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Labour market incentives among indigenous Australians: the cost of job loss versus the gains from employment

B. Hunter and A.E. Daly

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Summary

Policy makers will be in a better position to facilitate the transition from welfare to work if they have a detailed understanding of the incentives facing the potential indigenous workforce. Distinguishing the expected gains from becoming employed (captured by the replacement rate) from the expected loss of becoming unemployed (estimated in cost of job loss) is a prerequisite for developing a policy framework which ensures that more indigenous workers have an incentive to look for, secure and keep jobs. This paper uses the 1994 National Aboriginal and Torres Strait Islander Survey data to analyse the issues involved.

Incentives for indigenous Australians to work

The major work incentive issues raised by the literature are the effect of the welfare system on search activity, the duration of unemployment, the take-up rates to entitlements and the effect on the labour supply decisions of partners. The first two issues are directly captured by the replacement rate and cost of job loss measures.

- Ninety-four per cent of the indigenous unemployed aged 18–64 years were receiving government benefits. This high take-up rate suggests that any conclusions about the relationship between the benefit system and unemployment are likely to be applicable to the majority of unemployed indigenous Australians.
- The labour supply decisions of indigenous couples are highly correlated. Among unemployed males, 91 per cent had partners who were either unemployed or not in the labour force. Among unemployed females, 40 per cent had partners who were either unemployed or not in the labour force.

Indigenous replacement rates

Replacement rates provide one summary measure of the incentive to work in the presence of the social security system. In simple terms, it can be considered to capture the immediate gains from employment for potential members of the labour force. The closer a replacement rate is to one, the less incentive an individual has to work. Replacement rates greater than one mean that an individual has no monetary incentive to work as they can receive more income from remaining outside employment. However, if working in a low paid job today leads to substantial increases in future wages, then it is possible that a person chooses to work despite the immediate financial disincentive.

- Replacement rates for single males and females are highest for those not in the labour force but do not differ substantially between those in non-Community Development Employment Projects (CDEP) employment or unemployment.

- The average single indigenous male could expect to receive from unemployment benefits 69 per cent of the average income of a single indigenous male in any non-CDEP employment.
- Replacement rates were higher for females than males and higher for those who were married or in a de facto relationship. The first result reflects the lower earnings of females compared with males and the second, the fact that the welfare system explicitly recognises the additional costs of supporting a dependant spouse while employers do not.
- Among single males and females, about 20 per cent of individuals could expect a higher income from welfare than from employment in non-CDEP work (that is their replacement rate was greater than one). Among those in a partnered relationship, the share was higher, 30 per cent for males looking for work with a dependant partner and almost 80 per cent for females looking for work with a dependant partner.
- The estimated replacement rates rise with the number of dependants, as the welfare system pays additional benefits to larger families while employers do not explicitly adjust their wages and salaries to take account of family characteristics.
- Large differences in the replacement rates arise from changes in the assumptions of how the alternative wage is calculated. This illustrates that the incentive to work may be very sensitive to the type of work available in the local labour market.
- Incentives to work do not vary much over the lifecycle for indigenous males. Even though replacement rates are higher for older females, the results may be very sensitive to the assumptions made about the alternative employment available.

Cost of job loss among the indigenous employed

The cost of job loss is estimated for people who are currently employed. This measure includes both the effects of duration of unemployment and the replacement rate on the costs of unemployment to the individual. Our calculations show that the costs of unemployment are particularly high for many indigenous Australians because they tend to have longer durations of unemployment.

- Previous research concludes that the cost of job loss has gone up for all Australians over time but our calculations show that they were substantially higher for the vast majority of the indigenous population than for Australians in general in the early 1990s.
- The expected cost of job loss was particularly high, relative to the Australian average, for partnered indigenous Australians because of their substantially higher probability of being unemployed. So for example, the expected cost of losing a job for a partnered indigenous male with no children was an income

equal to 90 per cent of the income from full-year full-time work. Among all Australian partnered males in employment, the low probability of becoming unemployed meant that the equivalent statistic was 98 per cent.

Distinguishing the gains of becoming employed from the cost of job loss

The main advantage of the methodology used here is that it allows us to disaggregate the different incentives to find and stay in employment. For example, while the monetary incentive to find work, as measured by replacement rates, is lower for indigenous Australians, they have more to lose once they are employed because of the long spells between jobs.

- One possible implication of this result is that indigenous workers may be more reluctant to voluntarily quit than other employees. The resulting reduction in labour force mobility may have adverse impacts on the suitability of job matches in the indigenous workforce.

The level of change required in social security payments to provide an incentive for all the indigenous workforce to find and keep a job is probably politically and socially unacceptable. While the family payment reforms of the late 1980s and early 1990s provided some relief to the so-called 'working poor' families, significant labour market disincentives persist for many indigenous families.

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Introduction

A widely discussed issue in the period of high and persisting unemployment in Organisation for Economic Cooperation and Development (OECD) countries has been the role of the welfare system in perpetuating unemployment. It has been argued that high replacement rates, that is the ratio of welfare entitlement to the hypothetical income that would be received if an individual had a job, have adversely affected labour supply decisions particularly among those who are unemployed. The purpose of this paper is to estimate replacement rates and the cost of job loss for indigenous Australians and to examine some issues which relate specifically to this group.

The replacement rate provides one summary measure of the incentive to work in the presence of the social security system. In simple terms, it can be considered to capture the immediate gains from employment for potential members of the labour force. The closer a replacement rate is to one the less incentive an individual has to work. Replacement rates greater than one mean that an individual has no monetary incentive to work as they can receive more income from remaining outside employment. However, if working in a low paid job today leads to substantial increases in future wages, then it is possible that a person may choose to work despite the immediate financial disincentive.

While the calculation of replacement rates is conceptually simple it requires that the analyst models the whole social security and tax system in an attempt to account for the family circumstances of each individual. The major innovation of this study is to use the expected income from all types of work, including full-time, part-time and part-year work, as the basis of the estimated wage a person would receive if they found work. This recognises the fact that for many indigenous people, the alternative to social security income is not the income generated by a full-time job but rather the income expected from part-time, seasonal or occasional work.

Given the complex nature of the incentives to work and the issue of the availability of mainstream work opportunities for indigenous Australians, there are other aspects of the tradeoff between employment and welfare which need to be considered. These include the likelihood of gaining mainstream employment and special opportunities for indigenous people to work in an indigenous environment. In order to incorporate the first of these in our calculations, we have estimated the cost of job loss, following Flatau and Hemmings (1993a, 1993b). This measure includes both the effects of duration of unemployment and the replacement rate on the costs of unemployment to the individual. Our calculations show that the costs of unemployment are particularly high for some indigenous Australians because they tend to have longer durations of unemployment. An important issue in this context is the geographical distribution of the indigenous population and access to mainstream labour markets.

A particular feature of the indigenous labour market is the Community Development Employment Projects (CDEP) scheme. This further complicates the

analysis of incentives facing indigenous Australians to search for mainstream work. Under this scheme, indigenous communities get a grant similar to the collective Newstart entitlement to undertake community development work. The benefit recipients are then expected to work part-time for their entitlements. Historically the CDEP scheme was available on a one-in-all-in basis for each community. The current policy, which evolved gradually in the mid-1990s, means that when the CDEP scheme is provided in a community, the unemployed have the choice as to whether or not they participate in the scheme.

In 1994, there were 22,200 indigenous people participating in the CDEP scheme, accounting for 26 per cent of indigenous employment (ABS/CAEPR 1996). The scheme, with its focus on indigenous community development and the potential for earning additional income above an individual's benefit entitlement, may act as a preferred alternative to mainstream employment activities for many indigenous people even though the income they receive may be limited. For some, the CDEP scheme may provide a vehicle for the development of labour market skills and a transition from welfare dependence to mainstream employment.

The high level of welfare dependence among indigenous Australians has been a long-standing focus of concern (see for example, Australian Government 1987). Policy makers will be in a better position to facilitate the transition from welfare to work if they have a detailed understanding of the conflicting incentives facing the potential workforce. Distinguishing the expected gains from becoming employed, captured by the replacement rate, from the expected loss of becoming unemployed, estimated in cost of job loss, is a prerequisite for developing a policy framework which ensures that more indigenous workers have an incentive to look for, secure and keep jobs.

The evidence on the relationship between replacement rates and unemployment

There is an extensive international literature which calculates and compares replacement rates and examines the links between the welfare system and unemployment levels and durations (see Atkinson and Micklewright 1991; Layard, Nickell and Jackman 1991; Moffit 1992; Martin 1996). There remains considerable difference in the emphasis writers place on the effect of the welfare system on the level and duration of unemployment. One reason for these differences is that each welfare system operates in a unique institutional context which often makes it difficult to generalise across countries. While most writers concede that the existence of welfare benefits are likely to reduce work effort and employment search activity, there is considerable debate as to the extent of this effect and also about its wider social implications.

One important result given the Australian system of unlimited unemployment benefit entitlement is that open-ended systems are associated, all else being equal, with longer unemployment durations than systems which place

a time limit on the availability of welfare benefits (Layard, Nickell and Jackman 1991). These authors argue, however, that the rise in the replacement rate in most European countries in the 1960s and 1970s contributed little to the growth in unemployment over the period. Atkinson and Micklewright (1991) similarly concluded in their survey of OECD countries that the replacement rate has a small but significant effect on the probability of individuals leaving unemployment.

Australian studies have produced varied results for the effect of the replacement rate on unemployment. Gregory and Patterson (1983) and McGavin (1987) using aggregate data, found a positive effect of the replacement rate on the level of unemployment. Saunders, Bradbury and Whiteford (1989) using unit record data, concluded that the unemployment benefit did not encourage the employed to leave employment. They did, however, estimate high replacement rates for those unemployed at the time of their study and acknowledged the possibility that these may act as a disincentive to finding work. In a more recent Australian study, Bradbury, Ross and Doyle (1991) calculate replacement rates for 1986 and 1991 and conclude that they had fallen substantially for young people under the age of 18 years with changes in the eligibility rules.

Flatau and Hemmings (1993a, 1993b) extend the analysis of replacement rates to calculate for Australia a cost of job loss measure which includes both the standard replacement rate and the duration of unemployment. They use aggregate level data to consider how the cost of becoming unemployed has changed over the period 1973 to 1992. They conclude that for both single and couple income units, the cost of becoming unemployed increased. Of particular importance for this result was the increase in the average duration of unemployment over the period, which contributed to the increased income inequality between those with jobs and those without.

Among the important issues discussed in the literature is that of take-up rates to entitlements (Atkinson and Micklewright 1991; Moffit 1992). Where individuals do not take-up their welfare entitlements, the calculated replacement rates may have no influence on behaviour. The evidence presented below suggests that this is not an issue for indigenous Australians.

A further important effect of the welfare system may be on the labour supply decisions of the partners of the unemployed. In means tested systems, such as Australia, there is a disincentive for one partner to work when the other is unemployed as this reduces the family's benefit entitlement. Available evidence shows there is a correlation between the labour force status of partners (Miller and Volker 1987; Miller 1989, 1997). Miller's (1997) study based on 1991 Australian Census data shows a positive correlation between the labour force status of partners.

In summary, the major relevant issues for indigenous Australians raised by the literature are the effect of the welfare system on search activity and the related duration of unemployment and the effect on the labour supply decisions of partners.

Characteristics of indigenous Australians by labour force status

In this section some descriptive data on the characteristics of unemployed indigenous Australians are presented and these are related to some of the issues raised in the literature. The data presented here come from the National Aboriginal and Torres Strait Islander Survey (NATSIS) conducted by the Australian Bureau of Statistics (ABS) in 1994. The survey covered 15,700 indigenous people living in Australia and asked questions on a range of issues not usually covered in ABS surveys.

The NATSIS used a wider definition of unemployment than that usually adopted by the ABS. If people stated that they were registered with the Commonwealth Employment Service (CES), they were counted among the unemployed in the NATSIS but if they were taking no other steps to gain employment, they would not be included in the ABS Monthly Labour Force Survey (MLFS) definition of unemployment. Accordingly, only 72.8 per cent of those classified as unemployed in the NATSIS would be counted as unemployed in the MLFS. The remaining 27.2 per cent would have been included in the 'not in the labour force' (NILF) category in the MLFS (for a fuller discussion of this issue see Hunter 1996). A comparison of results using the two definitions shows that the NATSIS definition tends to increase the number of long-term unemployed. The results reported here are based on the NATSIS definition of unemployment.

In this paper we have focused attention on the 18–64 age group. The calculation of replacement rates for the 16–18 age group is complicated by the need for information on their parent's incomes and assets so we have omitted them from the current study. Compared with indigenous people employed in non-CDEP work, the unemployed were younger, more likely to live outside the major urban centres and had less education (Daly and Hunter 1998). In contrast, CDEP scheme workers were heavily concentrated in remote areas and were relatively older, but had similarly low levels of education.

Researchers in this area have pointed to the level of take-up of benefit entitlement as an important factor determining the likely effect of the welfare system on behaviour. The NATSIS data show that 94 per cent of the indigenous unemployed aged 18–64 years were receiving government benefit. This high take-up rate suggests that any conclusions about the relationship between the benefit system and unemployment are likely to be applicable to the majority of unemployed indigenous Australians.

One conclusion from the international literature was that welfare systems without time limits on the availability of unemployment benefits were associated with longer unemployment durations. Australia does experience relatively long unemployment durations (Elliott 1991; Committee on Employment Opportunities 1993). About half of the unemployed indigenous Australians aged 15 years and over had been out of work for more than 12 months (ABS/CAEPR 1996). The

proportion who had been unemployed for more than a year was very similar across all parts-of-State. More detailed calculations for those aged 18–64 years show that over half of both males and females had been unemployed for more than 18 months.[1] A comparison of indigenous and other Australians on the basis of MLFS data, shows 46 per cent of the indigenous unemployed to be long-term unemployed compared with 37 per cent of other Australians (ABS/CAEPR 1996). Long-term unemployment does, therefore, appear to be a particular problem for indigenous Australians, although the extent of the contribution of the welfare system to this outcome remains to be established.

Table 1. Couple where each indigenous spouse is aged 15–64: labour force status of husband and wife, 1994

	Wife				
Husband	Employed non-CDEP	CDEP	Un-employed	NILF	Total
A.					
Employed non-CDEP	41.3	5.6	9.2	43.9	100.0
CDEP	11.7	35.7	6.1	46.5	100.0
Unemployed	7.9	0.9	29.6	61.5	100.0
NILF	9.2	3.8	9.9	77.0	100.0
Total	19.3	9.9	14.7	56.0	100.0
B.					
Employed non-CDEP	66.5	17.5	19.4	24.3	31.1
CDEP	12.2	72.2	8.3	16.7	20.1
Unemployed	12.0	2.7	59.1	32.2	29.3
NILF	9.3	7.5	13.2	26.8	19.5
Total	100.0	100.0	100.0	100.0	100.0
Number	5,341	2,745	4,064	15,489	27,640

Notes: Table population is all married couples where both indigenous partners are present in the family unit. Unfortunately, the NATSIS did not collect data on the labour force status of non-indigenous partners. Panel A reports the unconditional probability of a wife being in a labour force state given the husband's labour force status. For example, the first line in Panel A estimates the probability that a wife is employed non-CDEP, CDEP, unemployed and NILF given that the husband works in non-CDEP employment. Panel B holds wife's labour force status constant.

Source: NATSIS unit record file.

International evidence shows that a means tested benefit system affects the labour supply decisions of the partners of the unemployed. Earlier Australian research shows a correlation between the employment status of partners. Table 1 confirms this result for indigenous Australians; the largest percentages are in the diagonal cells of the table. Among unemployed males, 91 per cent had partners who were either unemployed or not in the labour force. Among unemployed females, 40 per cent had partners who were either unemployed or not in the labour force. These shares would increase with the inclusion of CDEP participants among the unemployed.

Results

Calculating hypothetical welfare entitlements and tax liability

In order to calculate the replacement rate and the cost of job loss, we need estimates of potential earnings from employment for those unemployed and detailed information about Department of Social Security (DSS) benefit entitlements and the tax system. The calculations are quite detailed and a full description of the methodology is included in the appendixes.

In general terms, the estimated welfare entitlement of each individual is based on the social security rates reported in Table 2. Given that the income data in the NATSIS covers the year to June 1994, the expected social security income is based on the annualised entitlements at the 31 December 1993. The basic social security entitlements are calculated as the sum of Jobsearch Allowance or Newstart Allowance, Rent Assistance, Family Payments (Basic Family Payments and Additional Family Payments) and Remote Area Allowance.

Table 2. Basic social security rates before Rent Assistance, Family Payments and Remote Area Allowance, December 1993

	per annum
Single 18–20 year-old with no dependants—at home	$4,058.60
Single 18–20 year-old with no dependants—away from home	$6,162.00
Single 21–59 year-old with no dependants	$7,446.40
Single aged 60 years and over with no dependants	$8,221.20
Single with children	$8,221.20
Couple both 21+ (each)	$6,856.20
Couple partner 18–20 (each)	$6,162.00
Couple partner less than 18 (each)	$5,571.80

Source: A Guide to Social Security Payments, 20 September 1993 to 31 December 1993, DSS.

It is important to note that non-pecuniary benefits such as the Health Care or Pensioner Concession Cards are not included in our calculations because their value will depend upon uncertain events such as access to and need for health care. This omission places a downward bias in the replacement rate. Daly and Hunter (1998) provide details of the methodology used to predict the expected wage from employment for the unemployed.

Incentives to find work across labour force states and family types

Table 3 summarises the replacement rates for all labour force status groups using two comparison groups; those employed in non-CDEP work and a subset of these workers, those working full-time for a full-year. The first includes all employment outcomes, such as the most likely work options for indigenous

Australians of part-time and seasonal work, while the second is restricted to full-year full-time work only. The first comparison group is preferred because the opportunities for indigenous people to work full-time all year round may be severely circumscribed in many areas.

Table 3. Indigenous replacement rates across all labour force states, 1994

	No. of observations	Basis of sample for wage estimation (1) All non-CDEP workers		(2) Full-time, full-year	
Single adult income units					
Single males					
All	1,791	0.69	(0.27)	0.54	(0.15)
CDEP	296	0.66	(0.20)	0.56	(0.14)
Unemployed	517	0.62	(0.19)	0.52	(0.13)
Non-CDEP	357	0.56	(0.19)	0.48	(0.13)
NILF	621	0.85	(0.32)	0.59	(0.16)
Single females					
All	2,161	0.81	(0.24)	0.58	(0.13)
CDEP	153	0.76	(0.19)	0.60	(0.14)
Unemployed	461	0.74	(0.17)	0.58	(0.12)
Non-CDEP	374	0.68	(0.22)	0.52	(0.13)
NILF	1,173	0.89	(0.25)	0.60	(0.13)
Married/defacto income units					
If female partner is dependant (i.e. indigenous male partner looking for work)					
All	1,939	0.91	(0.23)	0.81	(0.17)
CDEP	380	1.00	(0.24)	0.89	(0.18)
Unemployed	485	0.92	(0.21)	0.82	(0.16)
Non-CDEP	727	0.85	(0.20)	0.77	(0.16)
NILF	347	0.92	(0.25)	0.80	(0.17)
If male partner is dependant (i.e. indigenous female partner looking for work)					
All	2,216	1.22	(0.29)	0.89	(0.18)
CDEP	221	1.31	(0.31)	0.98	(0.21)
Unemployed	300	1.18	(0.24)	0.90	(0.16)
Non-CDEP	504	1.10	(0.26)	0.83	(0.16)
NILF	1,191	1.27	(0.30)	0.89	(0.18)

Notes: Replacement rates for married income units are calculated by dividing the social security entitlement of both partners by the expected net income from non-CDEP wages (and consequent family payment entitlements when employed) of the partner looking for work. Other family income from non-wage and non-government sources is held constant throughout. Standard deviations are in brackets. Given that there are 30 or more estimates of replacement rates in all categories, we can estimate the standard errors using the usual formula (that is, dividing the standard deviation by the square root of the number of observations, N) and test for a significant difference between means by appealing to the central limit theorem. The largest standard error for the replacement rates in this table is 0.02, but most are less.

Source: NATSIS unit record file; Daly and Hunter (1998); A Guide to Social Security Payments, 20 September 1993 to 31 December 1993, DSS; and the Tax Pack for the financial year 1993/1994.

Replacement rates are presented separately for single males and females and for males and females who were members of a married or de facto relationship. So, for example, the table shows that the average single indigenous male could expect to receive from unemployment benefits 69 per cent of the average income of a single indigenous male in any non-CDEP employment. This represents a higher replacement rate than in comparison with a full-time, full-year worker. In this comparison, he could expect to receive from unemployment benefits 54 per cent of the average income of a full-time full-year indigenous male worker.

Looking at the breakdown by labour force status, Table 3 shows that the average replacement rate for single males and females is highest for those NILF but does not differ substantially between those in CDEP employment or unemployment. As might be expected, the lowest replacement rates were for those already in non-CDEP employment. The ranking across labour market states was, however, less clear for those who were married or in a de facto relationship. While those in non-CDEP employment faced the lowest replacement rates in each comparison group, the ranking differed for the other three labour force status groups.

Two other important features of the table are worth noting. Firstly, the replacement rates were higher for females than males and higher for those who were married or in a de facto relationship. The first result reflects the lower earnings of females compared with males and the second, the fact that the welfare system explicitly recognises the additional costs of supporting a dependant spouse while employers do not. The replacement rates in excess of one for partnered women show that their expected income was higher from welfare payments than from all non-CDEP employment.

The average replacement rate reported in Table 3 may conceal important variations between individuals depending on their particular characteristics. The replacement rates are particularly high for a large share of individuals when the alternative employment income used for the comparison is the expected income from all non-CDEP employment. Among single males and females, about 20 per cent of individuals could expect a higher income from welfare than from employment in non-CDEP work (that is their replacement rate was greater than one). Among those in a partnered relationship, the share was higher, 30 per cent for males looking for work with a dependant partner and almost 80 per cent for females looking for work with a dependant partner.

The replacement rates were lower if the alternative to welfare was full-time full-year non-CDEP employment. While the replacement rates for most single indigenous males and females were greater than 0.50, they were above one for only a small group. Among those with partners, about 14 per cent of males and 24 per cent of females had replacement rates above one. Virtually all partnered individuals had a replacement rate above 0.50.

Table 4. Replacement rates for selected categories of indigenous unemployed, 1994

	No. of observ-ations	Basis of sample for wage estimation (1) All non-CDEP workers[a]		(2) Full-time, full-year[a]	
Single adult income units					
Single males					
18–20 year-old with no dependants	31	0.53	(0.13)	0.41	(0.11)
21–59 year-old with no dependants	243	0.50	(0.09)	0.43	(0.06)
1 dependant under 12 years-old	92	0.69	(0.18)	0.56	(0.10)
2–3 dependants under 12 years-old	79	0.76	(0.16)	0.59	(0.10)
4 plus dependants under 12 years-old	32	0.76	(0.13)	0.69	(0.08)
Single females					
18–20 year-old with no dependants	32	0.55	(0.14)	0.42	(0.11)
21–59 year-old with no dependants	131	0.64	(0.13)	0.51	(0.10)
1 dependant under 12 years-old	111	0.77	(0.16)	0.59	(0.11)
2–3 dependants under 12 years-old	128	0.81	(0.15)	0.64	(0.08)
4 plus dependants under 12 years-old	28	0.87	(0.13)	0.74	(0.09)
Married/defacto income units					
If female partner is dependant (i.e. indigenous male partner looking for work)					
Couple with no dependants	468	0.91	(0.20)	0.81	(0.16)
1 dependant under 12 years-old	88	0.84	(0.15)	0.77	(0.10)
2–3 dependants under 12 years-old	171	0.98	(0.15)	0.84	(0.11)
4 plus dependants under 12 years-old	79	1.12	(0.15)	1.05	(0.12)
If male partner is dependant (i.e. indigenous female partner looking for work)					
Couple with no dependants	279	1.16	(0.23)	0.89	(0.16)
1 dependant under 12 years-old	53	1.20	(0.26)	0.89	(0.14)
2–3 dependants under 12 years-old	99	1.24	(0.20)	0.95	(0.12)
4 plus dependants under 12 years-old	32	1.30	(0.13)	1.06	(0.10)

Notes: See Table 3.

Source: See Table 3.

Table 4 focuses more closely on the unemployed and presents replacement rates for a range of family types. As in Table 3, the replacement rates reported here rise with the number of dependants as the welfare system pays additional benefits to larger families while employers do not explicitly adjust their wages and salaries to take account of family characteristics. The average replacement rates for both partnered males and females with dependant children were very high. These results resonate with the findings of Bradbury, Ross and Doyle (1991). Again, the replacement rates based on full-time, full-year employment are significantly lower than the estimates based on all non-CDEP workers.

The distribution of incentives to work

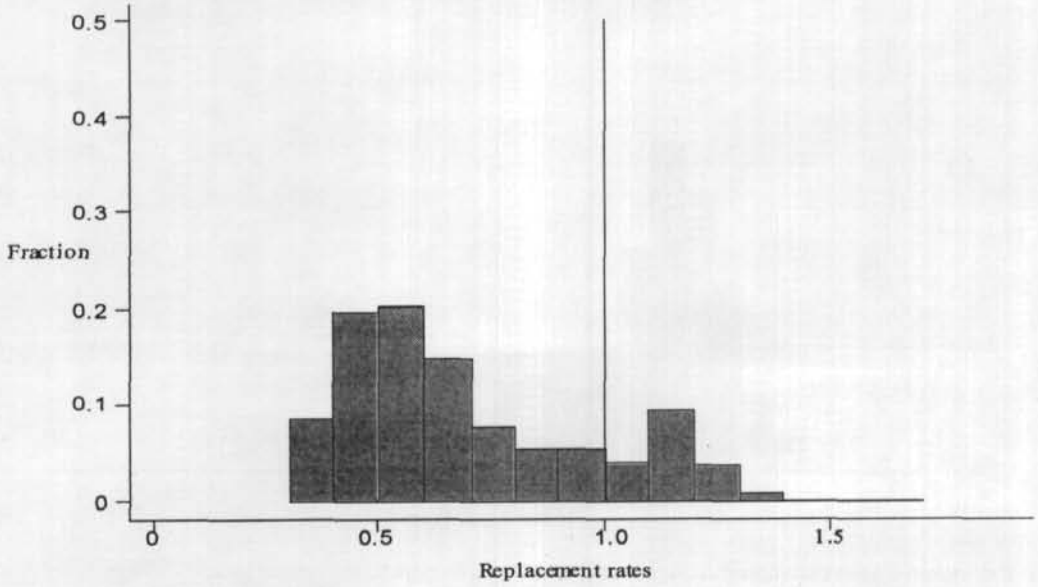
The distribution of financial incentives to work, represented by the replacement rates, can also be displayed in graphical form. Figures 1 and 2 illustrate several major issues raised in the previous section. Appendix B includes the equivalent graphs for married indigenous population.

First, female replacement rates are much higher than their male counterparts in both the single and married indigenous populations. Not only is the average replacement rate higher but the highest female replacement rate is almost twice as large as the highest male ratio. There are several females in the NATSIS sample whose expected wage is almost two-and-a-half times lower than their social security entitlements. In contrast, the highest male wages are less than one-and-a-half times lower than their respective social security entitlements. As indicated above, this largely reflects the poor alternative wage available to many indigenous females.

Second, many indigenous people, especially females, have little or no incentive to look for work. The large proportion of the population with replacement rates greater than one indicates that even if they found employment the resulting wage would, more than likely, be less than their social security entitlements (given the individual's family circumstances). The line drawn at one on each graph is designed as a visual cue to assist the reader in estimating how many people have no incentive to look for work. The proportion of the shaded area to the right of this line indicates the percentage of the population whose expected wage is less than social security entitlements. This observation is particularly pronounced when the estimated replacement rates are calculated using the wages from all non-CDEP scheme employment.

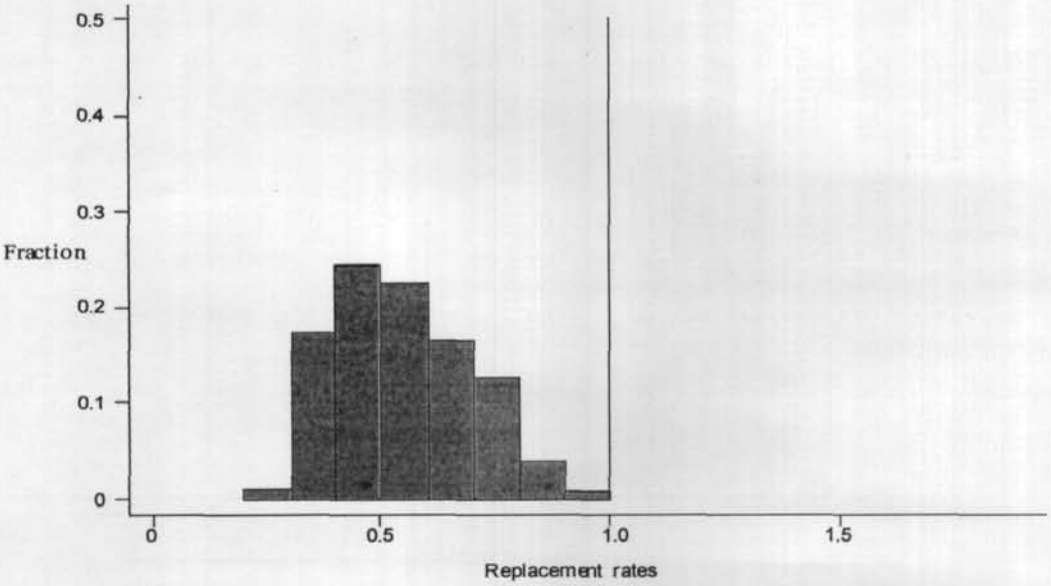
Finally, large differences in the replacement rates arising from changes in the assumptions of how the alternative wage is calculated illustrate that incentive to work may be very sensitive to the type of work available in the local labour market. Comparison of Figures 1a and 2a to Figures 1b and 2b illustrate the importance of assumptions about the type of work available. Virtually no males have replacement rates over one when full-time, full-year work is assumed to be available. However, if the alternative wage is based on the actual patterns of non-CDEP scheme employment that is including part-time and casual employment, there are substantial numbers of males with little or no incentive to look for work. Therefore any assessment of the indigenous incentive to work cannot be viewed in isolation from the state of the local labour market.

Figure 1a. Distribution of replacement rates for single males, wages estimated using all non-CDEP scheme employment



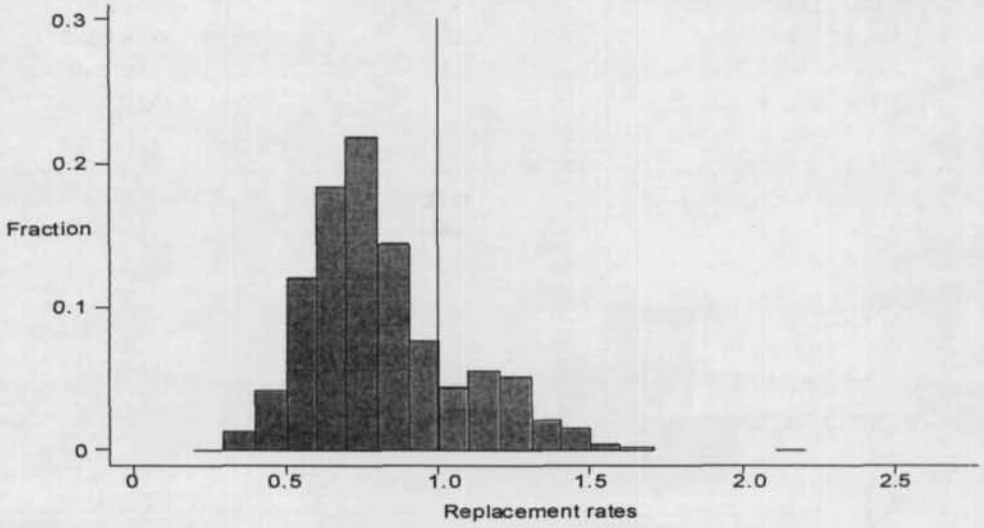
Note: Estimated wages calculated using income of all male non-CDEP employees.

Figure 1b. Distribution of replacement rates for single males, wages estimated using full-time, full-year non-CDEP scheme employment



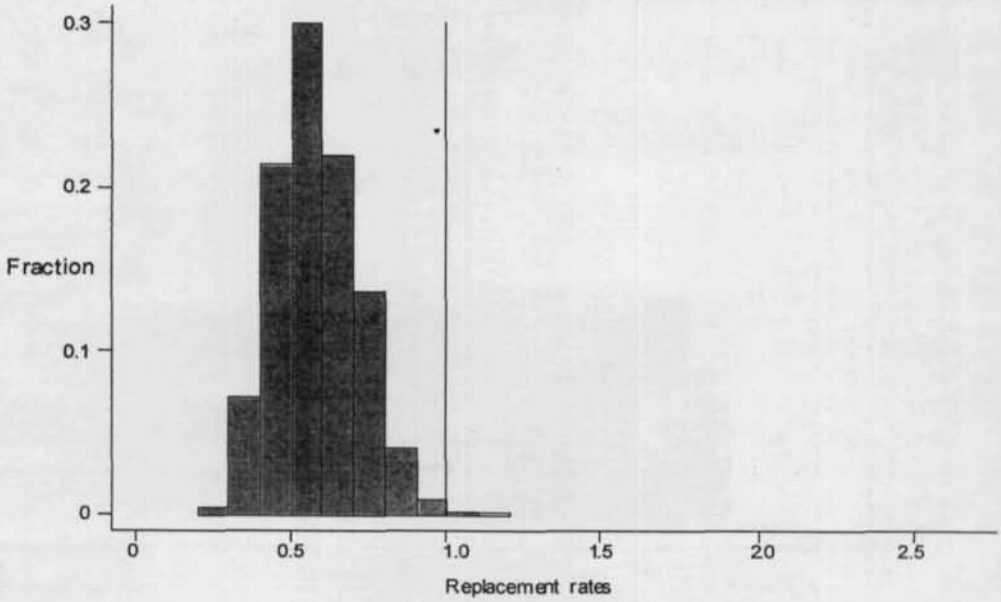
Note: Estimated wages calculated using income of full-time, full-year male non-CDEP employees.

Figure 2a. Distribution of replacement rates for single females, wages estimated using all non-CDEP scheme employment



Note: Estimated wages calculated using income of all female non-CDEP employees.

Figure 2b. Distribution of replacement rates for single females, wages estimated using full-time, full-year non-CDEP scheme employment

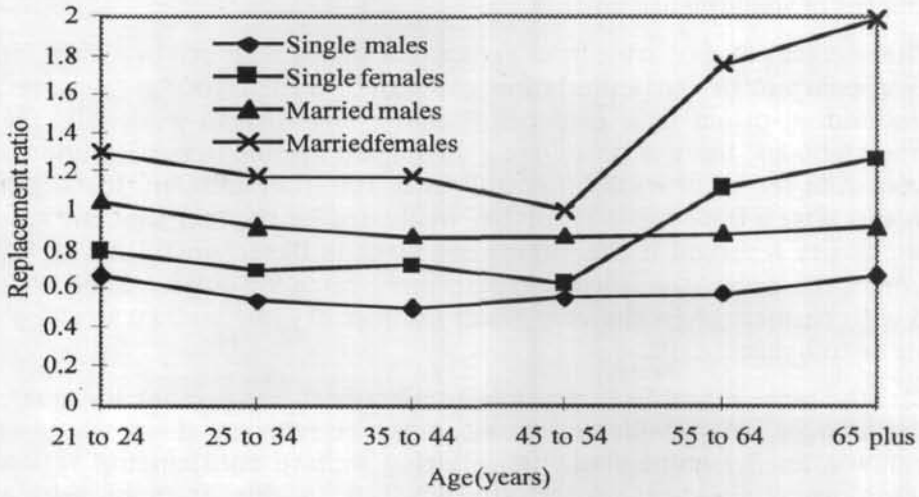


Note: Estimated wages calculated using income of full-time, full-year female non-CDEP employees.

Incentives to work across the lifecycle

In almost all industrialised countries workers are leaving the labour force at younger ages. While that trend is most evident for men, participation is also declining for older women. Gruber and Wise (1997) suggested that one of the major factors behind this trend is international increases in the average level of social security since the 1960s. While there is insufficient data available to directly address Gruber and Wise's proposition for indigenous Australians, it is possible to examine replacement rates for the older indigenous population relative to their younger counterparts at the time of the NATSIS. Specifically, this section examines whether there is any substantial difference in the level of social security entitlements for indigenous Australians, relative to the potential wage received in the labour market, over the lifecycle (see Figure 3).

Figure 3. Indigenous replacement rates over the lifecycle based on all non-CDEP employment income, 1994



Note: The replacement rates in this figure are based on all NATSIS respondents in the particular age group. It is not possible to estimate the ratios for any sub-group because of the low numbers involved.

Figure 3 illustrates two major issues. First, that incentives to work do not vary much over the lifecycle for indigenous males. Second, even though replacement rates are higher for older females, the results may be very sensitive to the assumptions made about the alternative employment available.

The above graph illustrates how the replacement rate declines very gradually for workers until age 54 where it begins to rise again. The increase in replacement rates among older people is more marked for females than it is for males. Indeed, male wages, relative to welfare entitlements, do not vary much over

the lifecycle. The large difference in labour market participation of older, as opposed to younger, indigenous males does not appear to be related to disincentive provided by social security payments being at high levels. Therefore, the cross sectional evidence for indigenous males in NATSIS does not support Gruber and Wise's (1997) hypothesis. Tinkering with welfare entitlements will not significantly alter older indigenous males' incentive to work relative to the younger population.

Rather than focus on financial incentives to work among older indigenous Australians, it is probably more profitable to examine the causes of lack of employment opportunity among such groups. Relative to other Australians the older indigenous males have extremely low employment rates in mainstream employment with less than one-quarter (24.4 per cent) of 54 to 64 year-olds being in non-CDEP work in 1996 (Hunter and Gray 1998). This is less than half the equivalent statistic for non-indigenous males in the immediate pre-retirement years. The mainstream employment rate for indigenous females in that age group (14.9 per cent) is just over half of their non-indigenous counterparts.[2] It is clear that the lack of opportunity to work is far more important than financial disincentives of welfare entitlements.

The second point to arise from Figure 3 is that the alternative wage for older females appears to be particularly low compared to their younger counterparts. Notwithstanding prima facie evidence that the incentive to work falls for older indigenous females, there is no sign of a significant decline in participation among such women in recent years (Hunter and Gray 1998). In addition, the support for Gruber and Wise's hypothesis is further weakened by the fact that the result for older women is reversed if the alternative wage is based on full-time, full-year employment. However, these lower replacement rates for older women should be treated with caution given the very small number of older women working either full-time or full-year.

Clearly, more research is required to identify the reason for these relatively low female wages before policy conclusions can be reached. If low wages are due to discrimination by employers then altering welfare entitlements rationalises such employer behaviour. Alternatively, if it is due to poor educational endowments of older indigenous females, then it may be more appropriate to address deficiencies rather than place further burden on a disadvantaged group.

The cost of job loss

These estimates of replacement rates for indigenous Australians do not take into account another aspect of unemployment, namely its duration. This is accounted for in both the cost of job loss (CCJLR) conditioned upon losing a job and the expected cost of job loss (ECJLR) given the probability of remaining in employment for those who are employed. As noted in the definitions of these terms in Appendix A, a value close to one suggests that the costs are minimal while smaller ratios suggest larger costs.

Table 5 presents a comparison of these measures for indigenous Australians and all Australians (for further detailed results see Appendix C1).[3] The latter estimates are taken from Flatau and Hemmings (1993a). In general, the cost of job loss, as measured by the extent to which a CCJLR is less than one, was lower for indigenous Australians than for all Australians. For example, conditional on losing their job, an indigenous male with a spouse and no children could expect to receive 82 per cent of their full-year full-time employment income over a two-year time period. All Australians in this category could expect only 64 per cent of their full-year full-time employment income given that they had lost their job. The relatively low employment income available to indigenous Australians, evident in the high replacement rates, outweighs the effect of the longer duration of unemployment. The main exception to this generalisation is indigenous youth under 21, whose low retention rates at school will distort their duration of unemployment relative to the rest of the population.[4]

Table 5. Conditional and expected cost of job loss for indigenous and all Australians, 1992 and 1994

	Conditional cost of job loss			Expected cost of job loss		
	Indig. (1)	All Aust's (2)	Ratio (1)/(2) (3)	Indig. (4)	All Aust's (5)	Ratio (4)/(5) (6)
Single adult income units						
Single males 18 to 29: at home		0.81			0.96	
Single males 18 to 20: independent	0.74[a]	0.88	0.84[b]	0.81[a]	0.97	0.84[b]
Single males over 20: no children under 12	0.73	0.64	1.14	0.83	0.97	0.86
Male sole parent: one child	0.84	0.71	1.18	0.89	0.98	0.91
Single females 18 to 20: at home		0.83			0.96	
Single females 18 to 20: independent	0.70	0.91	0.80	0.79	0.98	0.81
Single females over 20: no children under 12	0.71	0.74	0.96	0.85	0.98	0.87
Female sole parent: one child	0.82	0.82	1.0	0.89	0.99	0.90
Married/defacto income units						
Couple with no children: male loses job	0.82	0.64	1.28	0.90	0.98	0.92
Couple with no children: female loses job	0.85	0.82	1.04	0.93	0.99	0.94
Couple with one child: male loses job	0.86	0.75	1.15	0.92	0.98	0.94
Couple with two children: male loses job		0.79			0.99	
Couple with three children: male loses job	0.95[c]	0.83	1.17[d]	0.97[c]	0.99	0.98[d]
Couple with four children: male loses job	0.96	0.87	1.10	0.97	0.99	0.98

Notes:
a. These figures include both the 'at home' and 'independent' benefit entitlements. The calculations distinguish whether or not an individual was at home but the number in each category was too small to report separately.
b. This ratio takes an average of the 'at home' and 'independent' benefit entitlements for all Australians.
c. These figures are for indigenous couple with either two or three children.
d. This ratio takes an average for all Australians with either two or three children. The costs of job loss from Flatau and Hemmings (1993a) are for the second quarter in 1992. This was done to minimise seasonal fluctuations between their estimates and our NATSIS-based estimated since the survey was conducted in June 1994. See Appendix Table C1 for more details on the calculations for indigenous Australians.

Sources: Appendix Table C1; Flatau and Hemmings (1993a).

Among those with partners, the cost of job loss, as measured by a CCJLR, was much lower for all Australians than for indigenous Australians. This reflects the high replacement rates of partnered unemployed indigenous Australians, reflecting their lack of skills and low earning power in non-CDEP employment.

In contrast, the cost of job loss as measured by the ECJLR, is much higher for indigenous Australians. The expected cost of job loss was particularly high, relative to the Australian average, for partnered indigenous Australians because of their substantially higher probability of being unemployed. So for example, the expected cost of losing a job for a partnered indigenous male with no children was an income equal to 90 per cent of the income from full-year full-time work. Among all Australian partnered males in employment, the low probability of becoming unemployed meant that the ECJLR was 0.98.

The reason for this apparent paradox is that CCJLR is conditional upon a person losing their job whereas the ECJLR measures the expected income relative to what a person would receive if they stayed in employment continuously. Therefore, higher durations of unemployment inflate the expected cost of job loss for indigenous people by reducing the steady state probability of remaining in employment. Put another way, while the monetary incentive to find work once they lose a job is lower for indigenous Australians, they have more to lose once they are employed because of long spells between jobs.

Flatau and Hemmings (1993b) conclude that the cost of job loss has gone up for all Australians over time, but these calculations show that they were substantially higher for single indigenous males and females than for Australians in general in the early 1990s.

Concluding remarks

This paper presents two related estimates of the relationship between the welfare system and potential earnings from employment for indigenous Australians. The first set of results calculates replacement rates from data from the NATSIS and DSS information. These results show that if expected employment income is taken as the average for indigenous Australians not working in the CDEP scheme, that is it includes part-time and part-year work, then the replacement rate for many indigenous Australians is high and their monetary incentive to work is therefore low. The broad summary of these findings is that replacement rates are highest for those with partners and dependant children and lowest for single people. The estimated replacement rates are higher for females than males. This result of high replacement rates for females was also found for indigenous female sole parents in an earlier study of replacement rates (Daly 1992).

The large difference in replacement rates arising from the choice of the basis for the expected employment income has important implications for future research into the incentive to work. The prevalence of part-time, casual and seasonal work among indigenous workers either indicates that they are

constrained from finding full-time work or choose to supply their labour on a part-time basis. Given the low educational status of many indigenous workers and their marginalised status in the labour market, it would be misleading to overemphasise their employment choices. If the only jobs offered in the local labour market involve part-time and casual work, then estimated replacement rates should reflect this fact. This point has wider implications. The general increases in part-time employment in the Australian workforce highlights the importance of calculating replacement rates for both types of employment in future analysis.

Earlier studies emphasise two conclusions; higher replacement rates are associated with longer unemployment durations and the labour force status of partners is closely related. The evidence presented here conforms with these results. Indigenous Australians have relatively high replacement rates and long unemployment durations and the labour force status of partners is closely correlated.

The exact implications of the results presented here for labour market behaviour remain an empirical question. It is possible that even a high replacement rate may have a limited effect on people's decision about whether or not to seek employment. However, given the large proportion of indigenous Australians with high replacement rates, it seems probable that they have some effect on job search activity, especially when it is remembered that for those living in remote areas, mainstream employment may involve shifting locations. It is important to remember that there may also be many other reasons why indigenous Australians have high unemployment rates, for example their geographical dispersion, any discrimination against them and lifestyle preferences.

Given the limited variation in replacement rates evident over the lifecycle, especially for males, it would be unwise to place too much emphasis on the role of incentives in determining indigenous employment outcomes. The particularly low employment and participation rates among the older indigenous population is likely to be driven by other factors such as the availability of suitable work and poor educational attainment, rather than the high rates of social security payments relative to the alternative wage.

An extension of the replacement rate to include duration of unemployment is presented in the cost of job loss ratios. They show that the expected cost of job loss is higher for indigenous Australians than for all Australians because of their longer unemployment durations and subsequent higher probability of being unemployed.

The main advantage of Flatau and Hemming's (1993a, 1993b) methodology is that it allows us to disaggregate the different incentives to find and stay in employment. For example, while the monetary incentive to find work, as measured by replacement rates and CCJLR, is lower for indigenous Australians, they have more to lose once they are employed because of the long spells between jobs. One possible implication of this result is that indigenous workers may be

more reluctant to voluntarily quit than other employees. The resulting reduction in labour force mobility may have adverse impacts on the suitability of job matches in the indigenous workforce. Further research into indigenous labour supply will be required before it is possible to square this prediction with the actual behaviour of indigenous workers.

A feature of the welfare system is that as the number of dependants increases so does the size of the welfare payment. This creates high replacement rates for this group of unskilled workers with high levels of fertility. A sudden change in the size of welfare payments may reduce the replacement rate but create major problems for some indigenous people who may remain unable to find employment. Such a policy change might, for example, create the need for migration from traditional lands in search of work. Given their low level of labour market skills, there may be limited employment opportunities for many indigenous Australians.

The level of change required in the social security payments required to provide an incentive for all the indigenous workforce to find and keep a job is probably politically and socially unacceptable. While the family payment reforms of the late 1980s and early 1990s provided some relief to the so-called 'working poor' families, significant labour market disincentives persist for many indigenous families. In addition, many single indigenous people and childless couples, who did not benefit directly from these reforms, have little incentive to find work. The fact that these reforms were designed to minimise disincentive effects should be carefully noted by any policy makers who believe there are any easy solutions to the ongoing poor outcomes in indigenous wages and employment.

The CDEP scheme offers an alternative to long-term unemployment and an important opportunity for indigenous Australians to gain work experience in an indigenous environment. While it may do little to reduce indigenous dependence on government income support, it may be important in creating a different culture and attitude toward this income support.

The replacement rate and the cost of job loss ratios can be changed by reducing benefits, raising potential employment income or reducing unemployment duration. The latter require that indigenous Australians gain more labour market skills and that any barriers to employment, such as racial discrimination, are reduced. These are major long-term goals for policy.

Notes

1. The calculations are based on the NATSIS unit record file and assume that those unemployed in the open ended category of 'greater than 12 months' have been out of work for 18 months.
2. The 1996 Census indicates non-indigenous employment among males and females was 54.4 and 28.6 per cent respectively.
3. The Flatau and Hemmings (1993a) calculations relate to all Australians and therefore include indigenous Australians. As they account for 1–2 per cent of the population, their inclusion in the aggregate should not greatly affect the comparison.
4. The other exception is single indigenous females over 20 year-old whose CCJLR is slightly lower than for other single females.

Appendix A. Calculating the replacement rate and the cost of job loss

This appendix provides details of the basis for the calculations of replacement rates and the cost of job loss presented in Tables 3 to 5. As much of the same information is required to calculate the replacement rate and the cost of job loss, we will begin this appendix by defining these terms before outlining the methodology adopted to measure each.

The simple replacement rate can be defined as

$$RR = \frac{B + P - T1}{E + P - T2}$$

where B is the benefit entitlement given family characteristics, E is earnings from employment, P is means tested family payments, T1 and T2 are the income taxes associated with each income level and given the progressive nature of the tax system, T1 <T2. It measures the extent to which welfare income will replace employment earnings in any given time period.

The Conditional Cost of Job Loss Ratio (CCJLR) takes into account an additional effect of unemployment, namely the duration of the unemployment spell. In the interests of comparability with the study by Flatau and Hemmings (1993a, 1993b), we have considered the cost of spells of unemployment over a two-year period using the following formula

$$CCJLR = \frac{(C1 - T1) + (C2 - T2)}{(F1 - T1) + (F2 - T2)}$$

where C1 = D*UB + (52 - D)*F in year 1 and C2 is defined in a similar manner for year 2. D is the average duration of unemployment, UB is the social security payment when unemployed, F is the full employment income and T is the tax payable in each circumstance. When D>52 weeks, it has been constrained to equal 52 for C1 and the excess transferred to the estimate of C2. The closer this measure is to one, the smaller the costs that will be incurred by job loss.

In addition to calculating the above measure conditional on unemployment, Flatau and Hemmings (1993a, 1993b) calculate another ratio, the Expected Cost of Job Loss Ratio (ECJLR) which measures the income loss a currently employed worker might expect given the existing duration of unemployment spells and the probability of becoming unemployed.

$$ECJLR = P\frac{[(F1 - T1) + (F2 - T2)]}{[(F1 - T1) + (F2 - T2)]} + (1 - P)\frac{[(C1 - T1) + (C2 - T2)]}{[(F1 - T1) + (F2 - T2)]}$$

where P is the probability of being employed and all the other variables are defined as above. Once again, the closer the ECJLR is to one, the smaller the expected loss from unemployment. The interpretation of both of the cost of job loss estimates are analogous with that of a replacement rate. The major difference

is that a closer a replacement rate is to one the lower the expected gains from employment.

The treatment of social security income and tax payments

The Australian benefit system is means tested with both an asset and income test component so one issue is the extent to which indigenous Australians would be eligible for the full benefits. Evidence from the NATSIS suggests that the assets test for additional family payment would not be binding. Indeed, according to this survey no indigenous person has more than $22,000 income from non-government and non-wage sources and the vast majority of the indigenous population have no such income. The Additional Family Payment Assets limit of $363,500 is therefore extremely unlikely to be exceeded by anybody in our sample.

There are a number of other components to total benefit entitlement. The Family Payments for social security recipients are calculated solely using the number and age of children. Basic Family Payment entitlements are estimated to be $20.90 per fortnight per child for the first three children and $27.90 per fortnight for each child after that. Additional Family Payment entitlements are estimated as $61.90 per fortnight for each child under 13 and $87.40 per fortnight for each child between 13 and 15 years of age. Since family payments are not paid for students receiving Austudy or Abstudy we assume there is no entitlement for full-time students over 16 years of age.

Rent Assistance entitlements are based on increments of 75 cents per dollar above minimum rent thresholds detailed in Appendix Table A1. The maximum Rent Assistance payable varies between $1,664.00 and $2,215.20 depending on the family circumstance.

Appendix Table A1. Rent Assistance per annum, December 1993

	Maximum rent assistance	Minimum rent threshold	Maximum rent threshold
Partnered no children	$1,664.00	$2,636.40	$4,854.98
Partnered and separated	$1,664.00	$1,580.80	$3,799.30
Partnered and illness separated	$1,768.00	$1,580.80	$3,938.22
Partnered 1 or 2 children	$1,944.80	$3,161.60	$5,754.58
Partnered 3+ children	$2,215.20	$3,161.60	$6,115.20
Single no children	$1,768.00	$1,580.80	$3,938.22
Single 1 or 2 children	$1,944.80	$2,106.00	$4,698.98
Single 3+ children	$2,215.20	$2,106.00	$5,059.60

Note: Rent Assistance increments by 75c per dollar above minimum rent threshold.

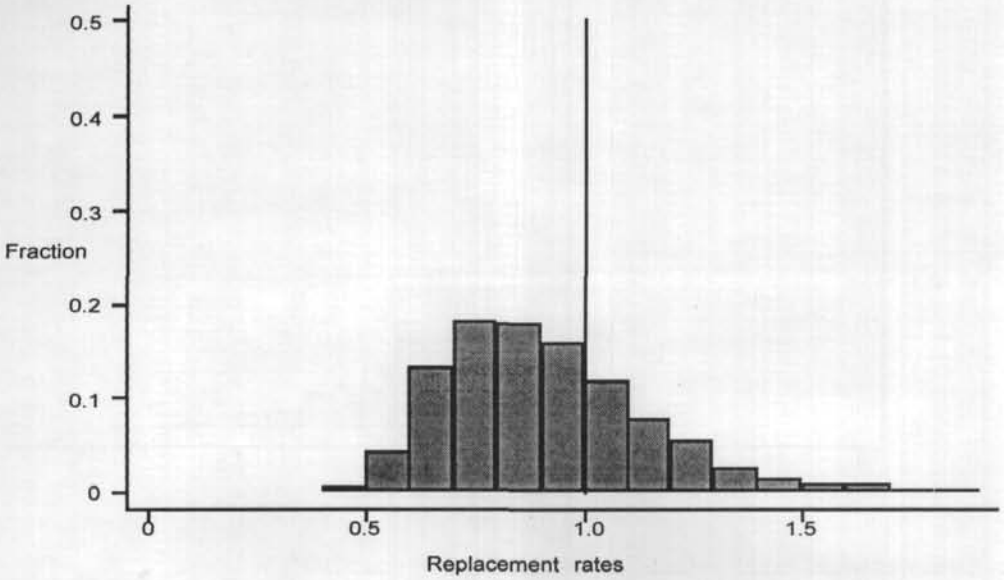
Remote Area Allowance is allocated to all indigenous people living in remote Australia (which is defined as a rural or remote area in the part-of-State classification that is more than 100 kilometres from the nearest Technical and

Further Education college). This entitlement was determined as $455.00 for a single person, $390.00 for each member of a couple and $182.00 for each child or student. All social security entitlements arising directly from the presence of children, including Family Payments, are split between partners.

Gross annual income from employment can be estimated from the NATSIS data but for the individual, post-tax income is the best estimate of the benefits of employment compared with social security income. Welfare recipients with no other sources of income do not pay tax. The expected personal tax liability is estimated using the tax rates and Medicare levy used in the 1993–94 financial year. Tax rebates of $1,425.00 for each dependant child or student, $1,188.00 for dependant spouse or housekeeper and $1,116.00 for Sole Parents are netted out from this liability if a person is included in the tax system. If a person pays less tax than these rebates then no tax is deducted from expected income. For people living in a remote area, the potential tax rebates are estimated as $338.00 plus 50 per cent extra to the dependant rebates listed above. Expected family income for the hypothetical situation where an unemployed or CDEP worker becomes employed in a non-CDEP scheme job is calculated using the actual family income, less a person's own wage and income from government payments, and adding the expected wage income from non-CDEP scheme employment.

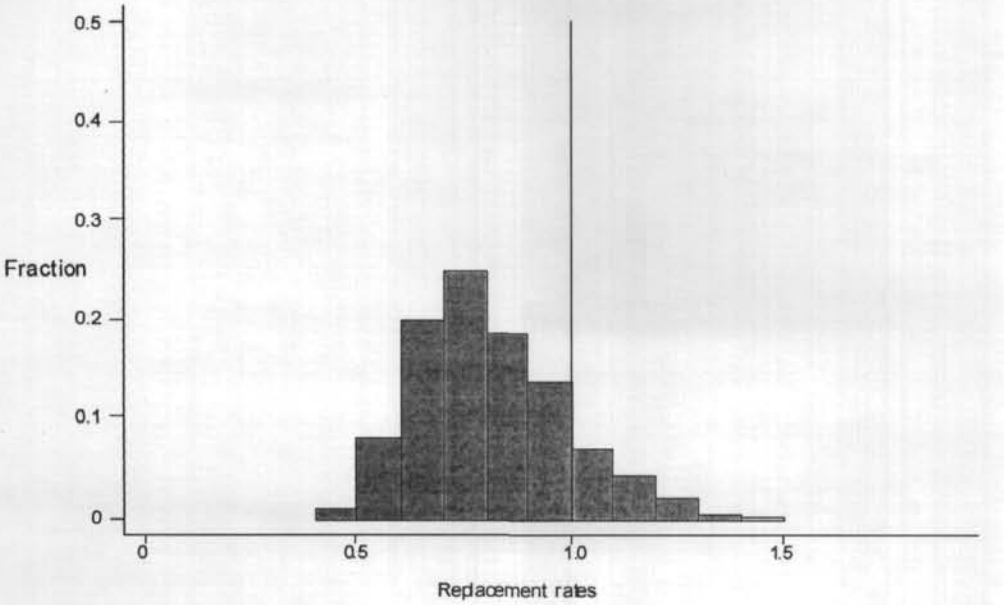
Appendix B. Distributions of replacement rates

Figure B1a. Distribution of replacement rates for married/defacto income units, indigenous male partner looking for work, 1994



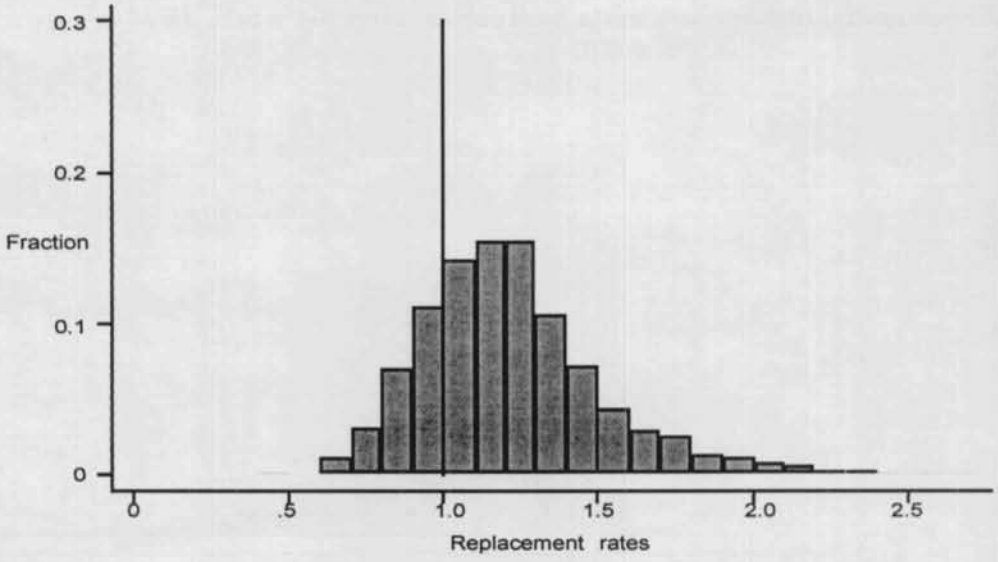
Note: Estimated wages calculated using income of all male non-CDEP employees.

Figure B1b. Distribution of replacement rates for married/defacto income units, indigenous male partner looking for work, 1994



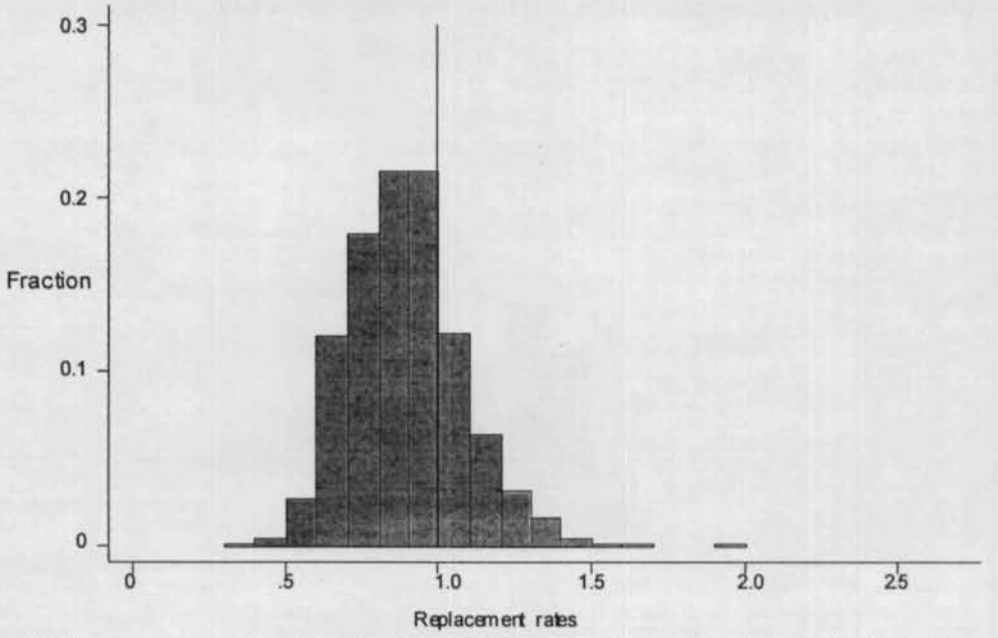
Note: Estimated wages calculated using income of full-time, full-year male non-CDEP employees.

Figure B2a. Distribution of replacement rates for married/defacto income units, indigenous female partner looking for work, 1994



Note: Estimated wages calculated using income of all female non-CDEP employees.

Figure B2b. Distribution of replacement rates for married/defacto income units, indigenous female partner looking for work, 1994



Note: Estimated wages calculated using income of full-time, full-year female non-CDEP employees.

Appendix C. Estimating the cost of indigenous job loss

Table C1. Conditional and expected cost of job loss, 1994

	No. of observ-ations	Unempl-oyment duration (months)	Prob. (employ)	CCJLR	ECJLR
Single adult income units					
Single males					
18–20 year-old with no dependants	19	10.45	0.28	0.74	0.81
21–59 year-old with no dependants	218	11.07	0.38	0.73	0.83
1 dependant under 12 years-old	64	10.29	0.30	0.84	0.89
2–3 dependants under 12 years-old	32	9.89	0.19	0.89	0.91
4 plus dependants under 12 years-old	9	11.90	0.15	0.93	0.94
All males in non-CDEP employment	1085	11.06	0.39	0.83	0.89
Single females					
18–20 year-old with no dependants	19	12.23	0.30	0.70	0.79
21–59 year-old with no dependants	157	12.24	0.48	0.71	0.85
1 dependant under 12 years-old	94	11.55	0.37	0.82	0.89
2–3 dependants under 12 years-old	71	11.20	0.30	0.85	0.90
4 plus dependants under 12 years-old	16	11.89	0.28	0.89	0.92
All females in non-CDEP employment	878	11.46	0.44	0.81	0.89
Married/defacto income units: only one partner employed					
Couple with no dependants					
male losses job	224	11.87	0.46	0.82	0.90
female losses job	198	11.73	0.51	0.85	0.93
Couple with 1 dependant under 12 years-old					
male losses job	157	12.26	0.48	0.86	0.92
female losses job	105	11.89	0.52	0.94	0.97
Couple with 2–3 dependants under 12 years-old					
male losses job	267	11.71	0.47	0.95	0.97
female losses job	157	12.02	0.48	0.94	0.97
Couple with 4 plus dependants under 12 years-old					
male losses job	70	11.81	0.34	0.95	0.97
female losses job	34	11.42	0.35	0.96	0.97

Note: The DSS rates and the average unemployment duration are used in conjunction with the pre-tax full employment income, F, to calculate the income conditional upon the loss of one's current job. Following Flatau and Hemmings (1993a, 1993b), F is based on the expected full-time non-CDEP wages calculated using equation (2) in Daly and Hunter (1998). There is not sufficient observations to separately estimate wages for under 21 year-olds living at home. However, the calculations of DSS entitlements factor in the different entitlements of youth who live at or away from home. In order to make comparisons with Flatau and Hemmings similar assumptions are made: the Medicare levy is omitted from the tax liability, remote area tax rebates are not included in the calculations and remote allowances are excluded from social security entitlements. Sensitivity analysis of the results indicate that variations of these assumptions do not alter the results substantively. The ECJLR is calculated for non-CDEP employees.

Source: Daly and Hunter (1998).

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