

FUNDAMENTAL TAX REFORM AND ITS IMPACTS ON ALTERNATIVE PROVIDERS OF RENTAL HOUSING.

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1. INTRODUCTION¹.

The Australian Government has recently introduced a new tax system that aims to reduce the tax burden on ordinary incomes by shifting some of the tax burden onto consumption. The most prominent feature of the new tax system is the Goods and Services Tax (GST). However, there are other significant reforms to the tax regime that are important in the present context. The introduction of a GST is to some extent balanced by the abolition of Wholesale Sales Tax and some State and Territory taxes. Also helping to offset the GST is cuts to marginal income tax rates and changes to income tax brackets. Reforms to the capital gains tax provisions introduced in September 1999, 9 months before the GST package, are also an important feature of the new tax system². In aggregate these reforms represent a fundamental reform of the tax system. The potential impacts on the housing sector are an important subject for research. This paper focuses on alternative providers of rental housing and, in particular, boarding houses and caravan park proprietors.

Under the Goods and Services Tax (GST) introduced in July 2000, private rental housing is input taxed, and this includes boarding houses and Caravan Park sites that offer predominantly long-term accommodation and which elect to be input taxed³. This means that proprietors are not required to charge tenants or residents a 10% GST on top of their rent. However, proprietors are not able to claim a credit for the GST they are charged on inputs purchased in the course of carrying out their business. For example, repairs that are carried out to properties or sites are a taxable supply. Goods in this category include the GST in their price and this is paid to the supplying firm in the act of purchase. With respect to caravan parks and boarding houses, the Government claimed that after taking into account the effects of abolishing wholesale sales tax, “long-term accommodation charges may increase slightly, as providers pass their increased costs on to residents by adjustments to accommodation charges”(Australian Competition and Consumer Commission, 2000b, GST Talk 9). In an illustrative example offered by the ACCC for long-term residents of caravan parks, site fees increase by 2.1%.

This paper subjects this estimate to critical scrutiny. We do not question the government estimates of the increase in proprietor input (operating) costs. But we nevertheless argue that government projections may seriously underestimate the impact on rents and proprietor returns. This is because they ignore the consequences

¹ The author wishes to acknowledge the excellent research assistance provided by Matthew Forbes. The conference paper has been written in such a way that the reader will gain an understanding of the argument and the main findings of the empirical work by reading section 1 and section 5 only. Readers who want to know more about the methods employed, and the detailed findings, should also read the intervening sections.

² The official government guide to the new tax system (“The Tax Reform (and Tax Cuts) Booklet”), delivered to all Australian households in the lead up to the GST implementation featured the capital gains tax changes already implemented.

³ The situation is more complex for proprietors of predominantly short-term accommodation. When a stay in such accommodation extends beyond 28 days, a two-tier GST rate applies; the full 10% rate on the first 27 days and a concessional rate for 28 days onwards. See the position paper for details. In this paper we will limit our attention to predominantly long-term accommodation that has chosen to be input taxed.

for proprietors' cost of capital and capital gains tax liabilities. The former are the costs of holding or financing acquisition of assets such as boarding houses or caravan park sites, and a critical determinant is the proprietor's marginal rate of tax (Wood and Watson, 2001 forthcoming). As part of the tax reform package most proprietors will experience a reduction in their marginal rate of income tax. This, paradoxically, will increase a proprietor's cost of capital. Consider a proprietor who is an outright owner of a boarding house. Their cost of capital is the after-tax return sacrificed on the next best alternative investment; if this were a term deposit with a financial institution the return sacrificed is the interest payments expected on the term deposit, minus the taxes payable on the interest return. With cuts to marginal tax rates the after-tax return sacrificed by the proprietor increases. If expected rates of capital gain are unchanged the rent required in order to match the after-tax return on the alternative investment must increase. If the proprietor cannot increase rent then an economic loss can eventuate; the proprietor would be better off realising her property asset and investing the proceeds in a term deposit.

A hypothetical illustration can help to explain what initially appears to be a puzzling conclusion. Consider a boarding house that has just been purchased for \$560,000. The \$560,000 price is not an arbitrary choice. It is the price at which an 18-bedroom boarding house was offered for sale in Fremantle, WA in January 2001 (Fremantle Herald, 27th Jan, p.18). Suppose the new proprietor has a taxable income of \$50,001, and a marginal tax rate of 47% under the 'old' tax system. In table 1 the gross rental yield, financing costs and capital gains take on representative values, and transaction costs are ignored. If the proprietor can borrow or save at the same prevailing interest rate (7.8%), capital (financing) costs are the same regardless of whether the purchase is loan or equity financed⁴. Suppose that the purchase is 100% debt financed. It is assumed the new proprietor will sell the boarding house after 1 year. These simplifying assumptions can be relaxed without altering the conclusions⁵. Given operating costs of \$23,615 the proprietor has a pre-tax deficit on net rental income of \$32,015. This deficit can be deducted from other sources of income at the proprietor's 47% marginal rate of tax, which yields a much smaller after-tax deficit. This smaller after-tax deficit arises because the proprietor gains a tax saving from sheltering other sources of income. With capital gains of \$19,600 there is a capital gains tax bill of \$2,632 under the 'old' tax system, which represents an effective capital gains tax rate of only 13.4%⁶. The high tax bracket proprietor is therefore acquiring an asset where part of the return (the capital gain component) is lightly taxed. This is a tax conversion benefit⁷. A zero after-tax economic return is the overall outcome. The rental income of \$35,280 (see table 1) is then just sufficient to cover all economic costs including the proprietor's cost of capital. It can be termed the reservation rent.⁸

⁴ In such circumstances the interest payments on debt will be the same as the interest sacrificed if the proprietor used her own savings to finance the acquisition.

⁵ See Wood and Watson (2001, forthcoming) where a model is developed that is a general statement of the financial arithmetic in table 1.

⁶ The effective capital gains tax rate is measured here as capital gains tax liabilities (\$2,632) divided by capital gain (\$19,600). If the proprietor operates the business for more than one year, the appropriate measure of the effective rate is more complex (see Wood and Yong, 2001).

⁷ Investing in an appreciating asset rather than a financial asset that provides all its return in the form of ordinary taxable income such as interest, allows the investor to convert a heavily taxed income stream into one that is lightly taxed.

⁸ So called because it is the minimum rent at which the proprietor is able to match the after-tax return on her next best alternative investment.

Under the new tax system cuts in marginal tax rates accompany the introduction of the GST. Table 1 ignores the GST impact on operating costs, and concentrates on the 'tax rate effect'. With an income of \$50001 our proprietor will experience a cut in her marginal tax rate to 42%. The tax shelter saving from the pre-tax deficit on net rental income is now smaller, and the post-tax deficit correspondingly larger at \$18569. *Ceteris paribus* an after-tax economic loss of \$1321 now eventuates despite a cut in the marginal tax rate. Ignoring any increase in operating costs due to the GST, the proprietor needs a 3.7% or \$1321 increase in gross rental income to reverse the financial deterioration.

But the new tax system also features another important change that impacts on our proprietor. The 1999 Review of Business Taxation (Ralph Report) advocated changes to the taxation of capital gains that were subsequently introduced in September 1999. Under the 'old' tax system the cost base used to calculate taxable gains was indexed to the rate of inflation as measured by the percentage increase in the Consumer Price Index⁹. Tax liabilities were obtained by multiplying the proprietor's marginal tax rate

Table 1: Proprietor After-tax Economic Returns and Marginal Tax Rates (MTR) ¹		
	Marginal Tax Rate 47%	Marginal Tax Rate 42%
1. Property Value \$	560000	560000
2. Gross Rental Income	35280	35280
3. Finance Costs \$	43680	43680
4. Operating Costs \$	23615	23615
5. Net Rent \$ = (2) - (3) - (4)	(32015)	(32015)
6. After-tax Net Rent \$ = (1-MTR)*(5)	(16968)	(18569)
7. Capital Gain \$	19600	19600
8. After-tax Capital Gain \$ = (7)- MTR*(q - p)*(1)	16968	17248
9. After-tax Economic Return = (6) + (8)	0	(1321)
1. The gross rental yield has been set equal to 6.3% the mean gross yield in the private rental sector according to the ABS (1993) Rental Investors Survey. Financing costs assume an interest rate for saving and borrowing of 7.8%, the interest rate for housing loans in July 2000. The parameter q is the rate of property price appreciation and has been set equal to 3.5%. The general rate of inflation p is assumed to be 2.5%. Figures in parenthesis represent negative numbers.		

by the taxable capital gain.¹⁰ The new system abandons indexation. Instead only 50% of capital gains are taxed at the proprietor's marginal tax rate. It can be shown that unless rates of property price appreciation are more than double the rate of inflation, proprietors will face a higher capital gains tax liability in the 'new' tax system¹¹.

⁹ Taxable capital gains are obtained by subtracting a cost base from the sales proceeds. In the 'old' tax system the cost base was the acquisition cost indexed to the rate of inflation.

¹⁰ Averaging provisions have been ignored (see Wood 2000, for an explanation).

¹¹ See Wood (2000). Transitional arrangements have been ignored. The new tax system also features another change that is relevant to investors financing the construction of new residential property. In October 1997 changes to the building write-off allowance were introduced. For proprietors financing

In table 1 the rate of inflation is set at 2.5%, which is more or less the current rate, and the rate of property price appreciation is assumed to be 3.5%, an annual real gain of 1% per annum. This is a real rate of increase typical of simulation studies (Berry, 2000). The effects of capital gains tax reform are illustrated in table 2. Capital gains tax liabilities increase from \$2352 (see column 3, table 1) to \$4116, so that effective capital gains tax rates rise from 12.0% to 21.0%. The after-tax economic loss widens alarmingly to \$3085 because of this increase in capital gains tax liabilities.

Table 2: Proprietor After-tax Economic Returns and Capital Gains Tax Reform ¹		
	Before Capital Gains Tax Reform	After Capital Gains Tax Reform
1. Property Value \$	560000	560000
2. Gross Rental Income \$	35280	35280
3. Finance Costs \$	43680	43680
4. Operating Costs \$	23615	23615
5. Net Rent \$ = (2) - (3) - (4)	(32015)	(32015)
6. After-tax Net Rent \$ = (1-MTR)*(5)	(18569)	(18569)
7. Capital Gain \$	19600	19600
8. After-tax Capital Gain ² \$	17248	15484
9. After-tax Economic Return = (6) + (8)	(1321)	(3085)
<p>1. See Note (1) table 1.</p> <p>2. Capital gains tax liabilities before reform are calculated from $MTR \cdot (q - p) \cdot (\text{row 1})$ where q is the rate of house price appreciation, p is the rate of inflation and MTR is the marginal tax rate. Capital gains tax liabilities after reform are calculated from $0.5 \cdot MTR \cdot (\text{row 7})$</p> <p>The marginal tax rate before and after capital gains tax reform is 42%.</p>		

Unless rental income is increased by 8.7% or \$3085, the proprietor is better off selling up and investing the net proceeds in a savings deposit earning a pre-tax interest return of 7.8%, and a post-tax return of 4.5%. If the proprietor is able to pass on increases in after-tax economic costs, weekly rents from each of the 18 bedrooms must increase from \$37.69 per week, under the old tax system, to \$40.99 per week under the new tax system. The equivalent fortnightly rent of \$81.98 lies below the thresholds at

the construction of (say) a boarding house, 2.5% of construction costs can be deducted from annual taxable income. Under the new arrangements, the deduction continues, but when the boarding house is sold, write-off allowances are deducted from the cost base used to calculate taxable capital gains. This change is analysed in our microsimulation model.

which families with children are entitled to rent assistance¹². In this particular case, rent assistance would not protect low-income families.

Recall the ACCC estimate of the typical impact of the GST, which is described as slight, and put at 2.1% in an illustrative example of effects on caravan park site fees. Our analysis suggests that the official view presents a partial view of the impacts attributable to the New Tax System, and may significantly underestimate impacts on rents, site fees and/or returns to proprietors¹³. This is because it ignores the consequences of cuts in marginal income tax rates and changes to capital gains tax arrangements that adversely affect proprietor returns. Our principal research question is whether these other features of the new tax system have significant impacts under alternative assumptions about key parameters such as proprietor income, property price appreciation rates, interest rates and the length of time the proprietor expects to run the business before realising the asset (the holding period).

The findings are potentially significant from a policy perspective. Boarding houses and caravan parks are a significant source of affordable housing for low-income groups. Increases in the rents and site fees charged by proprietors will then have important ramifications for the supply of low-income housing. It could also have implications for the incidence of homelessness. Evidence from the USA indicates that the levels of rents in low-income housing are a significant determinant of the incidence of homelessness across US metropolitan cities (Honig and Filer, 1993).

2. METHOD

The critical step in the empirical analysis is measurement of reservation rents. Recall from the introduction that reservation rents are the gross rental income that is just sufficient to cover all after tax economic costs, once account has been taken of capital gains.¹⁴ A general mathematical model of reservation rents has been developed under the old and new tax systems¹⁵. These mathematical expressions are calibrated using estimates of as many components of economic costs as it is practical to measure. Microsimulations are then conducted using alternative values of the key parameters determining proprietors' economic costs. This approach is commonly invoked to measure the impacts of fiscal measures in US and Canadian housing markets. The studies by Brueggeman, Fisher and Stern (1982), De Leeuw and Ozanne (1981), Dotzour and Levi (1995), Fisher and Lentz (1986), Gordon, et al. (1987), Follain, Hendershott and Ling (1987), Hendershott and Ling (1984), Hendershott, Follain and Ling (1987), Ling (1992), and MacNevin (1997a, 1997b) are typical of the approach¹⁶. This project has a methodological strength relative to the North American studies. The latter base measurement on a 'typical' hypothetical residential housing development. Our measurement exercise is based on actual boarding houses and caravan parks that have been offered for sale in the months during which the new tax

¹² From 20 March to 19 September 2001 the threshold for couples with 1-2 children is \$151.90, and for singles with 1-2 children it is \$102.62.

¹³ Note that the proprietor in our example experiences losses as a result of the new tax system. If the market cannot sustain a rent increase the short run impacts could be in the form of a loss of such accommodation. In fact the boarding house used in this example remains unsold as of June 2001, 6 months after it was first offered for sale.

¹⁴ When expressed as a proportion of capital value it is referred to as the reservation rental rate.

¹⁵ See the Final Report. See also Wood (2000) and Wood and Watson (2001, forthcoming).

¹⁶ A review of these studies is contained in the appendix to the position paper for this project.

system was implemented. In addition the Office of Housing Policy, Ministry of Housing, WA made available records of boarding houses that they manage.¹⁷

Data Collection and measurement of operating and transaction cost components of economic cost.

Data regarding boarding houses and caravan parks was collated from a variety of sources. The principal source was back issues of the real estate sections of both the Melbourne Age and the West Australian newspapers. These were examined for the period between March 2000 and March 2001 with a view to identifying boarding houses (lodging rooms and hostels) and caravan parks offered for sale in the time immediately prior to and following the introduction of the GST reform package.

From the advertisements we sought information with respect to:

- the offer price;
- number of bedrooms;
- number of powered sites (caravan parks);
- number of on-site vans and other forms of accommodation (caravan parks);
- the state in which the property was offered for sale;
- the region (urban or non-urban);
- date presented for sale; and
- the facilities associated with the property.

The resulting database comprised 16 boarding houses that met the informational requirements, all located within Western Australia. A database of 66 caravan parks that were offered for sale was compiled. This consisted of caravan parks from Victoria (38), Western Australia (24), Queensland (3) and the Northern Territory (1). It is the market value as measured by the offer price, which is the critical piece of information. It allows us to compute the rental income that a proprietor requires from her property if she is to cover all after-tax economic costs, including the cost of capital, maintenance, property taxes, land taxes, transaction costs and management fees (the reservation rent). The methods employed mirror those used by the author in research work conducted using the ABS Rental Investors Survey (See Wood and Watson, 2001, forthcoming)¹⁸.

Under the new tax system relevant operating cost and transaction cost parameters have been increased by percentage amounts that equal official government estimates of the net effect of GST (ACCC, GST Talk 4, 2000a). These are listed below:

Type of cost	New Tax System Effect
Agent's management fees	+8.7%
Letting Fees	+8.7%
Brokerage fees	+8.7%
Maintenance	+9.0%
Property Taxes (Rates)	GST free
Stamp Duty	GST free
Land Taxes	GST free

¹⁷ We are grateful to Ian Hafekost for his assistance. Our microsimulations for these boarding houses pose a hypothetical question. If a private proprietor owned these boarding houses, what rental income would she require to cover all after-tax costs?

¹⁸ Further details are also available in the final report.

The emphasis in this project is not on whether the above estimates are accurate. Our contribution is to point out that other features of the new tax system are relevant and deserve attention.

The Microsimulation Approach.

There remain some key parameters that are particularly relevant to measurement of after-tax capital costs and capital gains tax liabilities. These are parameters where it is not possible to measure a property specific value, either because we need to know the identity of the proprietor (eg marginal tax rate and holding period), or because the same value applies to all properties and proprietors, but choosing an accurate value for the parameter is problematic (eg interest rates and inflation rates). A sensible approach to these difficulties is to choose alternative values for these parameters and examine the sensitivity of results to alternative values. This is the essence of the microsimulation approach.

The reservation rental rate is measured for holding periods ranging from 10 years to 30 years, and in all income tax brackets where there is a positive marginal tax rate under the old tax system. We know little about the socio-economic and demographic background of boarding house and caravan park proprietors, so it is impossible to make any firm judgements about the most relevant tax bracket for analysis. Jope (2000) reports the results of interviews with 13 boarding house proprietors in the city of Yarra, Victoria, but no income data was elicited. However, she does report evidence on holding periods, claiming that the boarding houses had been in the proprietor's family ownership for an average of 40 years. We do not extend our microsimulations beyond 30 years, because they are not particularly sensitive to extended periods longer than 30 years¹⁹.

The general approach to interest rates and inflation rates is to take the levels prevailing at the time of the reform as baseline values. Alternative 'favourable' values are also experimented with. For the baseline values we use an interest rate of 7.8%, which was the standard variable rate on housing loans originated by large bank housing lenders in July 2000 (ABS, Australian Economic Indicators, Cat. No. 1350.0, April 2001). An annual inflation rate of 2.5% has been applied to index acquisition costs for the purposes of capital gains tax liabilities. A low inflation rate environment has persisted for some time now, and it seems reasonable to assume that this will continue for the foreseeable future. Annual rates of property price appreciation have been set at 3.5%. This implies a real rate of appreciation of 1 per cent per annum, a figure also employed in other Australian studies (Berry, 2000). The real rate of appreciation as measured from the ABS weighted average house price indices for the 8 capital cities for the period June 1986 to June 2000, is 1.9% per annum.²⁰ While the ABS index controls for changes in composition, it is not a constant quality index. Improvements in building standards, and capital expenditures by owners of existing buildings, will ensure some quality improvement. The baseline values assume an approximately 1 per cent per annum quality improvement.

¹⁹ Note that Jope's small sample is further hampered by censoring. By not observing proprietor's who have exited the industry, the average holding period in her sample will be biased upwards.

²⁰ We are grateful to Richard Watson for this estimate. He estimated a semi log regression model to obtain this rate of appreciation.

This may exaggerate quality improvement. We therefore also conduct microsimulations under favourable values for this key parameter, as well as interest rates. A rate of property price appreciation of 4.0 per cent per annum is experimented with. This implies a typical rate of quality improvement of less than 0.5%. We combine this higher rate of property price appreciation with a lower interest rate of 7.3% in the favourable scenario. If the new tax system is expected by financial markets to increase the long run growth potential of the economy, interest rates could fall to levels below what they would otherwise have been if the old tax system had been retained.

3. RESEARCH FINDINGS.

In table 3 we report the sample mean percentage increase in rental income that is required by proprietors if they are to exactly cover all their post-tax economic costs. These sample means are unweighted averages calculated with respect to all income tax brackets and holding periods chosen for the microsimulations²¹.

The sample means are reported separately for boarding houses and caravan parks. Note also that two sets of microsimulations have been executed for boarding houses. One set of microsimulations is conducted ‘as if’ the boarding houses had been newly constructed, and the proprietor is entitled to a building write-off allowance of 2.5% of construction costs per annum. These microsimulations are important because the new tax system includes an important change to the treatment of these allowances. Under the changed rules write-off allowances claimed by proprietors are recaptured at sale, and taxed as capital gains.²² Table 3 also reports measures of reservation rent increases for baseline values (the base scenario) and favourable values (the favourable scenario) for the interest rate and property price appreciation parameters. As explained in the method section, the favourable scenario assumes that interest rates are lower, and real rates of property price appreciation are higher.

The results for the base scenario show increases in reservation rents that are significantly above the official estimates offered by government. Indeed they are all above 10 per cent. There is little difference in percentage increases experienced by boarding houses and caravan parks. There is, however, a bigger percentage increase for newly constructed boarding houses, and this reflects the change to write-off allowances that are not relevant to established boarding houses. The favourable scenario yields lower percentage increases, as expected, but they are still well above official estimates. For caravan park sites and established boarding houses increases of between 5 and 6 per cent are projected.

²¹ See the Final Report, Appendix B where the detailed results are presented.

²² This change was in fact introduced in 1997, so it preceded the major reforms heralded as part of the New Tax System. However, the present government introduced them, and they are particularly relevant in the present context.

Table 3: Mean Percentage Increase in Annual Reservation Rents ¹		
	Base Scenario ²	Favourable Scenario ³
Boarding House – Existing	14.83	5.39
Boarding House – New	19.26	9.26
Caravan Park	14.84	5.59
<p>(1) This mean is calculated across all income tax brackets where the MTR is positive, and for a range of holding periods from 10 to 30 years.</p> <p>(2) Base scenario values entail an interest rate of 7.8 percent, an inflation rate of 2.5 percent and a rate of capital appreciation of 3.5 percent.</p> <p>(3) Favourable scenario values are an interest rate of 7.8 percent for the OTS and 7.3 percent for the NTS, an inflation rate of 2.5 percent and a rate of capital appreciation of 4.0 percent. The reduced interest rate is not applied to the OTS estimates, as it is assumed that the reduction in interest rate is a direct result of the implementation of the NTS.</p>		

There is a difficulty with interpreting these results, because normally we would consider the mean as a measure of central tendency. However, we do not know the distribution of proprietors over income tax brackets, and little is known about the typical periods over which businesses are run. The mean cannot necessarily be considered as ‘typical’ or representative or midway between two extremes. It turns out that our estimates vary over wide ranges when we consider proprietors with different incomes and holding periods. Consider table 4 where mean percentage increases are presented by income and holding period for established boarding houses²³. If we fix the latter at say 10 years, we find that the sample mean rent increase ranges from 7.7 % for proprietors with incomes of \$15000, to 23.7% for proprietors with incomes of \$50001.²⁴ This variation arises because the size of marginal tax rate cuts varies according to income tax bracket. The biggest marginal tax rate cut is in the old tax system \$38001 – \$50000 bracket. In the highest tax bracket (new tax system) marginal rates are unchanged. The middle-income proprietor thus suffers a relatively high increase in her after-tax cost of capital. Suppose we now fix income at \$60000. Mean percentage increases in reservation rents now vary from 17.2% for a 10-year holding period to 9.9% for a 30-year holding period. Reservation rent increases are lower the longer the holding period because capital gains taxes are paid on asset realisation, not as they accrue. If a proprietor delays realisation, payment of capital gains tax liabilities is postponed and their present value declines.²⁵ Furthermore, the tax liability is amortised over a longer period. Thus the capital gains tax reform component of the new tax system has a smaller impact on reservation rents the longer the holding period.

²³ See the Final Report, Appendix B for similar findings with respect to caravan parks.

²⁴ The income levels in table 4 have been chosen because they yield at least one income level from each of the tax brackets where marginal tax rates are positive.

²⁵ Delaying payment is equivalent to receiving an interest free loan from the tax authorities.

Table 4. Mean Percentage Increase in Annual Reservation Rents by Holding Period and Income; Established Boarding Houses, Base Scenario ¹ . %					
Proprietor Income \$					
Holding Period	15000	20701	38001	50001	60001
10 Years	7.7	12.5	23.7	21.9	17.2
15 Years	7.3	11.6	23.1	20.1	14.6
20 Years	7.0	10.8	22.6	18.7	12.7
30 Years	6.7	9.9	22.0	16.7	9.9
Note (1). See notes Final Report, tables B1 to B5, Appendix B.					

Under a favourable scenario the pattern of increases is the same, but the size of the increases is smaller. For proprietors of boarding houses and caravan parks in the 20% income tax bracket (old tax system), with holding periods of 15 years or more, the favourable scenario actually produces a *reduction* in reservation rents²⁶. But in almost all the other permutations of holding period and income tax bracket, the projected increases in reservation rents are higher than the 2.3% government forecast, regardless of whether a favourable scenario is assumed; and the overall average increase under a favourable scenario is 5.4% for established boarding houses and 5.6% for caravan parks. Though we cannot provide a definitive and precise estimate of the new tax system's impact on rents, the weight of evidence confirms the analysis in tables 1 and 2 above.

A different but equally important question is addressed in table 5. Given the increase in reservation rents projected under alternative holding period and income tax bracket permutations, can proprietors pass these on to residents/tenants? In private rental housing market rents are typically between 6% and 7% of capital values. If reservation rents are significantly higher as a percentage of capital values, proprietors will not be able to pass on increases in after-tax economic costs, and we can expect exit from the market in the longer run.

²⁶ See Final Report tables B5 and B10, appendix B. A fall in reservation rents is possible because interest rates are assumed to be lower under the new tax system, thus reducing pre-tax capital costs, and real rates of property price appreciation are higher, which curbs increases in capital gains tax liabilities under the new tax system.

Table 5: Mean Rental Rate under New and Old Tax Systems ¹				
	Old Tax System		New Tax System	
	Base Scenario ²	Favourable Scenario ³	Base Scenario ²	Favourable Scenario ³
Boarding House – Existing	7.5	6.8	8.6	7.2
Boarding House – New	7.0	6.3	8.3	6.9
Caravan Park	8.1	7.4	9.2	7.8
<p>(1) This mean is calculated across all income tax brackets, and for a range of holding periods from 10 to 30 years.</p> <p>(2) Base scenario values assume an interest rate of 7.8 percent, an inflation rate of 2.5 percent and a rate of capital appreciation of 3.5 percent.</p> <p>(3) Favourable scenario values are an interest rate of 7.8 percent for the OTS and 7.3 percent for the NTS, an inflation rate of 2.5 percent and a rate of capital appreciation of 4.0 percent. The reduced interest rate is not applied to the OTS estimates, as it is assumed that the reduction in interest rate is a direct result of the implementation of the NTS.</p>				

Table 5 suggests that in the old tax system survival is contingent on a real rate of property price appreciation somewhat higher than the 1% assumed for the base scenario. Average after-tax economic costs for boarding houses could be covered at market rental rates of between 6% and 7% given a real rate of appreciation of 1.5% (see column 3, table 5). But under the new tax system average reservation rental rates are in all but one case (newly constructed boarding houses) higher than 7%, regardless of base or favourable scenarios. At these average rates proprietors will be uncompetitive with private rental housing²⁷; indeed at the base scenario parameter values proprietors seem to be uncompetitive under the old tax system. Our microsimulations indicate that we can expect further decline in this sector of the private rental housing market.

4. CONCLUSION AND POLICY IMPLICATIONS.

In this paper we have argued that measurement of the new tax system's impacts on boarding house and caravan park proprietors should take into account consequences for both operating costs and capital costs. It should also recognise the important changes to capital gains tax arrangements that feature in the new tax system. Official government estimates of impacts are unlikely to be accurate because they have ignored the effects on proprietors' capital cost and capital gains tax liabilities.

We offer empirical evidence in the form of microsimulations conducted with respect to a sample of boarding houses and caravan parks offered for sale in the months immediately before and after the introduction of the GST. Considerable effort has been put into arriving at accurate measures of after-tax economic costs. These economic cost measures are comprehensive and include operating and transaction costs, as well as capital costs and capital gains tax liabilities, all defined on an after-

²⁷ Unless the new tax system raises market rental rates in private rental housing.

tax basis. The rent that would exactly cover these after-tax economic costs is termed a reservation rent, and this is the critical measure employed in the analyses of impacts. We compare reservation rents under the old and new tax systems. The comparison is conducted under two scenarios. The first baseline scenario, assumes the continuation of interest rates and property price inflation rates at their pre-reform values. The second favourable scenario assumes that the new tax system raises the long run growth potential of the economy so that interest rates can fall below pre-reform levels. It also assumes a higher property price appreciation rate.

Analyses of impacts for alternative proprietor marginal tax rates are conducted. The length of time a proprietor is expected to run her business before disposing of the property is also allowed to vary in the microsimulations. Even under the favourable scenario sample average increases in reservation rents are between 5% and 6%, which is well in excess of the official government estimate that housing rents would typically increase by 2.3%. It should be pointed out that there is a wide variation in estimates around this average and it is impossible to offer a precise single measure of impacts. However, the weight of evidence does support the view that impacts are larger than government estimates. Only in a few particular circumstances do our microsimulations yield estimates of increases in reservation rents at or below those made by government agencies.

Finally, we have also examined the extent to which proprietors of boarding houses and caravan parks can pass on increases in after-tax economic costs to residents. The analysis assumes that proprietors are to some extent competing with other providers of long-term rental accommodation, and in particular private rental landlords. The market rents obtained by the latter are typically between 6% and 7% of capital values. Our microsimulation estimates suggest that only proprietors from the highest income tax bracket (old tax system) could remain competitive and cover after-tax economic costs at these market rental rates.

This last finding is particularly important. It implies that proprietors from lower tax brackets will exit the market. Indeed our empirical work suggests that if the favourable scenario does not eventuate in the longer run, even proprietors from the highest tax bracket will struggle to pass on cost increases eventuating as a result of the new tax system. A prediction of future contraction in the supply of accommodation in this segment of the market will come as no great surprise, as this merely continues a trend that has been apparent for some considerable time with respect to boarding houses. However, the microsimulations offer firm evidence that this form of accommodation provider is uneconomic given current tax arrangements, and therefore hints at an appropriate policy response.

The supply of low-income rental housing has attracted increasing attention in recent years (Yates and Wulff, 2000). There is growing concern that though the need for such housing is increasing its supply is contracting. It seems that the new tax system will accentuate these supply problems. There are measures that government can take to help retain the stock of low-income housing. One such measure that has been implemented in the USA is a low-income housing tax credit. This is a targeted tax credit programme introduced in the USA in 1987. In the USA a landlord of an existing rental building can claim a tax credit of 4% of the building structure's value in each year for ten years, provided the property is ten years or older. The tax credit

entitles the landlord to a one-dollar reduction in tax liability for each dollar of tax credit. For example, suppose a landlord owns a \$100000 building that is more than 10 years old. He can claim a \$4000 tax credit each year for 10 years that will reduce his tax bill by \$4000, provided his taxable income is high enough to make use of the credit. Entitlement to the tax credit is also conditional on the building being occupied by low-income tenants who receive rental subsidies (Case, 1991; Smith, 2000).

In view of our findings such a programme has considerable appeal. Wood and Watson (2001, forthcoming) have conducted microsimulations for private rental investors, assuming that eligibility is conditional on charging weekly rents of less than \$100. They find that the tax credit successfully reduces the after-tax economic costs of those landlords of housing that is most vulnerable to an adverse change in market circumstances. Furthermore, the restriction on weekly rent targets assistance on low-income rental housing. The case for consideration of measures of this kind is compelling.

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