{\text{NH}} = [0.5\ (0.10)^2 \times \$300{,}000 \times 150{,}000 \text{ dwellings}] / 2 = \$225 \text{ million per annum} \quad (12)$$

The deadweight loss would rise to \$450 million if the supply of new dwellings were perfectly price elastic. On the other hand, the loss tends to zero as the supply price elasticity for new houses tends to zero.

However, this approach is incomplete. Three other significant issues need to be considered: the deadweight loss from expenditure on housing renovations; the real opportunity cost of resources used in housing; and the deadweight loss of raising tax revenue.

[14] For derivation of Equation (11), see for example Rosen (2002, p.292).

Annual capital expenditure on housing includes about $20 billion on renovations as well as $30 billion on construction of new housing and $5 billion on land development. To estimate the deadweight cost of renovations in the absence of convenient housing units, we substitute expenditure on housing renovation for Q_hP_h in Equation (11). The supply of renovations is assumed to be perfectly price elastic. Assuming again a subsidy of 10 per cent and a demand price elasticity of 1, the deadweight loss associated with expenditure on renovations is:

$$DWL_R = 0.5\ (0.10)^2 \times \$20 \text{ billion} = \$100 \text{ million per annum} \quad (13)$$

Returning to the supply of new houses, ignoring externalities, the difference between the price of a raw land housing site and its opportunity cost value is a direct indication of the difference between the price of a house and its real opportunity cost. Drawing on HIA (2003) raw land prices cited above and allowing conservatively that the land has an opportunity cost of $10,000 per dwelling, the surplus from development varies from $15,000 per lot in Perth to $50,000 in Melbourne, $57,500 in Brisbane, and up to $100,000 in Sydney. Evidently, the supply curve in Figure 5 is not a marginal cost curve. Figure 6 shows the housing market with a marginal cost curve below the market price reflecting the regulation of new housing supply. In this case, a housing subsidy increases investment in housing from Q_1 to Q_2 and there is an *efficiency gain equal to area ABCD*. This is the difference between the price that consumers are willing to pay for housing and the real cost of providing the housing.

Insert Figure 6 here

Suppose that the number of new dwellings built without a subsidy (Q_1 in Figure 6) equals 150,000 units per annum (an average building rate in Australia), there is a 10 per cent housing subsidy and a modest supply price elasticity of 0.25, the subsidy would produce 3750 extra housing units a year. With an average social surplus of say $50,000 per unit, there is an efficiency *gain* of $187.5 million per annum from the induced supply of new housing.[15]

These results are quite different from previous estimates of the deadweight losses of housing (see review by Yates, 2000) that generally ignored housing renovations, but which more importantly failed to allow for the effects of a regulated supply of new houses. Two other points should be noted.

First, a net housing subsidy of some $6.0 billion a year may have significant deadweight losses associated with raising this tax revenue. Following Campbell and Bond (1997) and allowing a deadweight loss of 20 cents per dollar of tax revenue, the deadweight loss from revenue raising taxes would be about $1.2 billion per annum.

Second, the analysis has been in a partial equilibrium framework given our estimates of benchmark taxation regime. These estimates imply judgements about a normal tax regime. This led us to the view that housing, especially the homeowner sector, receives substantial subsidies. Arguably housing is not subsidised compared with a major alternative vehicle for household savings, namely superannuation funds. These funds are rarely invested in housing, which suggests another possible reason for underinvestment in housing.

5.2 Deadweight losses of transaction taxes

Transaction taxes (stamp duties) are an estimated 9.1 per cent of gross rents (see Table 3). These taxes create two sets of deadweight losses. They deter housing consumption and housing exchange. We assess the latter deadweight loss here. This loss is a function of the number of house exchanges that are deterred.

[15] If a housing subsidy causes builders to build larger houses than they otherwise would, there would be a small offsetting deadweight loss.

Figure 7 illustrates the deadweight loss of transfer taxes. We assume that the price of exchanging a $300,000 house is $30,000 plus stamp duties. The exchange costs include estate agent fees and legal costs, moving costs, and private time costs. At this exchange price, one in seven dwellings (1.138 million housing units) is sold each year. Stamp duty on a $300,000 house adds about $10,000 to the cost of exchange. Thus the tax rate on the exchange price is 33 per cent. We assume that moving decisions are not price sensitive and that the elasticity of demand for house exchange is low (0.2). On these assumptions, 6.6 per cent of transactions would be deterred and there would be 1.063 million exchanges per annum. The deadweight loss is shown by triangle *ABC* in Figure 7. The loss (DWL_{SD}) would be $375 million per annum (see Equation 12). Even with very inelastic demand for housing exchange, the deadweight cost of current transaction taxes is substantial.

$$DWL_{SD} = 0.5 \times 75{,}000 \times 10{,}000 = \$375 \text{ million} \quad (14)$$

Insert Figure 7 here

5.3 Deadweight losses of tenure choice distortion

Turning to tenure choice, without the subsidies, homeowner user costs would typically sum to about $15,900 per annum for a $300,000 dwelling unit (see Table 4). Some households choose to rent because of the advantages of flexibility of house size, structure, location and so on. However, with a10 per cent subsidy, homeowner user cost falls to some $14,300 and some renters convert to owners. The deadweight loss is illustrated in Figure 8. The demand curve is the demand for homeownership. With the estimated 10 per cent subsidy, there were 5.58 million home owner dwellings in 2004. This includes some households who would otherwise have been renters. Suppose that the homeowner subsidy induces 4 per cent of renters (100,000 households) to switch to home ownership. Without the subsidy, there would be 0.10 million fewer homeowner dwellings. The deadweight loss due to distorted tenure choice (DWL_{TC}) is shown by triangle *ABC*. On the figures assumed, the deadweight loss would equal $80.0 million per annum.

$$DWL_{TC} = 0.5 \times (15{,}900 - 14{,}300) \times 100{,}000 = \$80.0 \text{ million} \quad (15)$$

Insert Figure 8 here

6 Conclusions

The private housing sector as a whole receives an estimated net subsidy of $6.3 billion per annum, which equals 6.4 per cent of the estimated gross annual rental value of housing. Virtually all this net subsidy accrues to homeowners who receive a subsidy equal to just over 8 per cent of gross rental values. This subsidy rises to some 12 per cent of gross rent if the GST on new homes is borne by landowners and it would then equate to about $1600 per homeowner per annum. Public housing tenants receive just over $4000 per household. On the other hand, investors and renters of private rental properties jointly receive an estimated net subsidy of about $375 per rental property per annum.

With unitary housing demand and supply elasticities, a 10 per cent subsidy to *homeowners* raises the average Australian house price by an estimated 2 per cent from $300,000 to $306,000. It also increases total housing consumption by 2 per cent, with home owner consumption rising by nearly 8 per cent and rental consumption falling by 12 per cent. The price increase is greater with a higher price elasticity of demand or a lower price

elasticity of supply. The consumption response increases with a high price elasticity of demand or supply.

Taxes on housing investors increase housing rents but reduce house prices and rental consumption. On the other hand, subsidies for private renters have little effect on housing consumption or prices because they are in effect an income support grant. Also, taxes on new houses have minimal impact on house consumption or house prices because most of the impact is borne in lower land prices.

Turning to efficiency effects, the paper estimates that a general housing subsidy of 10 per cent produces deadweight losses from expenditure on renovations in the order of $100 million per annum. On the other hand, it produces *net welfare gains* from expenditure on new housing in the order of $187 million a year. These results differ markedly from most previous estimates of the deadweight loss of housing which overlooked housing renovations and failed to allow for the regulated nature of the market for new houses. On the other hand, there could be a high deadweight loss of $1.2 billion associated with funding $6 billion per annum.

Finally the paper estimates the efficiency cost from misuse of the housing stock. The estimated deadweight loss due to transaction taxes is $375 million per annum. The estimated loss due to unequal treatment of homeowners and renters is a further $80 million per annum.

References

Abelson, P. and D. Chung (2004), "House Prices in Australia: 1970 to 2003", Macquarie Economics Research Papers, No. 9/2002, Macquarie University.

Abelson, P. and R. Joyeux (2006), "Price and efficiency effects of taxes and subsidies for Australian housing", Working Paper, Sydney University, School of Economics and Political Science.

Australian Bureau of Statistics (2000), *Australian Housing Survey, Housing Characteristics, Costs and Conditions*, ABS Cat. No. 4182, Canberra.

Australian Institute of Health and Welfare (2005a), *Commonwealth-State Housing Agreement National Data Reports 2003-04: House Purchase Assistance*, AIHW Cat No. HOU 124, Australian Institute of Health and Welfare, Canberra.

Australian Institute of Health and Welfare(2005b) *Commonwealth-State Housing Agreement National Data Reports 2003-04: Private Rent Assistance*, AIHW Cat No. HOU 125, Australian Institute of Health and Welfare, Canberra.

Berger-Thompson, L. and L. Ellis (2004), "Housing Construction Cycles and Interest Rates", RDP 2004-08, Reserve Bank of Australia.

Bourassa, S.C and P.H. Hendershott (1992), *Over-investment in Housing?,* Background paper for National Housing Strategy, Commonwealth Department of Health Housing and Community Services.

Campbell, A. and K. Bond (1997), "The cost of public funds in Australia", *Economic Record,* 74, pp. 22-34.

Housing Industry Association (2003), HIA *Submission ti the Productivity Inquiry into First Home Ownership*, HIA Canberra.

Kennedy, A., and E. Robertson (2003), *2001 Census: Housing*, Census Paper No. 03/02, Australian Bureau of Statistics, Canberra.

O'Sullivan, A. (2003), *Urban Economics*, 5th ed., McGraw-Hill Irwin, New York.

Productivity Commission (2004), *First Home Ownership*, Report No. 28, Melbourne.

Reserve Bank of Australia (2003), *Submission to Productivity Commission Inquiry into First Home Ownership*, Reserve Bank, Sydney.

Rosen, H.S. (1985), "Housing Subsidies, Efficiency and Equity", in M. Feldstein and A. Auerbach (eds.), *Handbook of Public Economics*, Vol. 1, New Holland, Amsterdam, pp. 375-420.

Rosen, H.S. (2002), *Public Finance*, 6th edition, New York.

Wang, H., D. Wilson and J.Yates (2004), *Measuring the distributional impact of direct and indirect housing assistance*, AIHW Cat.No HOU 108, Australian Institute of Health and Welfare, Canberra.

Yates, J. (2000), "Housing and Taxation: An Overview", in J.G.Head and R.Krever (eds), *Taxation towards 2000*, Australian Tax Research Foundation, Melbourne, pp.503-33.

TABLE 1
MAJOR AUSTRALIAN TAXES AND SUBSIDIES AFFECTING HOUSING

Tax or subsidy	Main features
Tax concessions	
Non-taxation of imputed rents	Imputed rental income is not assessed as part of taxable income.
Non-taxation of rental services	No consumption tax on imputed or actual housing rents.
Concessional capital gains taxes	(a) Home owner-occupiers pay no capital gains tax. (b) Property investors pay tax on half the nominal capital gains.
Tax treatment of losses on rental property (negative gearing)	Investors can deduct 100 per cent of nominal losses from rental property against other taxable income.
Public expenditure subsidies	
First home owner grants	Grants of $7000 to first home owner purchasers since 1 July 2000.
Assistance to private renters	Australian Government provides rental subsidies to low income persons, who comprise about one quarter of all private renters.
Assistance to public housing tenants	State governments provide public housing to 5 per cent of Australian households - in most cases at below market rents.
Main taxes on land and housing	
State land taxes	States taxes on value of land used for rental properties and second homes. Some land taxes on premium value owner-occupied property.
Local government land taxes	Local governments levy land taxes (rates) on most residential properties.
Stamp duties on transfers of land and housing and on mortgages	Most state governments levy stamp duty on the value of property when it is transferred and on mortgages.
GST on home renovations, land sales and new buildings	10% GST applies to (a) maintenance and renovation expenditure for existing housing and (b) sales of land and new buildings.
Infrastructure developer charges	Most state and local governments levy infrastructure charges on developers.

TABLE 2
ESTIMATED CAPITAL AND ANNUAL VALUES OF HOUSING IN 2004

	Unit	Owner-occupied housing[a]	Private rental housing	All private housing[b]	Public rental housing
No. of dwellings	No mn	5.58	2.39	7.97	0.39
Average (mean) value	$	325,000	275,000	285,000	200,000
Capital value	$bn	1813	657	2470	78
Rental value p.a. @ 4%	$bn	73	26	99	3
Investment in housing p.a.	$bn	Na	Na	50[c]	Na

(a) These include dwellings that are not occupied or rented, eg. second homes.
(b) Excluding caravans, cabins and houseboats.
(c) A trend figure that includes expenditure on new houses and alterations and additions. It does not include land development and home maintenance costs that total about another $10 billion.

TABLE 3
ESTIMATED ANNUAL AFTER–TAX VALUE OF SUBSIDIES AND TAXES FOR PRIVATE HOUSING

Subsidy / tax	Owner-occupied housing		Private rental housing		All private housing[a]	
	$bn	% annual housing value	$bn	% annual housing value	$bn	% annual housing value
Subsidies						
Imputed rent tax concession	8.0	11.0	Na	Na	8.0	8.1
No GST on imputed / actual rents	7.3	10.0	2.6	10.0	9.9	10.0
Capital gains tax concession	7.2	9.9	Na	Na	7.2	7.3
Asymmetric tax treatment of losses and gains	Na	Na	1.6	6.2	1.6	1.6
First home owner grant	1.2	1.6	Na	Na	1.2	1.2
Private rent subsidies	Na	Na	1.8	6.9	1.8	1.8
Total subsidies	23.7	32.4	6.0	23.1	29.7	30.0
Taxes						
Land taxes (state governments)	Na	Na	1.2[b]	4.6	1.2	1.2
Land taxes (local government)	6.0	8.2	1.2[b]	4.6	7.2	7.3
Stamp duties	7.0	9.6	2.0	7.7	9.0	9.1
GST on land / new houses	3.0	4.1	0.5	0.5	3.5	3.5
GST on major renovations and additions	1.8	2.4	0.7[c]	0.7	2.5	2.5
Total taxes	17.8	24.3	5.6	21.5	23.4	23.6
Subsidies - Taxes	5.9	8.1	0.4	1.6	6.3	6.4

(a) Excluding caravans, cabins and houseboats.
(b) Estimated net tax for investors after allowing for lower income tax at a marginal tax rate of 40 per cent.
(c) A small part of this may be allowed as a tax deduction.

TABLE 4
HOME OWNER HOUSING USER COSTS UNDER VARIOUS ASSUMPTIONS

Housing	H_{uc}	H_{ruc}	$H_{uc} - H_{ruc}$	H_{uc}	H_{ruc}	$H_{uc} - H_{ruc}$	$(H_{ruc} - H_{uc}) / H_{ruc}$
Assumptions	%	%	%	$ p.a.	$ p.a.	$ p.a.	%
Base case[a]	4.76	5.30	-0.54	14,280	15,900	-1,620	10.2
Equity							
$\alpha = 0.2$	5.60	5.60	0.0	16,800	16,800	0	0.0
$\alpha = 1.0$	3.36	4.80	-1.44	10,080	14,440	-4,320	29.9
Interest rates							
$i = 7\%$, $mr = 8\%$	5.06	5.20	-0.14	16,830	18,900	-2,070	10.9
Tax rate							
$t_r = 20\%$	5.06	5.30	-0.14	15,180	15,600	-1080	6.9
$t_r = 40\%$	4.76	5.40	-0.94	13,380	16,200	-2700	16.6

(a) For assumptions used in the base case, see text.

TABLE 5
MARKET OUTCOMES FROM SUBSIDIES FOR HOME OWNERS

Market assumptions	S1	S2	S3	S4	S5	S6
Owner subsidy / tax (%)[a]	+10.0	+10.0	+8.0	+10.0	+10.0	+10.0
Fall in rental demand	-0.10	-0.10	-0.08	0.00	-0.10	-0.10
Demand elasticities	–1.00	–1.00	–1.00	–1.00	–2.00	–1.00
Supply elasticity	+0.00	+1.00	+1.00	+1.00	+1.00	+2.00
Market outcomes						
New house price ($)	312,000	305,940	304,770	310,320	308,750	303,950
% change in house price	+4.0	+2.0	+1.6	+3.4	+2.9	+1.3
Total housing (mn)	7.97	8.13	8.09	8.24	8.20	8.18
Owner housing (mn)	5.90	6.02	5.93	5.93	6.37	6.06
Rental housing (mn)	2.07	2.11	2.16	2.31	1.83	2.12
% change: all housing	0.00	+2.0	+1.6	+3.4	+2.9	+2.7
% change owner housing	+5.8	+7.9	+6.3	+6.3	+14.2	+8.6
% change rental housing	-13.5	-11.7	-9.4	-3.3	-23.4	-11.2

(a) A "+" denotes a subsidy; "–" is a tax.

TABLE 6
MARKET OUTCOMES OF FISCAL MEASURES FOR INVESTORS

Market assumptions	Tax	Subsidy
Owner tax / subsidy (%)[a]	–10.0	+10.0
Demand elasticity	–1.00	–1.00
Supply elasticity	0.00	+1.00
Market outcomes		
New house price ($)	291000	304,460
% change in house price	-3.0	+1.5
Total housing (mn)	7.97	8.05
Owner housing (mn)	5.75	5.50
Rental housing (mn)	2.22	2.59
% change: all housing	0.0	+1.5
% change owner housing	+3.1	-1.5
% change rental housing	-7.2	+8.4

(a) A "–" is a tax; "+" is a subsidy.

FIGURE 1
EFFECTS OF 10 PER CENT SUBSIDY TO HOME OWNERS ON HOME OWNER AND RENTAL MARKETS WITH FIXED TOTAL SUPPLY OF HOUSING

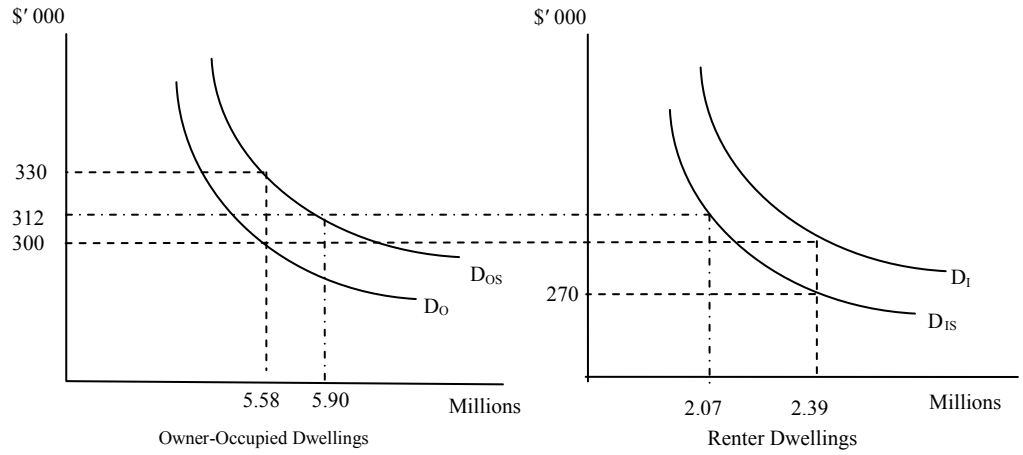

FIGURE 2
EFFECTS OF SUBSIDY TO HOME OWNERS WITH UNIT ELASTICITY SUPPLY RESPONSE

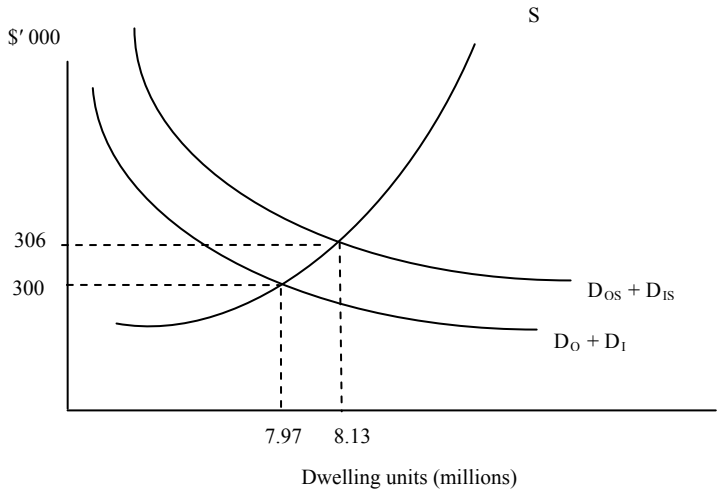

FIGURE 3
EFFECTS OF 10 PER CENT TAX ON RENTAL INCOME WITH FIXED HOUSING SUPPLY

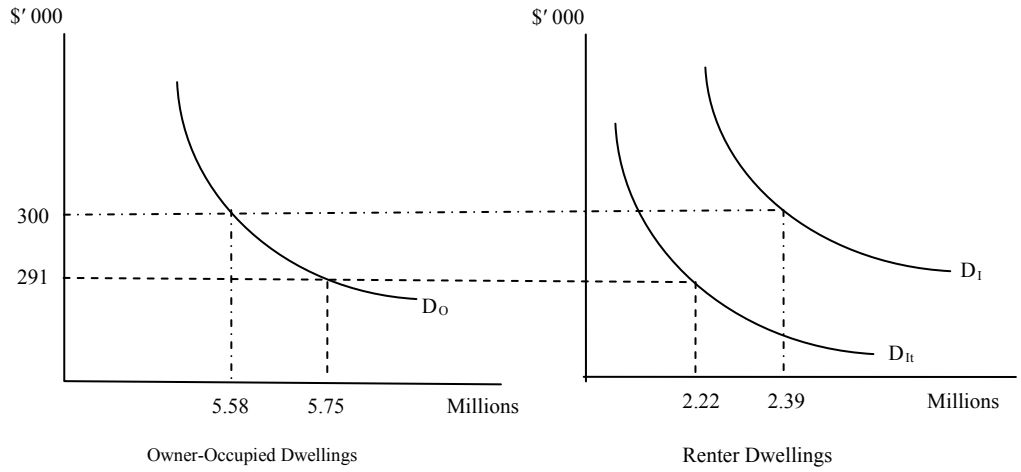

FIGURE 4
THE EFFECT OF A TAX ON PRICES OF NEW HOUSES

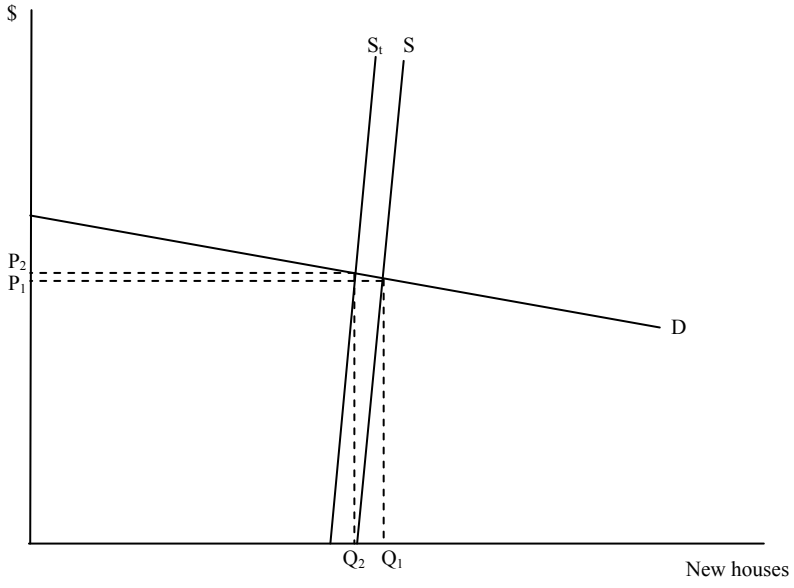

FIGURE 5
EFFECTS OF A HOUSING SUBSIDY ON HOUSING QUANTITY AND PRICE WITH COMPETITIVE HOUSING AND LAND MARKETS

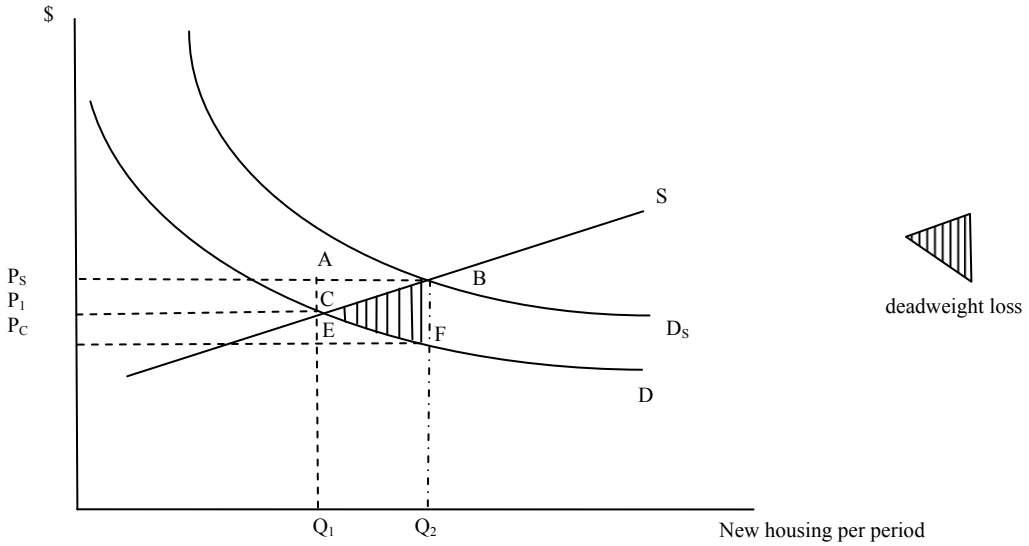

FIGURE 6
EFFICIENCY GAIN FROM INCREASED HOUSING WHEN SUPPLY IS REGULATED

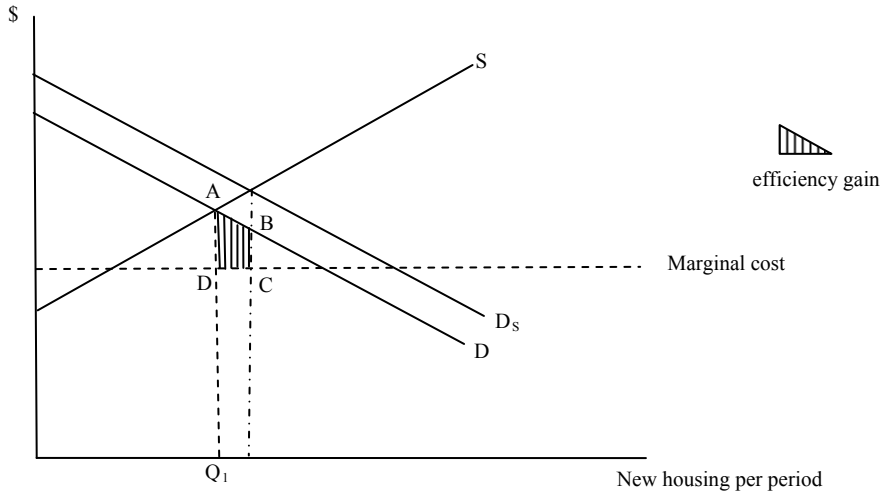

FIGURE 7
DEADWEIGHT LOSS OF TRANSACTIONS TAX

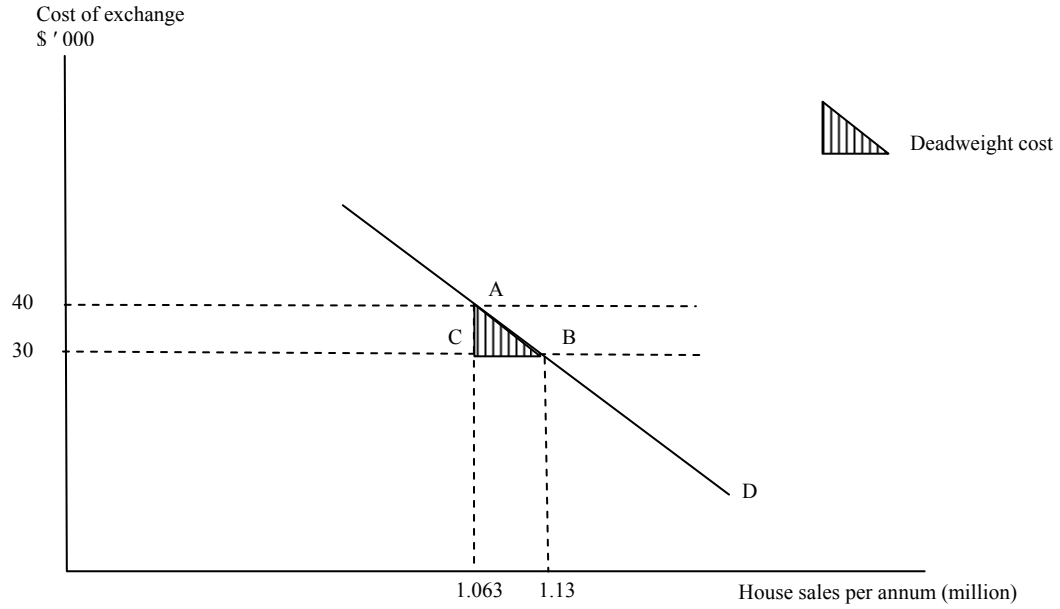

FIGURE 8
DEADWEIGHT LOSS OF HOMEOWNER SUBSIDY DUE TO TENURE DISTORTION