Welfare reform, housing assistance and effective marginal tax rates

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Abstract

A major objective of the recent tax and welfare reform agenda in Australian has been to ameliorate the disincentive effects of high effective marginal tax rates (EMTRs) faced by benefit recipients. This paper uses data from the Survey of Income and Housing Costs to illustrate how the distribution of EMTRs across individuals has varied between the years of 1982-83, 1996-97, 2000-01 and 2002-03. The impact of changes in the tax-benefit system on work incentives is then assessed by applying the real tax-benefit parameters from 1982-83, 1996-97 and 2002-03 to the household composition and income data from a base year (2000-01). In addition to providing comparable estimates across a considerable time span, two important features set this study aside from previous research estimating EMTRs in Australia: (1) the estimates are based on the actual circumstances of Australian households, rather than for selected 'hypothetical' households and income ranges; (2) the estimates fully incorporate the effects of withdrawal of housing assistance with increased income, encompassing both Commonwealth Rent Assistance and the imputed value of rent subsidies available to people living in State Housing. Persons in subsidised State Housing are found to face particularly weak financial incentive to increase their engagement in paid work. The 'reform agenda' is found to have had minimal impact on work incentives across the Australian population.

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1.   Introduction

An inevitable dilemma in the provision of welfare to the disadvantaged is that more generous levels of financial support may also create disincentives for the target group to attempt to increase their income and participation in the labour market. Situations in which the combined effect of the tax-benefit system results in little, if any, financial gain from a marginal increase to work effort are often referred to as 'poverty traps'. Effective marginal tax rates (EMTRs) are the most commonly used measure to gauge the existence and severity of poverty traps. Much of the focus of welfare and tax reform in recent years has been concerned with the high EMTRs faced by benefit recipients with low incomes or low earning potential.

This paper investigates whether major efforts to reform the tax and welfare systems, including the introduction of the New Tax System in 2001, have been effective in lowering the EMTRs faced by Australian households and whether housing subsidies worsen poverty traps faced by eligible households. Data from the Australian Bureau of Statistics Surveys of Income and Housing Costs (SIHC) to show how EMTRs have changed for the Australian population over a 20 year period to 2002-03. A major focus is the contribution of housing assistance (HA) to EMTRs. The two main HA programs are the Commonwealth Rent Assistance (CRA) program and concessional rents for State public housing tenants. While previous studies have incorporated CRA in calculating EMTRs, this paper departs from the existing literature by also imputing the value of rental subsides for public housing tenants and incorporating the change in rents payable with earned income to estimate EMTRs.

Unit record data from the 1982-83, 1996-97, 2000-01 and 2002-03 SIHCs are used to generate EMTRs based on household and individual circumstances of respondents and incorporating the full range of parameters of the tax and benefits system, including imputed rental concessions. Consequently the study presents estimates by household characteristic and income level in accordance with their representation in the Australian population. That is, the estimates are of the *actual* distribution of EMTRs faced by Australian households. This approach differs from the standard one which presents profiles of potential EMTRs faced by a subset of synthetic households and income ranges. The effects of policy changes are isolated from changes in the sample composition by imposing the 1982-83, 1996-97 and 2002-03 tax and benefit parameters upon the 2000-01 survey data. To the best of our knowledge, no previous study has generated consistent EMTR estimates for Australia over such a long term horizon.[1]

The following section provides some background on EMTRs and their significance and Section 3 a summary of housing assistance arrangements in Australia. The data

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[1]It must also be acknowledged that EMTRs are only one of a number of potential measures of disincentive effects of the tax and welfare system. No one measure can give a complete picture and we hope to publish corresponding estimates of replacement rates in the near future. See Giles, Johnson and McCrae (1997) for a paper providing alternative measures, including EMTRS, replacement rates and average tax rates, for public housing tenants in the UK.

and method are discussed in Section 4 before presentation of the EMTR estimates (Section 5) and the results of the simulation exercise (Section 6). Section 7 concludes.

2. Effective marginal tax rates and poverty traps

The EMTR is the proportion of each additional dollar of private income above current levels that a person forfeits due to the interaction of reduced government benefit payments and increased tax liabilities. In extreme circumstances EMTRs can exceed 100%; that is, the combination of income tax payable and the withdrawal of benefit entitlements can leave an individual with less net income as a result of increasing their earnings in employment. The theoretical model underlying most micro-economic analyses of labour supply posits that individuals act to maximise their utility (wellbeing), and that their wellbeing is an increasing function of the amount of goods and services consumed (their real disposable income) and the number of hours of leisure they have available to them. If people are free to choose their hours of work each individual will keep offering additional hours of labour so long as the value they place on net income gained, comprised of their hourly wage less taxes and any withdrawal of benefits, is greater than the value they place on the hour of leisure foregone. Thus people strive for a 'utility maximising' point where the marginal return derived from an additional hour of paid work equates to the value placed on an additional hour of non-work time.

There are a number of competing models which stress the importance of institutional, cultural, life-cycle and other factors in determining individuals' labour supply and labour market outcomes. The relative importance of the variables emphasised in the neo-classical model of labour supply, and hence their policy significance, is an empirical question. There is a vast international body of empirical research estimating key parameters such as the elasticity of labour supply with respect to wages and the effect of EMTRs. An extensive review of developments in the empirical analyses of labour supply can be found in Blundell and MaCurdy (1999). Much of this empirical research has stemmed from evaluation of 'welfare to work' or 'workfare' policies recently introduced in a range of countries (Cahuc and Zylberberg 2004: 4; Blank, 2002), as well as tests of their underlying rationale; that the 'passive' design of pre-existing welfare programs created significant disincentives to labour force participation for those disadvantaged in the labour market. The disincentive effects created by different tax and benefit regimes have become a major international policy issue (see, for example, OECD 1998).

Due to competing income and substitution effects, the theory is ambiguous as regards the impact of a change in the real after-tax wage rate received upon the number of hours of labour that an individual will want to offer, and the elasticity is likely to change over the distribution of wages and hours worked, and to be very different for groups with different non-wage incomes and preferences. For example, there is evidence that wage elasticities are larger for persons working a low number of hours. As a consequence women and sole parents in particular, who are more likely to be out of the labour force or working part-time, display a stronger elasticity of hours supplied with respect to wage changes (Cahuc and Zylberberg 2004: 40-41). EMTRs are an important part of this story as they determine the net change in income an individual faces given a change in the number of hours worked or in their hourly

wage rate. Indeed the empirical literature has relied heavily upon variations created by taxation and benefits regimes, and thus variations in EMTRs, in order to generate estimates of the elasticity of labour supply.

Again we refer readers to Blundell and MaCurdy (1999) for an extensive review of this literature with respect to both methodological developments and empirical estimates, along with Kalb (2003). There is a broad consensus that the higher EMTRs faced by welfare beneficiaries do create disincentive effects that adversely impact upon labour market outcomes, however, the estimates with respect to the magnitude of such effects fall within a wide range. A common methodology is to estimate a labour supply function across a sample of individuals (cross-section). The estimated elasticity of labour supply can then be used to infer the impact of different EMTRs on labour supply by calculating the change in earnings (and hence labour supply) under different tax and benefit scenarios. A second standard approach, but requiring longitudinal data, is to estimate the probability of transitions (such as entering employment, exiting unemployment or moving off benefits), conditional upon the EMTR facing the individual and other factors known to influence labour market outcomes. Particularly convincing evidence of the importance of disincentive effects comes from changes in the unemployment hazard rate - the probability of leaving unemployment conditional on duration - in situations in which benefits or unemployment insurance are not open ended. The hazard rate is often observed to increase markedly just prior to the point of benefit exhaustion (see, for example, Card and Levine 2000, Meyer 1990).[2] Methodological difficulties in identifying the impact of policy measures, including changes in EMTRs upon labour market outcomes has seen a growing body of contributions based upon natural experiments (sometimes called 'quasi-experiments'). These rely upon exogenous changes to the tax and benefits system that affect only a subset of the population (see Angrist and Krueger (2001), Rosenzweig and Wolpin (2000) and Heckman and Smith (1996) for reviews of research based upon natural experiments).

A number of studies present EMTR estimates for Australia, including Barber, Moon and Doolan 1994; Beer 1998; Beer 2003; Beer and Harding 1999; Department of Social Security 1993; Flatau and Wood 2000; Harding, and Polette 1995; Hulse, Randolph, Toohey, Beer, and Lee 2003; Polette 1995 and Whitlock 1994. Very few, however, consider directly the role of HA and when they do they focus on Commonwealth Rent Assistance and not on public housing rent subsidies. In a UK study closely comparable to this Giles, Johnson and McCrae (1997) investigate the return to housing benefit recipients from either entering employment or expanding the number of hours of labour supplied. They find that many council and Housing Association tenants face very small financial gains from increased employment, particularly in the case of sole parents and those with non-waged partners.

Also, no previous Australian studies have been identified which provide estimates of EMTRs on a consistent basis over the longer term, such as the 20 year period analysed here, and thus which permit direct evidence on trends in EMTRs and the extent of poverty traps over time. Moreover, the period from 1982-83 to 2002-03 has seen significant changes in working patterns. Notably, the female participation rate

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[2] The more relevant measure of disincentives for the unemployment-to-work hazard is the replacement rate. As noted, replacement rate estimates are being developed in ongoing research to accompany the estimates of EMTRs reported in this paper.

increased from 44.6 per cent to 55.9 per cent; and the share of part-time workers increased from 17 to 29 per cent of all workers[3]. EMTRs will therefore have been affected by these substantive shifts in the working arrangements of households, as well as by policy changes to the parameters of the tax and welfare system. Outcomes are likely to be mixed between genders, full-time/part-time status and other characteristics of working arrangements. In the UK, for example, there is evidence that females with unemployed partners have not matched the increase in participation as other females due to blunt work incentives (Kell and Wright, 1990). This highlights the important contribution of two features of the methodology used in this paper: the calculation of EMTRs based on the actual circumstances of households rather than synthetic households, and the isolation of the effects of policy changes from the effects of household composition and working arrangements.

In line with the overseas literature, Australian empirical studies suggest modest disincentive effects facing welfare beneficiaries (see Kalb 2003). Duncan and Harris (2001) estimate that a reduction in the withdrawal rate of the sole parent pension from 50 per cent to 40 per cent would increase the average number of hours worked by sole parents by just 0.6 per cent. Kalb (2000) estimates small decreases in labour supplied by both married women and men resulting from increases in maximum benefit levels and reductions in the taper rate, although women and persons on lower incomes are estimated to be more responsive to these changes. The estimates from both of these studies are derived using a microsimulation model of labour supply now known as the Melbourne Institute Tax and Transfer Simulator (MITTS), which is described in detail in Creedy et al. (2002). Note that Chapman et al. (2000) argue that such models can exaggerate the extent of negative incentive effects by failing to account for future growth in wages that typically arises from work experience.

2.1 Housing Assistance and financial disincentives

As the receipt of HA is normally conditional upon consumption of housing it may not have the same disincentive effects as other government benefits that are withdrawn as earned income increases. In theory, however, the effect on labour supply could be greater or lesser than the effect of an equivalent cash benefit. On the one hand the conditionality for receipt of the HA payment or subsidised rent might make it of lower value than an untied, cash-equivalent benefit and hence have a lower effect on labour supply. On the other, if a means tested subsidy is conditional on the consumption of a merit good, such as housing, and the good is a compliment for leisure, the subsidy may have a greater impact on labour supply than an equivalent cash transfer (Leonesio 1988, cited in Whelan 2004a:8).

While there is strong evidence that beneficiaries of HA do exhibit inferior labour market outcomes (see Whelan 2004a, Flatau et al. 2003, Wadsworth 1998), this does not necessarily imply causality and it must also be noted that the provision of HA is correlated with other impediments to labour market participation. These include neighbourhood effects and any stigma associated with participation in welfare schemes. Whelan (2004a and 2004b) provides an international overview of studies into the effect of HA upon labour market outcomes, as well as one of the few

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[3] ABS on-line statistics, catalogue number 6291.0.55.00, Labour Force Australia, Detailed.

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Australian contributions. The international studies reviewed are dominated by US studies and, to a lesser extent, UK studies. While the findings are not unanimous they generally concur with expectations that participation in HA programs reduces labour force participation, both in terms of the likelihood of being employed and the number of hours supplied once in work. Further, several studies explicitly attribute this effect to high EMTRs facing HA beneficiaries (see Yelowitz 2001 for the US; Brewer 2000 and Giles et al. 1997 for the UK). Marked differences in the administration of the programs in each country limit the relevance of these findings to Australia. Whelan (2004a) and Barrett (2002) have both identified inferior labour market outcomes for Australian HA beneficiaries, but have not linked these directly to financial incentives.

3. Housing Assistance in Australia

The contribution to EMTRs of the two main forms of HA available in Australia, CRA and subsidised housing provided through State Housing authorities, is modelled in this paper. Housing assistance is also provided through community housing organisations and through charities, but this is on a very minor scale and can be ignored with no consequence. An important difference between CRA and public rent subsidy programs is that the latter is rationed (demand for public housing exceeds supply and so wait lists operate) while CRA is an entitlement paid to all eligible private rental tenants.

While the CRA structure is the same for 1996-97, 2000-01 and 2002-03, there are significant differences between the CRA structure in these three years and the CRA structure in 1982-83. The CRA structure in 1996-97, 2000-01 and 2002-03 is first described. In order to qualify for CRA, a person must pay rent in the private rental market above an applicable rent threshold and be in receipt of a benefit or receive more than the base rate of family payment (1996-97) or more than Family Tax Benefit (Part A) (2000-01 and 2002-03). CRA is paid at the rate of 75 cents for every dollar of rent paid above the specified minimum rent threshold until the maximum rate is reached. Maximum CRA rates and thresholds vary according to the recipient's family situation, the number of children they have and whether or not accommodation is shared with others. One threshold applies if CRA is paid as a supplement to benefits under the Social Security Act and another applies if CRA is paid as a supplement to family payments.

Consider an income unit in receipt of the maximum entitlement under a benefit, thus ensuring eligibility for CRA. The rent assistance payment (S_i) that is made to income unit i is determined according to the formula;

$$S_i = 0; R_i < R_i^*$$
$$S_i = \min[S_i^m, \beta(R_i - R_i^*)]; R_i > R_i^*$$

where R_i is the rent paid by income unit i

R_i^* is the minimum threshold rent for CRA eligibility.

S_i^m is the maximum entitlement to rent assistance for income unit type i

and β = rate of subsidy of 0.75.

If the rent paid by an otherwise eligible renter is equal to or less than R_i^*, then no CRA will be paid, as is shown between 0 and R_i^* in Figure 1. Once a rent greater than R_i^* is paid there is a CRA entitlement of 75 cents for each dollar of rent above R_i^* until the upper rent threshold R_i^H is reached.

Figure 1   Relationship between CRA and levels of rent
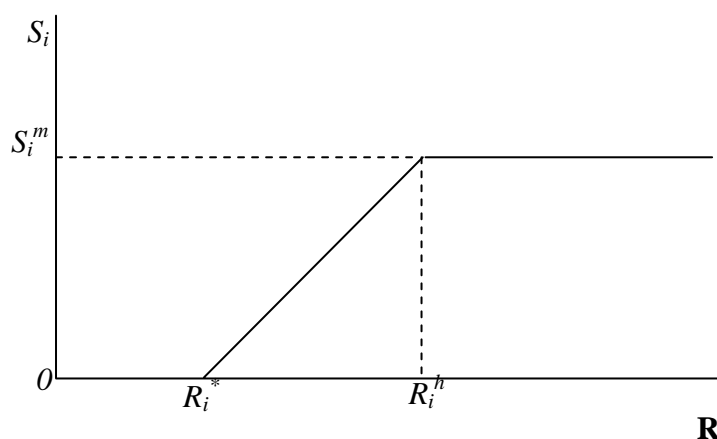
Source: Wood, Forbes and Gibb (2005)

The recipient's income does not directly affect the level of CRA. However, benefit and family payments *are* dependent upon the recipient's level of assessable income, and eligibility for CRA is contingent upon the receipt of such government benefits and family payments. Furthermore, once income has risen to a level such that entitlement to benefits or family payments is lost, further increases in income reduce CRA entitlements. Payment of CRA is thus indirectly dependent upon the recipient's level of assessable income.

The CRA structure in 1982-83 is now described. In 1982-83, CRA was known as supplementary assistance[4]. CRA was also subject to a separate income test[5]. It was paid at the rate of 50 cents for every dollar of rent paid above the specified minimum rent threshold less half the assessable income of the income unit until the maximum rate was reached (Department of Family and Community Services[6], 2006).

Rents in public rental housing are set at levels that are in the vast majority of cases below market rents.[7] Typically, tenants pay rents that are determined by their assessable income, so that the assistance (S_j) received by household j is given by:

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[4] Supplementary assistance was re-named CRA on 5 September 1985.

[5] The separate income test was removed on 9 July 1987.

[6] Department of Family and Community Services (2006) '5.2.2.20 Additional Payments - April 1943 to Present Date', *Guide to Social Security Law*, http://www.facs.gov.au/guide/ssguide/52220.htm (Accessed 29 March 2006).

[7] According to the SCRCSSP (2004), 88.7 per cent of public housing tenants paid rent below the market level as at 30 June 2003.

$$S_j = R_j - \gamma Y_j \qquad\qquad\qquad (4)$$

where $\gamma <= 0.25$

> Y_j is household assessable income
> R_j is the market rent for the property chosen by household j
> γY_j is the rebated or concessional rent level.

Different State Housing Authorities employ different definitions of household assessable income. Assessable incomes include the government benefit entitlements of the principal earner and their partner, but practice varies with respect to the fraction of income of other household members included as assessable income.

Work incentives may be affected by public housing rent setting arrangements in a number of different ways. The most obvious is that a rise in income results in a fall in the rental subsidy because a higher proportion of the market rent is paid by the household. More subtly, the inclusion of a child's or relative's income in household assessable income means that rebated rent levels can rise when their income increases, though there is no income sharing between the (say) couple and child or relative (Hulse et al. 2003). In some jurisdictions, income from casual and intermittent work is assumed to last a full year, and allowed to determine rents on this basis (Wulff, Pidgeon and Burke 1992). Thus, a temporary increase in income can cause an abrupt rent increase that stays in place for a full year, and remains in place long after the income increase has been reversed. This might deter public housing tenants from accepting temporary work opportunities.

4. Data and method

EMTR estimates are derived from the SIHC Confidentialised Unit Record Files for 1982-83, 1996-97, 2000-01 and 2002-03. The sampling frame of the SIHC is all those aged 15 and over living in private dwellings. Excluded are those people resident in non-private residences (e.g., hotels, boarding schools, boarding houses and institutions), the homeless, those living in remote areas of the Northern Territory, and members of permanent defence forces. The sampling frame of the SIHC covers around 98 per cent of the Australian population. In releasing the SIHC unit record data the ABS undergoes a process of confidentialising the data. This includes reducing the level of detail of a number of items, placing ranges or top-coding some otherwise continuous data and changing the demographic detail for some respondents.

The SIHC data set is cross-sectional. However, respondents to the SIHC are drawn from Australia's Monthly Population Survey (MPS), which tracks an individual's labour force outcomes during an eight-month window. The MPS labour force data for each individual is linked by the ABS to the rich SIHC questionnaire containing housing-related questions (housing tenure, dwelling structure and location, estimated house value, housing loans and repayments, housing costs, and year of purchase), labour market questions (e.g., wages, labour force position), socio-demographic information (e.g., age, education, country of birth, family type) and very detailed income data (income is specified by source of income and on a current and previous year's financial basis).

The EMTR is the proportion of each additional dollar of private income above current levels that a person forfeits due to the interaction of reduced government benefit

payments and increased tax liabilities. The methodology employed in this study accounts for the full range of government tax-benefit programs and also incorporates concessional or rebated public housing rents. An increase in income will generally result in an increase in concessional rents for public housing tenants, and the increase in rent is treated as equivalent to a reduction in government benefits (or increase in tax liabilities). This provides a more accurate representation of the work disincentives faced by public housing tenants.

The EMTR of person i arising from a one-dollar increase in weekly private income (or $52 per annum)[8] is defined as:

$$EMTR_i = 1 - \left(\Delta Y_i^d / \Delta Y_i^p \right) \tag{5}$$

where ΔY_i^d = change in income unit disposable income of person i

ΔY_i^p = change in private income of person i, that is, $52 per year.

The one-dollar increase in weekly private income is equivalent to an annual increase in wage and salary income of $52, that is ΔY_i^p=$52. The EMTR of person i is calculated taking into account the impact of his/her $52 increment in private income on his/her *income unit's*[9] disposable income. This is because the level of government benefit entitlements and direct tax liabilities of each person is not simply dependent on his/her own income, but the income of the income unit to which he/she belongs. For example, the amount of Newstart Allowance (NSA) received by a partnered individual is determined not only by his/her assessable income level but also by the partner's assessable income level.[10] Moreover, the Medicare levy can be reduced by a family reduction amount if a person is partnered or has dependent children. Thus, for any couple income unit two EMTRs are calculated, one for the reference person and one for the partner of the reference person. An important assumption is that the income of the partner (reference person) is held constant when the EMTR of the reference person (partner) is computed.[11]

ΔY_i^d represents the change in disposable income of person i's income unit caused by a $52 increase in earnings of person i of the income unit. The annual change in disposable income includes the following components of disposable income:

$$\Delta Y_i^d = \Delta Y_i^p + \Delta G_i - \Delta T_i \tag{6}$$

where ΔY_i^p = change in private income of person i,

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[8] Most EMTR studies assume a one-dollar increase in weekly private income (Podger et al. 1980, Gallagher and Ryan 1992, Whitlock 1994, Polette 1995, Beer and Harding 1999).

[9] An income unit is a person or group or persons related by marriage or parent-dependent child relationship who live within the same household and share income (ABS, 1997). A household may comprise several groups of unrelated income units living together. As government benefit entitlements are computed based on the income unit's income rather than the household's income, EMTRs are computed based on income unit income.

[10] An individual's NSA entitlement decreases by 70 cents for every dollar that his/her partner's income exceeds the partner's cut out point.

[11] This is in contrast to some studies that set the income of a partner (reference person) equal to zero when estimating the reference person's (partner) EMTR.

ΔG_i = change in income unit government benefits of person i, where $\Delta G_i \leq 0$

ΔT_i = change in income unit direct tax liabilities of person i, where $\Delta T_i \geq 0$.

The change in private income, ΔY_i^p, is the increase in wage and salary of person i of the income unit since the wage and salary of the partner, if there is one, is assumed to remain constant. The change in government benefits, ΔG_i, takes into account the changes in the government benefits paid to all members of the income unit as a result of an increase in person i's weekly wage and salary. The amount of government benefits received will either stay the same if the income unit assessable income does not exceed the income test free area, or decreases if assessable income exceeds the income test free area, that is, $\Delta G_i \leq 0$.

The change in direct tax liabilities, ΔT_i, takes into account the changes in the income unit's personal income tax, Medicare levy, superannuation surcharge and tax offsets. When the wage and salary of person i increases, the level of direct tax liabilities of person i will either stay the same if each component of the direct tax liabilities does not exceed its respective tax free threshold, or increase if the rise in private income subjects the income unit to higher levels of income tax, Medicare levy or superannuation surcharge or reductions in tax offsets. Thus, $\Delta T_i \geq 0$.

This approach has a number of important advantages relative to that used in many other studies in the literature. First, the EMTR relates to the disposal income of the income unit, taking account of impacts on partners' eligibility for government benefits. Second, the rate is calculated given the reference person's and their partner's actual circumstances, in contrast to studies which use hypothetical households and income ranges, and which commonly adopt the simplifying convention of setting the income of the reference person's partner to zero. Finally, while other EMTR studies such as Beer and Harding (1999), Beer (2003) and Hulse et al. (2003) account for the reduction in rent assistance in their EMTR calculations, the reduction in public housing rent subsidy is not accounted for.

The tax provisions and income support programmes that are modelled and the SIHC files are described in appendix A2.

5.   Trends in Marginal Tax Rates over Time

Estimates of EMTRs for the years of 1982-83, 1996-97, 2000-01 and 2002-03 are presented in Tables 1 and 2. In Table 1, EMTRS for three groups of HA beneficiaries are modelled separately:
- CRA1 beneficiaries - private rental tenants with no dependent children who receive CRA;
- CRA2 beneficiaries - private rental tenants with dependent children who receive CRA; and
- public housing tenants[12].

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[12] In 1996-97, 2000-01 and 2002-03, CRA1 beneficiaries received their CRA as a supplement to pensions and allowances, and CRA2 beneficiaries received their CRA as a supplement to family

These are compared with two other working age groups that act as benchmarks for comparison purposes:

- Non-HA beneficiaries - government benefit beneficiaries who are not eligible for HA; and
- Non-beneficiaries - persons who neither receive government benefits nor receive HA.

Non-HA beneficiaries form a low-income group who are likely to have socio-economic and demographic characteristics that are similar to HA beneficiaries. They therefore act as a more suitable benchmark for comparison than non-beneficiaries. The estimates are based on a sample of working age persons. Thus, the retired and dependent children are omitted from the analysis. The labour force status of persons within each of these five sub-samples is shown in Appendix A1. In all years both HA and non-HA beneficiaries are disproportionately unemployed or not participating in the labour force when compared to non-beneficiaries, and CRA1 beneficiaries are the most likely to be unemployed from 1996-97 onwards.

The mean and median EMTRs are shown in Table 1, along with the proportion of the sample which faces EMTRs in excess of 47 per cent (representing the highest marginal income tax rate in 1996-97, 2000-01 and 2002-03) and in excess of 60 per cent (a benchmark of high EMTRs commonly used in EMTR studies and the highest marginal income tax rate in 1982-83). Note that changes in EMTR outcomes between any two years can result from two sources: changes in the level or composition of income and in household formation between the two years; and changes in the tax-benefit system and housing assistance structure between the two time periods. As a test of the robustness of the results, the estimates for 2000-01 are also estimated using the sample composition and income data collected from the 2001 wave of the Household Income and Labour Dynamics Australia (HILDA) Survey. This process reveals relatively minor changes in the estimates. (Full details of the comparisons are available from the authors).

A striking feature is the impact of public housing rent setting arrangements on EMTRs. For public housing tenants, median EMTRs lie at or above 20 per cent reflecting the fact that the 20 per cent rental subsidy withdrawal rate applies immediately to public housing tenants on receipt of the first dollar of private assessable income. *In short, in the case of public housing tenants, the 20 per cent rental subsidy withdrawal rate provides a floor to EMTR estimates.* The median public housing tenant failed to earn sufficient income to face benefit withdrawal or pay tax. However, the median public housing tenant suffers a loss in public rent subsidy because when they do receive any (assessable) income they suffer a reduction in the value of the rental subsidy equal to 20-25 per cent of the assessable income received. All the EMTR estimates for public housing tenants in Table 1 show that the EMTRs for this group increased between 1982-83 and 2002-03. This is primarily because the rate at which public housing subsidy is withdrawn has increased since

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payments. In 1982-83, only private rental tenants who were pensioners and long-term sickness beneficiaries were eligible for CRA, and CRA was subject to a separate income test from the eligible renters' pensions or sickness benefit.

1982, hence increasing the amount of subsidy lost per additional dollar of income earned for public housing tenants.

The 20-year trend is very different for CRA beneficiaries. For CRA1 beneficiaries, the mean EMTR was highest at 29.6 per cent in 1982-83, then fell to 8.7 per cent in 1996-97 before rising again to 15.6 per cent in 2002-03. The percentage of CRA1 beneficiaries with EMTRs above 47 per cent also shows the same trend. Moreover, while the median EMTR was 50 per cent in 1982-83, it was 0 per cent in later years. The EMTR results indicate that CRA1 beneficiaries in 1982-83 faced extremely high EMTRs relative to CRA1 beneficiaries in later years. The main reason for this trend is that CRA was subject to a separate income test from government benefits in 1982-83. In the case of CRA beneficiaries from 1996-97 onwards, withdrawal of CRA only begins after the benefit to which it is attached cuts out. Hence, a 'multiple stacking' effect was present for CRA beneficiaries in 1982-83 but absent for CRA beneficiaries from 1996-97 onwards. Moreover, CRA was only made available to pensioners and long-term sickness beneficiaries in 1982-83 and pension withdrawal rates were 50 per cent (25 per cent) for singles (each member of a couple) in 1982-83 but fell to 40 per cent (20 per cent) for singles (each member of a couple) from 2000-01 onwards after the introduction of the new tax system.

The 20-year trend for CRA2 beneficiaries is very different again. On average, EMTRs rose over the 20 years. This trend is caused by two main factors. Firstly, it is caused by a change in the labour force composition of CRA2 beneficiaries since 1982-83. In 1982-83, 93 per cent of CRA2 beneficiaries were not employed. In 2002-03, only 59 per cent of CRA2 beneficiaries were not employed. This indicates that CRA2 beneficiaries in 2002-03 were more likely to have income above the income test and tax free thresholds and experience a withdrawal of government benefits and increase in tax liabilities than CRA beneficiaries in 1982-83. In 1982-83, only 2 per cent of CRA2 beneficiaries faced an increase in tax liabilities when private income increased by one dollar, as compared to 37 per cent of CRA2 beneficiaries in 2002-03.

Secondly, the increase in mean EMTRs since 1982-82 is due to a change in the tax-benefit structure since 1982-83. Apart from a significant difference in CRA structure, there were other major differences between the tax-benefit system in 1982-83 and 1996-97. For example, in 1982-83 there were no assets tests, deeming rules, Pharmaceutical Allowance or Medicare Levy. The main family payment, that is, Family Allowance, was not income-tested. Furthermore, the 1982-83 personal income tax rates and thresholds were significantly different from 1996-97. For more details, refer to Appendix A3.

As noted previously, in 1982-83 CRA was paid at the rate of 50 cents for every dollar of rent paid above the specified minimum rent threshold less half the assessable income of the income unit until the maximum CRA rate was reached. Hence, CRA2 beneficiaries in 1982-83 were subject to multiple stacking of pensions or sickness benefits and CRA. Note, however, the impact of multiple stacking would not be felt by CRA2 beneficiaries who were receiving the maximum CRA entitlement and whose rent payment were so high despite an increase in one dollar of assessable income, they were still entitled to the maximum CRA rate. In 1982-83, over two-thirds of CRA2 beneficiaries were entitled to the maximum CRA rate despite an increase in assessable income of one dollar.

While the family payment in 1982-83 was not income-tested, CRA2 beneficiaries were subject to multiple stacking of family payments and other government benefits in 1996-97, 2000-01 and 2002-03. In 1996-97, family payment above the minimum rate was subject to a withdrawal rate of 50 per cent, and in 2000-01 and 2002-03, Family Tax Benefit (A) had a withdrawal rate of 30 percent. While the increase in assessable income of one dollar is unlikely to make a difference to CRA entitlements for CRA2 beneficiaries from 1996-97 onwards due to the absence of multiple stacking between government benefits and CRA, some CRA2 beneficiaries from 1996-97 onwards may be subject to multiple stacking of pensions or allowances and family payments.

On average, non-HA beneficiaries have had lower EMTRs than public housing tenants over the 20-year period. This is because the EMTRs of public housing tenants are increased by the withdrawal of public housing subsidy per additional dollar of income earned apart from the withdrawal of government benefits and increase in tax liabilities. Non-HA beneficiaries had higher EMTRs than CRA1 beneficiaries from 1996-97 onwards but lower EMTRs than CRA1 beneficiaries in 1982-83. This is because CRA1 beneficiaries in 1982-83 face a 'multiple stacking' problem due to the separate income test of CRA in 1982-83, but as this separate income test was abolished in 1987, CRA1 beneficiaries from 1996-97 onwards do not have the problem of 'multiple stacking'.

The impacts of the July 2000 welfare reform on EMTRs are now examined by comparing the EMTRs in 1996-97 and 2000-01. Between 1996-97 and 2000-01, median EMTRs remained zero throughout the period for the CRA1 and CRA2 categories. For public housing tenants they remain at approximately 25 per cent. In other words, changes brought in with the introduction of the welfare reform package of July 2000 were not sufficiently large to have any direct effect on the value of EMTRs for at least half of all HA recipients. The welfare reform package of July 2000 introduced several key changes aimed at encouraging greater economic participation. Increases in tax free thresholds were a major part of the reform package. All other things being equal a rise in the tax free threshold should act to reduce EMTRs. Why then did this and other changes not flow through to a reduction in mean EMTRs for all beneficiaries in the period 1996-97 to 2000-01?

The answer lies in the fact that these and other changes, which were introduced in the package, were not of sufficient impact to offset rises in income, cohort compositional effects (the composition of the 1996-97 cohort is different to that of 2000-01), household formation changes and other tax-benefit reforms which worked in the opposite direction. In terms of tax threshold effects, it is important to note that increases in *nominal* tax thresholds do not guarantee a reduction in EMTRs. An increase in nominal tax thresholds only reduces EMTRs when the increase in thresholds is large enough that bracket creep is avoided. Hence, it is real increases in tax thresholds that matter. Furthermore, we must not only consider the effect of changes in tax free threshold values but also changes in the proportion of people in the tax-free bracket.

Even though the nominal tax free threshold increased from $5400 to $6000 between 1996-97 and 2000-01, the percentage of CRA2 beneficiaries – those with dependent

children - below the tax-free threshold fell from 30.5 per cent to 23.2 per cent. Among the non-HA beneficiaries group, the percentage in the tax free threshold fell from 38.7 per cent to 32.1 per cent. The large decrease in the proportion of those in the tax-free threshold suggests that income growth for these groups outstripped the increase in the tax-free threshold helping to drive EMTRs up.

For public housing tenants, the percentage below the tax free threshold increased from 33.5 per cent to 37.4 per cent. However, mean EMTRs increased as well. Hence, the increase in the mean EMTR for the public housing tenant group cannot be attributed to a fall in the percentage of persons in the tax free threshold. One driver of the rise in the mean EMTR, however, was that the withdrawal rate of public housing subsidies increased between 1996-97 and 2000-01, resulting in rising EMTRs.

One further tax-benefit impact should be noted, that related to parenting payment arrangements. In 1996-97, the Parenting Allowance was divided into basic and additional Parenting Allowance. The basic component was not income-tested. However, this was replaced in 2000-01 with the Parenting Payment, which was fully income-tested. This reform would have contributed directly to the rise in mean EMTRs among beneficiaries with dependent children.

Table 1   EMTR trends, by HA-benefit status, 1982-83 to 2002-03, per cent

Tax-benefit regime	CRA1	CRA2	Public housing	Benefits, no HA	No benefits, no HA	Total
Mean EMTR						
1982-83	29.6	17.6	23.5	19.3	29.3	23.5
1996-97	8.7	18.5	29.5	21.7	29.5	26.8
2000-01	11.1	20.1	32.1	22.4	28.3	26.5
2002-03	15.6	23.9	32.0	21.9	29.2	27.3
Median EMTR						
1982-83	50.0	0.0	20.0	29.7	29.7	29.7
1996-97	0.0	0.0	23.0	19.5	34.4	34.4
2000-01	0.0	0.0	25.0	20.0	30.3	30.3
2002-03	0.0	16.2	25.0	16.3	30.2	30.1
EMTR>47 per cent						
1982-83	54.1	32.7	11.8	2.9	3.9	4.1
1996-97	11.2	15.0	14.4	14.9	2.0	6.1
2000-01	11.3	21.5	18.6	14.8	8.2	10.4
2002-03	17.9	26.8	18.4	14.9	8.0	10.6
EMTR>60 per cent						
1982-83	5.2	1.8	1.7	1.3	0.0	0.8
1996-97	9.7	10.8	10.8	8.9	1.1	3.8
2000-01	11.0	7.6	8.5	8.5	1.2	3.4
2002-03	15.7	15.3	7.6	8.6	1.1	3.7
Sample						
1982-83	135	171	1,000	14,152	10,384	25,842
1996-97	330	334	465	2,630	7,775	11,534
2000-01	291	302	377	2,024	7,272	10,266
2002-03	458	477	537	2,902	10,665	15,039

As noted previously, the mean (and median) EMTRs of non-beneficiaries decreased slightly between 1996-97 and 2000-01. A contributing factor influencing the decline in mean EMTR for non-beneficiaries is, of course, the increase in tax thresholds mentioned previously.[13]

One interesting finding from our time series analysis of EMTRs is that the proportion of HA beneficiaries with EMTRs higher than 47 per cent increased between 1996-97 and 2000-01. The same trend is apparent for those who do not receive benefits or HA. However, with respect non-HA beneficiaries the proportion with EMTRs higher than 47 per cent remained constant. The proportion of persons with EMTRs higher than 60 per cent remained relatively constant between 1996-97 and 2000-01.

In Table 2, EMTRs for persons employed full-time, part-time, unemployed and not in the labour force (NILF) are tracked separately. High EMTRs deter the former from working harder and the latter from saving. Both reduce financial independence. Apart from full-time employed persons, all other labour force status groups experienced almost no change in mean EMTRs between 1996-97 and 2000-01. Hence, it would appear that while the increase in tax thresholds under the reform package initially reduced mean EMTRs for full-time employed persons, they have not benefited part-time employed persons, unemployed persons and persons who are NILF. Note, however, that the proportion of full-time employed persons with EMTRs in excess of 47 per cent increased markedly between 1996-97 and 2000-01. A main factor causing this trend is the introduction of superannuation surcharge for high-income earners in 2000-01.

The majority of unemployed persons and persons who are NILF usually have low taxable incomes that tend to place them under the tax-free thresholds both before and after the welfare reform. Hence, in the increase in tax-free thresholds from $5,400 to $6,000 between 1996-97 and 2000-01 would not benefit such persons. For unemployed persons who receive Newstart Allowance, the reform package would have made no difference to their benefit receipt as the lower and upper withdrawal rates for Newstart Allowance remained constant at 50 per cent and 70 per cent respectively.

Part-time employed persons are more reliant on tax offsets to reduce their tax liabilities than full-time employed persons, who are mostly ineligible for tax offsets, and persons who are unemployed or NILF, who have such low income levels that they do not require tax offsets to reduce their tax liabilities. Note that, while nominal tax offset rates and thresholds have increased between 1996-97 and 2000-01, real tax offset rates and thresholds have fallen for some tax offsets. For instance, between 1996-97 and 2000-01, nominal dependent spouse tax offset income test free thresholds remained constant at $282, indicating a fall in real value. Nominal low income tax offset income test free thresholds remained constant at $20,700, again

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[13] In 1996-97, the personal income tax thresholds (tax rates) were $0-$5,400 (0 per cent), $5401-$20,700 (20 per cent), $20701-$38,000 (34 per cent), $38,001-$50,000 (43 per cent) and $50,001 or over (47 per cent). In comparison, the personal income tax thresholds (tax rates) in 2000-01 were $0-$6,000 (0 per cent), $6,001-$20,000 (17 per cent), $20,001-$50,000 (30 per cent), $50,001-$60,000 (42 per cent) and $60,000 or over (47 per cent).

indicating a fall in real value. Moreover, sole parents were eligible for the non-income-tested sole parent tax offset in 1996-97. By 2000-01, the sole parent tax offset had been abolished and sole parents were only eligible for the income-tested pensioner tax offset.

Table 2   EMTR trends, by labour force status, 1982-83 to 2002-03, per cent

Tax-benefit regime	Employed full-time	Employed part-time	Unemployed	NILF	Total
Mean EMTR					
1982-83	32.3	26.5	6.1	7.7	23.5
1996-97	35.4	28.9	5.6	11.1	26.8
2000-01	33.8	29.5	6.2	11.5	26.5
2002-03	34.5	31.2	7.6	11.2	27.3
Median EMTR					
1982-83	29.7	29.7	0.0	0.0	29.7
1996-97	34.4	20.7	0.0	0.0	34.4
2000-01	30.3	30.1	0.0	0.0	30.3
2002-03	30.2	30.1	0.0	0.0	30.1
EMTR>47 per cent					
1982-83	3.6	6.1	4.6	4.2	4.1
1996-97	3.8	15.8	3.3	6.0	6.1
2000-01	12.6	15.0	1.3	4.0	10.4
2002-03	12.2	17.0	4.0	3.5	10.6
EMTR>60 per cent					
1982-83	0.1	2.3	2.5	1.3	0.8
1996-97	2.7	11.5	2.3	2.0	3.8
2000-01	2.4	9.4	1.1	2.1	3.4
2002-03	2.1	11.7	3.4	1.5	3.7
Sample					
1982-83	14,512	2,862	1,384	7,084	25,842
1996-97	6,397	1,694	747	2,696	11,534
2000-01	5,737	1,610	473	2,446	10,266
2002-03	8,287	2,550	643	3,559	15,039

6.   The impact of policy changes

As discussed, the welfare reform package of July 2000 introduced several key changes aimed at encouraging greater economic participation. To assess the impact of these changes to the tax-benefit system EMTR estimates for 1982-83, 1996-97 and 2002-03 are derived by the application of the 1982-83, 1996-97 and 2002-03 tax-benefit system parameters to the 2000-01 SIHC sample after appropriately deflating relevant tax and transfer nominal values[14]. That is, we simulate the impact of the

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[14] Between 1982 and 2003, the minimum female Age Pension age increased from 60 to 62 years. In this section, the Age Pension parameters from 1982-83, 1996-97, 2000-01 and 2002-03 are all applied to Age Pensioners in the 2000-01 SIHC. In 2000-01, the minimum female Age Pension age is 61.5 years. In 1982-83, the Commonwealth-State Housing Agreement covered states and the Northern Territory. Hence, the 1982-83 Northern Territory rules are applied to 2000-01 public housing tenants in both

change in tax-benefit parameters on work disincentives given the household composition and real incomes of the working age population that existed in 2000-01. Note that this approach only partially simulates the impact of the policy changes, since the policy changes may themselves cause changes in labour supply, earnings and household composition between the surveys. However, such effects are likely to be minor and the results will still provide a useful indication of changes in the incentives and disincentives inherent in the tax-benefit systems of each year.

The results are reported in Table 3. Looking at the effect of developments in the tax-transfer parameters over the longer term, a comparison of figures for 2002-03 with those for 1982-83 show that, on each measure, EMTRs have crept upwards for persons in total and the same holds for most of the separate categories. CRA recipients with dependent children (CRA1) provides an exception with sizeable falls in the mean EMTR and the proportion with EMTRs in excess of 47 per cent. Between 1996-97 and 2002-03 the changes in EMTRs attributable to reform of the tax transfer system are minimal. While the estimated mean and median EMTRs for persons in total and for non-beneficiaries decline marginally between 1996-97 and 2000-01, the mean EMTRs have risen again by 2002-03 while median EMTRs remained constant. Given that government benefit and tax parameters have been deflated back to 2000-01 prices using a CPI deflator, the nominal increase in rates and means test free areas between 2000-01 and 2002-03 does not impact on EMTRs.

The impact of changes between 2000-01 and 2002-03 in the tax system on mean EMTRs is quite difficult to unravel. Tax thresholds were not indexed between those years. Furthermore, there was no change to nominal thresholds for low income earners. As our modelling procedure involves the deflation of the actual 2002-03 nominal tax parameters, including tax thresholds, to the 2000-01 time period and the further application of those parameters to the 2000-01 SIHC we would have expected to see an increase in mean EMTRs across the various categories of recipients. The impact of the non-indexation of tax brackets at the bottom of the income distribution was to raise the mean EMTRs of all groups between 2000-01 and 2002-03.

Northern Territory and Australian Capital Territory. When the 1982-83 tax-benefit parameters are imposed on the 2000-01 SIHC, it is assumed that:

- 2000-01 Mature Age Allowance and Mature Age Partner Allowance recipients would have received Unemployment Benefit in 1982-83 as both the allowances are paid to persons who face barriers to employment due to lack of recent workforce experience;

- 2000-01 Youth Allowance recipients who are in the labour force, that is, employed or unemployed, would have received Unemployment Benefit in 1982-83;

- 2000-01 single Parenting Payment recipients would have received both the Sole Parent Pension and the non-income-tested Family Allowance in 1982-83 but partnered Parenting Payment recipients would have received Family Allowance only;

- 2000-01 Widow Allowance recipients would have received Widows Pension in 1982-83;

- 2000-01 Carer Payment and Carer Allowance recipients would not have received government benefits in 1982-83 because there were no major government benefits paid to carers then and data limitations makes it difficult to calculate Handicapped Child's Allowance for 2000-01 carers.

Table 3   Impact of changes in tax-benefit parameters on EMTRs, by HA-benefit status, 1982-83 to 2002-03, per cent

Tax-benefit regime	CRA1	CRA2	Public housing	Benefits, no HA	No benefits, no HA	Total
Mean EMTR						
1982-83	19.1	10.0	23.9	24.4	29.1	26.0
1996-97	10.0	22.3	28.7	25.2	31.8	29.6
2000-01	11.1	20.1	32.1	22.4	28.3	26.5
2002-03	11.4	20.5	32.7	23.0	29.4	27.4
Median EMTR						
1982-83	0.0	0.0	20.0	29.3	29.4	29.3
1996-97	0.0	0.0	23.9	19.2	34.3	34.3
2000-01	0.0	0.0	25.0	20.0	30.3	30.3
2002-03	0.0	0.0	25.0	20.0	30.3	30.3
EMTR>47 per cent						
1982-83	35.8	15.2	17.2	5.6	6.3	6.8
1996-97	12.7	23.0	14.3	16.3	2.5	6.4
2000-01	11.3	21.5	18.6	14.8	8.2	10.4
2002-03	11.4	22.5	19.1	15.2	7.9	10.3
EMTR>60 per cent						
1982-83	1.6	3.4	6.1	3.0	0.1	1.9
1996-97	9.2	16.2	9.0	10.8	1.6	4.3
2000-01	11.0	7.6	8.5	8.5	1.2	3.4
2002-03	11.1	8.6	9.8	9.0	1.1	3.5
Sample						
2000-01	251	296	377	1,972	7,370	10,266

The results in Table 4 complement the results in Table 2. Holding the characteristics of the working age population constant at 2000-01 levels, small increases in mean and median EMTRs are evident for the population as a whole over the long-term, while there have been significant increases in the proportion of persons facing EMTRs in excess of 47 per cent and 60 per cent. This also applies for employed persons, irrespective of whether they are employed part-time or full-time. The welfare reforms of 2000 appear to only have benefited full-time workers. EMTRs remain low for the unemployed and non-participants, and as discussed the replacement rate applying from a transition from non-employment to employment is probably more relevant measure of disincentive effects for these groups.

Table 4   Impact of changes in tax-benefit parameters on EMTRs, by labour force status, 1982-83 to 2002-03, per cent

Tax-benefit regime	Employed full-time	Employed part-time	Unemployed	NILF	Total
Mean EMTR					
1982-83	33.5	28.6	6.8	10.4	26.0
1996-97	38.3	32.4	5.7	12.3	29.6
2000-01	33.8	29.5	6.2	11.5	26.5
2002-03	34.9	30.9	6.4	11.7	27.4
Median EMTR					
1982-83	29.4	29.3	0.0	0.0	29.3
1996-97	34.4	23.9	0.0	0.0	34.3
2000-01	30.3	30.1	0.0	0.0	30.3
2002-03	30.3	30.3	0.0	0.0	30.3
EMTR>47 per cent					
1982-83	6.2	10.7	3.4	6.3	6.8
1996-97	4.5	15.1	1.9	6.1	6.4
2000-01	12.6	15.0	1.3	4.0	10.4
2002-03	12.2	15.4	1.3	4.0	10.3
EMTR>60 per cent					
1982-83	0.6	6.9	0.6	2.1	1.9
1996-97	3.2	11.6	1.1	2.5	4.3
2000-01	2.4	9.4	1.1	2.1	3.4
2002-03	2.3	10.4	1.1	2.2	3.5
Sample					
2000-01	5,737	1,610	473	2,446	10,266

7.   Conclusion

The findings indicate that those receiving Commonwealth Government pensions and allowances (benefits) typically have substantially higher EMTRs than non-beneficiaries, even though the latter have higher marginal income tax rates. Moreover, public housing tenants face particularly high EMTRs. Because the 'stacking' of CRA and other government allowances is avoided, CRA makes a negligible contribution to poverty traps for most beneficiaries. In 2000-01, State Housing tenants represented around 4 per cent of the working age population and one-fifth of benefit recipients of working age. As all previous Australian estimates of EMTRs have, to the best of our knowledge, ignored the effect of the withdrawal of State Housing rental subsidies they will have significantly underestimated EMTRs for this portion of the population. And although their earnings can be expected to be significantly lower, part-time workers are found to face very similar mean and median EMTRs to full-time workers.

The times series modelling shows a long term increase in EMTRs for working age Australians in total and for most of the sub-populations selected. CRA recipients with dependent children (CRA1) benefited from the removal of a separate assets test that applied to CRA payments in 1982-83, but have also faced rising EMTRs from 1996-97 onwards. For public housing tenants mean EMTRs increased from 23.5 per cent in 1982-83 to 32.0 per cent in 2002-03, while median EMTRs increased from 20.0 per

cent to 25.0 percent. Distinguishing individuals by labour force status, the EMTRs facing full-time and part-time workers have similarly crept upwards over the long–term, with the mean EMTRs rising more sharply, by almost 5 percentage points, for part-time workers. For working age Australians as a whole, the median EMTR changed little over the 20 years between 1982-83 and 2002-03, while the mean EMTR increased from 23.5 per cent to 27.3 per cent and the proportion facing high EMTRs more than doubled.

These results demonstrate that any policy changes have been insufficient to offset changes in the composition and earnings of households. The important finding from this exercise is that the 'major' welfare reform package and the new tax system of 2000 provided, at best, a very minor and temporary reduction in EMTRs which has since been eroded by bracket creep. The actual mean EMTRs faced by CRA recipients, public housing tenants, other beneficiaries and part-time workers all increased between 1996-97 and 2000-01. Yet these are all groups which will have low average earned incomes, and for whom the reforms were supposedly targeted as those for whom work incentives needed to be increased. To more directly asses the impact of the policy changes, the real parameters of the tax and transfer system have been applied holding household composition and real earnings constant with that defined by the 2000-01 sample. Even still the findings show that, on the whole, the reform package provided minimal reduction in EMTRs for recipients of CRA or for part-time workers, and continued deterioration of work incentives for public housing tenants. Under this approach the non-indexation of tax thresholds and income free areas for benefit recipients is modelled as a 'policy change' to the extent that it represents a reduction in the real level of these thresholds.

There remains the question of how much of an influence these EMTRs have on labour supply. Do high EMTRs create poverty traps? This has not been addressed directly in this paper but remains the topic of ongoing research by the authors. A body of international literature suggests there are non-trivial behavioural responses to EMTRs and the recent focus of welfare reform and political dialogue in Australia very much presumes that EMTRs created by the interaction of the tax and transfer arrangements are of major concern. In this context, the evidence in this paper suggests, first, that State Housing tenants represent a group that is highly vulnerable to poverty traps and an appropriate target group for active labour market assistance. Second, tinkering with the parameters of the tax benefit is not going to substantially ameliorate disincentive effects. To do this policy makers must be prepared either to make far more momentous changes to the parameters, such as the introduction of indexation of tax thresholds or earned income tax credits; or to address disincentive effects through other avenues, such as stricter mutual obligation requirements or imposing time limits to benefits.

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Appendix A

A1   SIHC Samples by HA-benefit Status and Labour Force Status

Table A.1   HA-benefit status by labour force status, 1982-83 SIHC

Labour force status[a]	CRA1	CRA2	Public Housing	Benefits, no HA	No Benefits, no HA	Total
FT	0.7	0.0	33.6	43.1	78.1	56.3
PT	1.5	7.0	6.6	14.7	6.8	11.1
UN	2.2	7.0	6.5	7.9	1.1	5.1
NILF	95.6	86.0	53.3	34.3	13.9	27.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Observations	135	171	1,000	14,152	10,384	25,842
Row Per cent	0.5	0.7	3.9	54.8	40.2	100.0

Table A.2   HA-benefit status by labour force status, 1996-97 SIHC

Labour force status[a]	CRA1	CRA2	Public Housing	Benefits, no HA	No Benefits, no HA	Total
FT	2.1	16.8	20.2	22.5	72.7	55.5
PT	11.2	13.2	14.2	16.9	14.2	14.7
UN	45.2	14.1	11.9	12.5	2.1	6.5
NILF	41.5	56.0	53.7	48.1	11.0	23.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Observations	330	334	471	2,626	7,773	11,534
Row Per cent	2.9	2.9	4.1	22.8	67.4	100.0

Table A.3   HA-benefit status by labour force status, 2000-01 SIHC

Labour force status[a]	CRA1	CRA2	Public Housing	Benefits, no HA	No Benefits, no HA	Total
FT	3.2	17.9	15.6	25.1	70.0	55.9
PT	14.0	17.9	12.2	18.0	15.2	15.7
UN	27.6	14.9	11.7	7.8	2.1	4.6
NILF	55.2	49.3	60.5	49.1	12.7	23.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Observations	279	302	377	2,010	7,298	10,266
Row Per cent	2.7	2.9	3.7	19.6	71.1	100.0

Table A.4   HA-benefit status by labour force status, 2002-03 SIHC

Labour force status[a]	CRA1	CRA2	Public Housing	Benefits, no HA	No Benefits, no HA	Total
FT	1.6	15.5	17.5	20.9	70.1	55.1
PT	18.7	25.4	10.6	20.8	15.8	17.0
UN	24.8	11.1	9.1	7.2	2.1	4.3
NILF	54.9	48.0	62.8	51.1	12.0	23.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Observations	439	477	537	2,869	10,717	15,039
Row Per cent	2.9	3.2	3.6	19.1	71.3	100.0

Note: In this and the rest of the tables: FT = Full-time employed, PT = Part-time employed; UN = Unemployed; NILF = Not in the labour force.

A2   Tax-benefit Model and SIHC Data

Table A.5   Tax-benefit modelling paremeters, by tax-benefit regime

Tax-benefit regime	1982-83	1996-97	2000-01	2002-03
Tax				
Applicable date	July 1982	July 1996	July 2000	July 2002
Personal income tax	Tax-free threshold $4,462	Tax-free threshold $5,400	Tax-free threshold $6,000	Tax-free threshold $6,000
Medicare levy	Not applicable	Beyond the upper income limit, the levy is calculated at 1.7 per cent of taxable income. Family concessions apply	Beyond the upper income limit, the levy is calculated at 1.5 per cent of taxable income. Family concessions apply	Beyond the upper income limit, the levy is calculated at 1.5 per cent of taxable income. Family concessions apply
Non-refundable tax offsets	Dependent spouse tax rebate Pensioner tax offset Sole parent tax offset	Dependent spouse tax offset Pensioner tax offset Beneficiary tax offset Sole parent tax offset Low income tax offset Low income aged persons tax offset Superannuation pension or annuity tax offset Franking tax offset	Dependent spouse tax offset Senior Australians tax offset Pensioner tax offset Beneficiary tax offset Low income tax offset Superannuation pension or annuity tax offset	Dependent spouse tax offset Senior Australians tax offset Pensioner tax offset Beneficiary tax offset Low income tax offset Superannuation pension or annuity tax offset
Refundable tax offsets	Not applicable	Not applicable	Franking tax offset	Franking tax offset
Superannuation surcharge	Not applicable	Not applicable	Employer superannuation contribution rate based on 2002-03[a] average rate by industry	Employer superannuation contribution rate based on 2002-03[b] average rate by industry

Tax-benefit regime	1982-83	1996-97	2000-01	2002-03
Government benefits				
Applicable date	November 1982	July 1996	July 2000	July 2002
Government benefits modelled	Age Pension	Age Pension	Age Pension	Age Pension
	Invalid Pension	Disability Support Pension	Disability Support Pension	Disability Support Pension
	Wife Pension	Wife/Carer Pension[c]	Wife Pension	Wife Pension
	Widows Pension	Sole Parent Pension	Carer Payment	Carer Payment
	Supporting Parents Benefit	Parenting Allowance	Parenting Payment	Parenting Payment
	Unemployment Benefit	Newstart Allowance	Newstart Allowance	Newstart Allowance
	Sickness Benefit	Youth Training Allowance	Youth Allowance	Youth Allowance
	DVA War Widows Pension	Mature Age Allowance[d]	Mature Age Allowance[d]	Mature Age Allowance[d]
	DVA War Disability Pension	Sickness Allowance	Sickness Allowance	Sickness Allowance
	Family Allowance	Special Benefit	Special Benefit	Special Benefit
	Guardian's Allowance	Widow Allowance	Widow Allowance	Widow Allowance
	Additional Pension for Child	Partner Allowance	Partner Allowance	Partner Allowance
	Additional Benefit for Child	Child Disability Allowance	Carer Allowance	Carer Allowance
	Additional Benefit for Partner	Austudy	Austudy	Austudy
		DVA Service Pension	DVA Service Pension	DVA Service Pension
		DVA War Widow's Pension	DVA War Widow's Pension	DVA War Widow's Pension
		DVA Disability Pension	DVA Disability Pension	DVA Disability Pension
		Family Payment	FTB	FTB
		Pharmaceutical Allowance	Pharmaceutical Allowance	Pharmaceutical Allowance
		DVA War Widow's Income Support Supplement	DVA War Widow's Income Support Supplement	DVA War Widow's Income Support Supplement
Housing assistance programmes				

Tax-benefit regime	1982-83	1996-97	2000-01	2002-03
Housing assistance modelled	CRA Public housing subsidy	CRA Public housing subsidy	CRA Public housing subsidy	CRA Public housing subsidy

Notes:

a. The 2000-01 average rates are not used because the ABS did not publish data for that year. The rates for the closest year available are the 2002-03 rates. The employer superannuation contribution rates are not available for the agriculture, forestry and fishing industry. Therefore, the average for all industries is used for this industry. If the average rate for a particular industry is lower than the minimum employer contribution rate for that year, the minimum employer contribution rate is used for that industry. The minimum employer contribution rates are 8 and 9 per cent in 2000-01 and 2004-05 respectively.

b. The 2004-05 average rates are not used because the ABS did not publish data for that year. The rates for the closest year available are the 2002-03 rates. The employer superannuation contribution rates are not available for the agriculture, forestry and fishing industry. Therefore, the average for all industries is used for this industry. If the average rate for a particular industry is lower than the minimum employer contribution rate for that year, the minimum employer contribution rate is used for that industry. The minimum employer contribution rates are 8 and 9 per cent in 2000-01 and 2004-05 respectively.

c. The 1996-97 SIHC does not differentiate between Wife Pension and Carer Payment beneficiaries. However, this problem is of no consequence as the rates and means tests for both the Wife Pension and Carer Payment are the same. Thus, whether an income unit is a Wife Pension or Carer Payment recipient, the income unit is still subject to the same rates and meanst test limits.

d. The 1996-97 *and* 2000-01 SIHC do not differentiate between pre-1 July 1996 or post-1 July 1996 grants. Thus, it is assumed that all income units who report that they are Mature Age Allowance beneficiaries receive post-1 July 1996 grants.

Table A.6   Tax-benefit modelling assumptions and details, by dataset

Dataset	1982-83 SIHC	1996-97 SIHC	2000-01 SIHC	2002-03 SIHC
Sample composition	Working age persons	Working age persons	Working age persons	Working age persons
Sample size	25,846 persons	11,534	10,266 persons	15,039 persons
Number of dependent children aged under 13	Variable not required	Existing variable	Because the number of dependent children aged 10-12 and 13-14 are summed under the	Because the number of dependent children aged 10-12 and 13-14 are summed under the category 'Number

Dataset	1982-83 SIHC	1996-97 SIHC	2000-01 SIHC	2002-03 SIHC
			category 'Number of dependent children aged 10-14, the number of children aged under 13 and 13 or over are derived using a random assignment process based on proportions estimated from the 1996-97 SIHC. This is necessary because the FTB(A) maximum rates income limits beyond which only the base rate is paid differ for income units with children aged under 13 and 13 or over	of dependent children aged 10-14, the number of children aged under 13 and 13 or over are derived using a random assignment process based on proportions estimated from the 1996-97 SIHC. This is necessary because the FTB(A) maximum rates income limits beyond which only the base rate is paid differ for income units with children aged under 13 and 13 or over
Income measure	Annualised current weekly income	Annualised current weekly income	Annualised current weekly income	Annualised current weekly income
Dividend-bearing assets	Variable not required – assets test not applicable	Dividend-bearing assets are imputed based on income from dividends only	Dividend-bearing assets are imputed based on income from dividends only	Dividend-bearing assets are imputed based on income from dividends only
Interest-bearing assets	Variable not required – assets test not applicable	Assessable interest-bearing assets are imputed based on income from interest and other investments	Assessable interest-bearing assets are imputed based on income from interest and other investments	Assessable interest-bearing assets are imputed based on income from interest and other investments
Austudy/Abstudy	Variable not required – Austudy/Abstudy not applicable	It is not possible to tell Austudy and Abstudy beneficiaries apart in the	Persons do not report whether they receive Austudy or Abstudy in the	Persons do not report whether they receive Austudy or Abstudy in the

Dataset	1982-83 SIHC	1996-97 SIHC	2000-01 SIHC	2002-03 SIHC
		1996-97 SIHC. Thus, beneficiaries of the benefit category 'Austudy/Abstudy' are treated as Austudy beneficiaries.	2000-01 SIHC. Thus, persons who report income from 'Other' government benefits and meet all the eligibility criteria for receipt of Austudy are assigned Austudy recipient status	2000-01 SIHC. Thus, persons who report income from 'Other' government benefits and meet all the eligibility criteria for receipt of Austudy are assigned Austudy recipient status

A3   Major Differences in Tax-benefit Systems

Table A.7   Major Difference in Tax-benefit Systems, 1982-2003

Tax-benefit parameter	1981-82	1996-97	2000-01	2002-03
Tax				
Personal income tax rate	$0-$4,462: 0% $4,463-$17,894: 30.67% $17,895-$19,500: 35.33% $19,501- $35,788: 46% $35,789 or over: 60%	$0-$5,400: 0% $5401-$20,700: 20% $20701-$38,000: 34% $38,001-$50,000: 43% $50,001 or over: 47%	$0-$6,000: 0% $6,001-$20,000: 17% $20,001-$50,000: 30% $50,001-$60,000: 42% $60,001 or over: 47%	$0-$6,000: 0% $6,001-$20,000: 17% $20,001-$50,000: 30% $50,001-$60,000: 42% $60,001 or over: 47%
Medicare levy	No	Yes	Yes	Yes
Superannuation surcharge	No	No	Yes	Yes
Tax rebate/offset				
Dependent spouse tax rebate/offset	Yes	Yes	Yes	Yes
Sole parent tax rebate (non-income tested)	Yes	Yes	No	No
Pensioner tax rebate/offset	Yes	Yes	Yes	Yes
Beneficiary tax offset	No	Yes	Yes	Yes
Senior Australians tax offset	No	No	Yes	Yes
Low income tax offset	No	Yes	Yes	Yes

Tax-benefit parameter	1981-82	1996-97	2000-01	2002-03
Superannuation pension or annuity tax offset	No	Yes	Yes	Yes
Franking tax offset	No	Yes, non-refundable	Yes, refundable	Yes, refundable
Government benefits				
Means test	Income test only	Income and assets test	Income and assets test	Income and assets test
Family Payments	Family Allowance not subject to an income test; Other payments include: Mother's Allowance, Additional Pension for Child, Additional Benefit for Child	Family Payment: First taper is 50% 'Sudden death' once family income falls below the minimum Family Payment income limit.	Family Tax Benefit (A): First taper is 30% Second taper is 30% Family Tax Benefit (B)	Family Tax Benefit (A): First taper is 30% Second taper is 30% Family Tax Benefit (B)
Pharmaceutical Allowance	No	Yes	Yes	Yes
DVA Income Support Supplement	No	Yes	Yes	Yes
Deeming	No	Yes	Yes	Yes
Housing assistance				
CRA	Known as Supplementary Assistance; Available to pensioners and long-term sickness beneficiaries only; Subject to separate income	Available to most government benefit recipients; Subject to the same income test of the benefit to which it is attached as a	Available to most government benefit recipients; Subject to the same income test of the benefit to which it is attached as	Available to most government benefit recipients; Subject to the same income test of the benefit to which it is attached as a

Tax-benefit parameter	1981-82	1996-97	2000-01	2002-03
	test	supplementary payment only *after* the benefit cuts out (no multiple stacking)	a supplementary payment only *after* the benefit cuts out (no multiple stacking)	supplementary payment only *after* the benefit cuts out (no multiple stacking)
Public housing subsidy	Rent set as a percentage of up to 25 per cent of assessable income, with slight variations among states.	Rent set as a percentage of up to 25 per cent of assessable income, with slight variations among states.	Rent set as a percentage of up to 25 per cent of assessable income, with slight variations among states.	Rent set as a percentage of up to 25 per cent of assessable income, with slight variations among states.