

The Australian National University



Centre for
Aboriginal
Economic
Policy
Research

Discussion Paper



**The participation of Aboriginal people in
the Australian labour market**

A.E. Daly

No.6/1991

ISSN 1036-1774
ISBN 0 7315 1247 2

SERIES NOTE

The Centre for Economic Policy Research (CAEPR) was established in March 1990 under an agreement between the Australian National University and the Commonwealth of Australia (Aboriginal and Torres Strait Islander Commission). In accordance with the Agreement, CAEPR operates as an independent research unit within the University's Faculty of Arts. CAEPR's principle objectives are to undertake research with the following aims:

- to investigate issues relating to Aboriginal employment and unemployment;
- to identify and analyse the factors affecting Aboriginal participation in the labour force; and
- to assist in the development of government strategies aimed at raising the level of Aboriginal participation in the labour force and at the stimulation of Aboriginal economic development.

The Director of the Centre is responsible to the Vice-Chancellor of the ANU and receives assistance in formulating the Centre's research agenda from an Advisory Committee consisting of senior ANU academics nominated by the Vice-Chancellor and Aboriginal representatives nominated by the Chief Executive Officer of the Aboriginal and Torres Strait Islander Commission and the Secretary of the Department of Employment, Education and Training.

CAEPR DISCUSSION PAPERS are intended as a forum for the dissemination of refereed papers on research that falls within the CAEPR ambit. These papers are produced for discussion and comment within the research community and Aboriginal affairs policy arena. Copies of discussion papers are available from Bibliotech, ANUTECH Pty Ltd, GPO Box 4, Canberra, ACT, 2601 (Phone: 06 249 2479 FAX 06 257 5088).

As with all CAEPR publications, the views expressed in this DISCUSSION PAPER are those of the author(s) and do not reflect an official CAEPR position.

Jon Altman
Director, CAEPR
Australian National University

ABSTRACT

This paper is the first of two that examine the participation and employment of Aborigines in the formal labour market using data from the 1986 Population Census. The labour force participation rate is a concept of interest because it is indicative of the degree of integration into the formal labour market. The paper begins by presenting the facts about the relationship between labour force participation and location of residence for both men and women. Aboriginal men and women had lower levels of participation in each of the three locations which we were able to distinguish; major urban, other urban and rural. They were particularly low in rural areas. The results of a formal analysis of the effects of Aboriginality on labour force participation are then presented using the unit record data available in the one per cent sample of the Census. They support the hypothesis that there is a statistically significant negative effect of Aboriginality on the participation probability once other factors such as age, education and marital status are taken into account. These preliminary results show that Aborigines living in rural locations had, other things equal, a particularly low probability of being included in the labour force. The lower participation rates of these people therefore do not just reflect their lower levels of human capital. The implications of these results for Aboriginal employment policy are considered in the conclusion.

Acknowledgements

This is a revised version of a paper presented at a Centre for Aboriginal Economic Policy Research seminar. I would like to thank the participants for their helpful comments. I am especially grateful to Jon Altman, John Taylor, Bruce Chapman, George Fane and Ann Hawke for their comments on the earlier draft of this paper.

Dr Anne Daly is a Research Fellow in the Centre for Aboriginal Economic Policy Research, Faculty of Arts, the Australian National University.

The first part of the report discusses the general situation of the country and the progress of the work. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and the prospects for the future.

The second part of the report deals with the financial aspects of the work. It gives a detailed account of the income and expenditure of the organization and shows how the work has been financed.

The third part of the report contains a list of the names of the members of the organization and the names of the various committees and sub-committees.

The Aboriginal Employment Development Policy Statement has a target of employment equity between Aboriginal and other Australians by the year 2000 (Australian Government 1987). The achievement of this target requires that the proportion of Aboriginal people aged 15 and above who are employed increases from 37 per cent to around 60 per cent. Both the labour force participation and the employment rates of Aboriginal men and women remain well below that of the general population and the achievement of this goal will require a dramatic growth in Aboriginal employment. Not only are Aboriginal employment levels relatively low but their attachment to the formal labour market as measured by labour force participation rates, is also low.¹

This paper is the first of two that examine the participation and employment of Aborigines in the formal labour market.² The distinction between in the labour force (either employed or unemployed) and out of the labour force is rather arbitrary. In most surveys conducted in Australia, people are defined as employed if they work for pay or profit and as unemployed if they do not have a job and have actively looked for work over a defined period.³ However, those outside the labour force may be productively employed (for example, hunter-gatherers or housewives) or may be willing to take up paid employment if an offer arose even though they are not actively searching for employment. Conversely, those included among the unemployed may in fact not be actively seeking work and if offered a job may not accept it. Despite these qualifications, the concept of labour force participation remains one of interest. An individual's labour force status is indicative of their degree of integration into the formal labour market. In addition, the unemployment rate, which is calculated in relation to the size of the labour force, shows the proportion of those who consider themselves as part of the formal labour market and are seeking work at the going wage.

Some basic facts about Aboriginal participation in the formal labour market, with a particular emphasis on the effect of location of residence on participation, are initially presented. A number of studies (see, for example, Altman and Nieuwenhuysen 1979; Fisk 1985) have emphasised the differences between Aborigines living in different locations in a range of indicators such as income and employment. Location may be of interest in a discussion of the labour force participation rate if it is closely related to the degree of integration of people into the labour force. Different participation rates according to location of residence may also reflect differences in supply and demand conditions in rural and urban areas.

The question as to the source of the lower levels of participation by Aborigines in the formal labour market will be investigated in the context of a statistical model. The following question is posed: do Aboriginal men and women have lower levels of labour force participation because they are endowed with characteristics which are associated with low levels of participation, such as little education, or for women, a large number of dependents, or is there something uniquely associated with Aboriginality which explains these relatively low levels of labour force attachment? For example, a culture which differs markedly from the mainstream, may reduce labour force attachment. Or for those living in remote areas, perhaps the prospect of employment in the formal labour market is so small that the 'discouraged worker' effect dominates and people cease to consider themselves as part of the labour force.⁴

The data used in this analysis come from both the full count of individuals and the 1 per cent sample of the 1986 Population Census. The data available in the 1 per cent sample have a number of shortcomings for the purposes of the statistical analysis reported here, as there were only about 1200 Aborigines of working age in it. A larger sample would enable a more detailed exploration of the relationship between Aboriginality and labour force status in particular locations. The results presented here are indicative of important areas for further research that the Centre for Aboriginal Economic Policy Research will be undertaking using the full Aboriginal sub-file from the 1986 Census.

The relationship between labour force participation and location⁵

Figures 1-6 compare the labour force participation rates of Aboriginal and non-Aboriginal men and women at various ages living in three types of locations; 'major urban', centres with more than 100,000 people; 'other urban', centres with between 1,000 and 99,999 people; and rural areas containing the rest of the population.⁶ At a general level, Aborigines had lower participation rates than non-Aborigines with the exception of men aged 15-19 in major urban areas. The typical life cycle pattern of labour force participation differs between men and women so the Figures for men (Figures 1-3) and women (Figures 4-6) will be considered separately.⁷

There was little difference in the labour force participation rates of non-Aboriginal men in the three locations. In the 15-19 age category about half the men were in the workforce, but between the ages of 25 and 49 over 90 per cent participated. Participation fell after the age of 50 with a

Figure 1. Participation rates by age and major urban residence for Aboriginal and non-Aboriginal men.

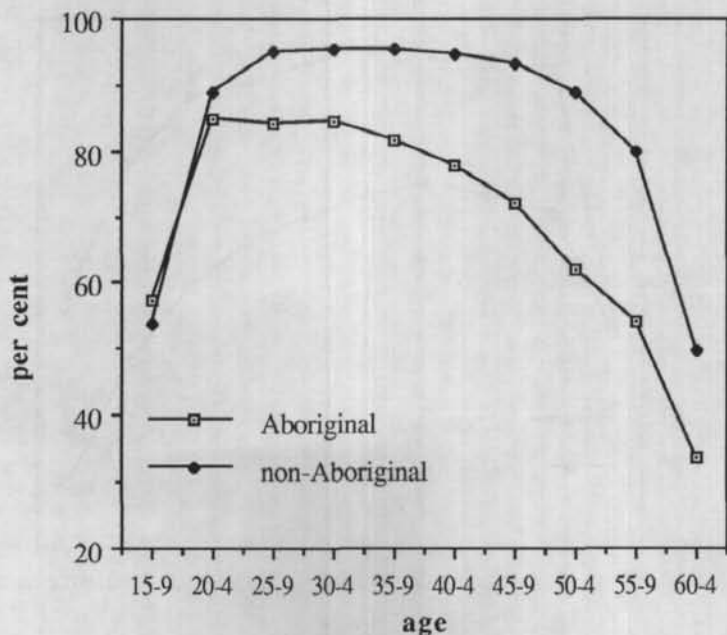


Figure 2. Participation rates by age and other urban residence for Aboriginal and non-Aboriginal men.

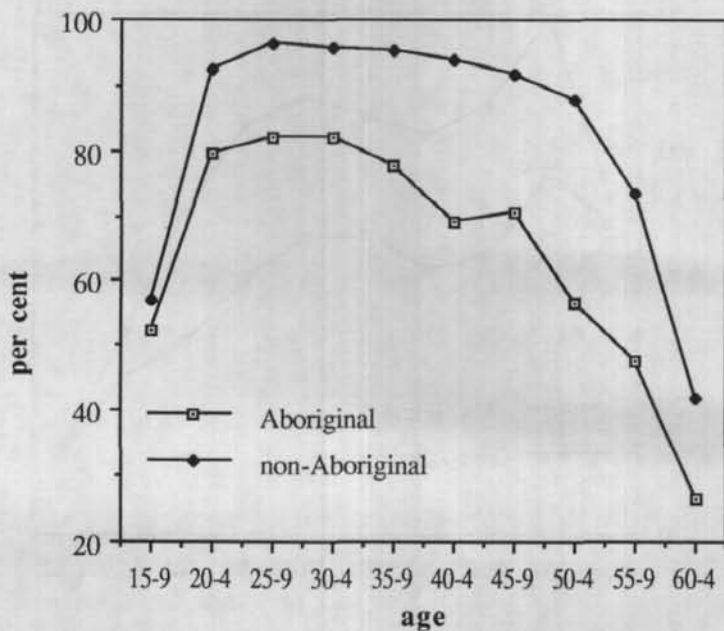


Figure 3. Participation rates by age and rural residence for Aboriginal and non-Aboriginal men.

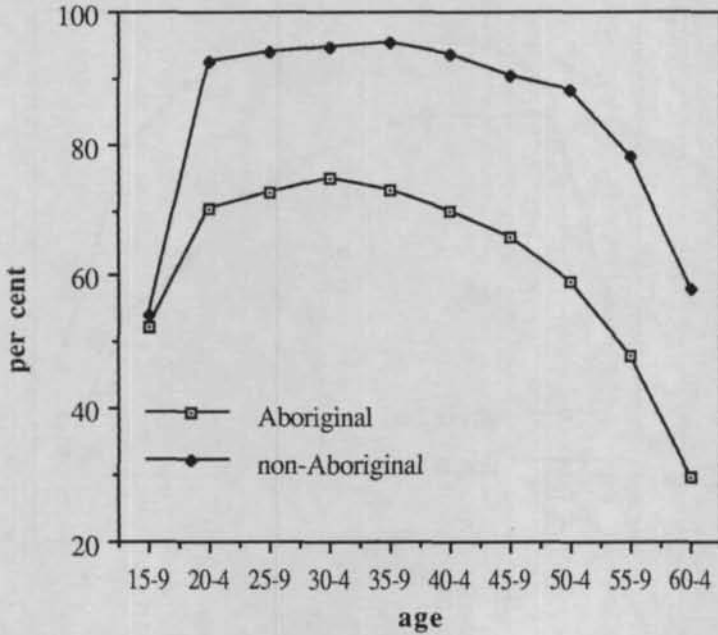


Figure 4. Participation rates by age and major urban residence for Aboriginal and non-Aboriginal women.

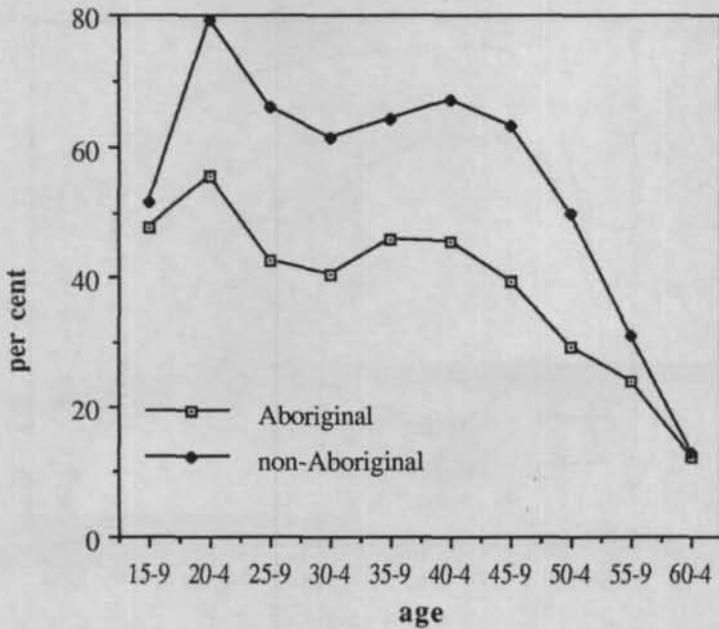


Figure 5. Participation rates by age and other urban residence for Aboriginal and non-Aboriginal women.

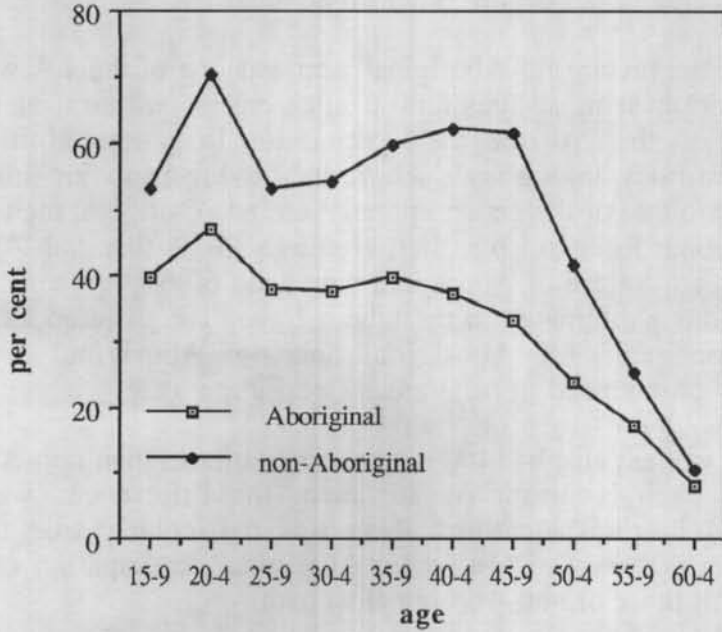
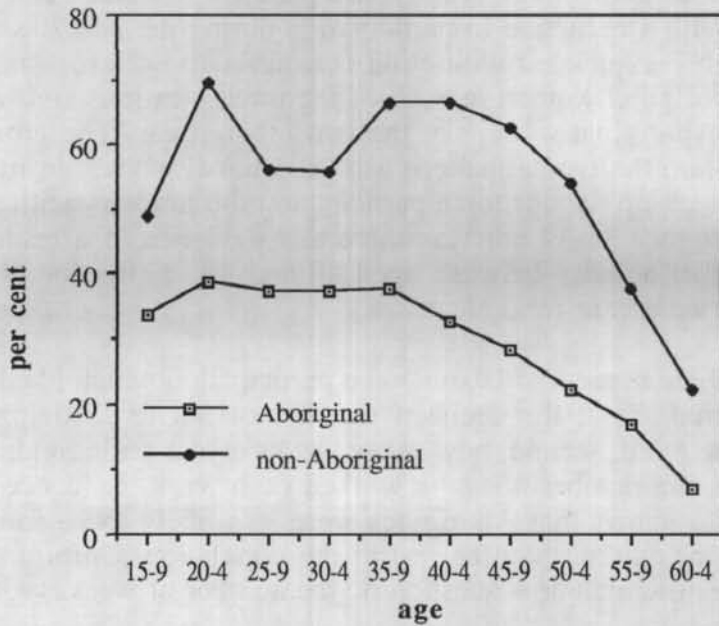


Figure 6. Participation rates by age and rural residence for Aboriginal and non-Aboriginal women.



particularly pronounced decline between the age categories 55-59 and 60-64 in the two urban locations. Men in rural areas aged 60-64 had a participation rate of 58 per cent compared with 50 per cent in major urban areas and 42 per cent in other urban areas.

In contrast, the picture for Aboriginal men was one of much lower levels of participation at most ages and a much earlier withdrawal from the labour market than for the male population in general. Initially, the participation rates among male Aborigines living in major urban areas was similar to that of the general population but Aboriginal men began to leave the labour force much earlier, after age 35-39, than non-Aboriginal men. Less than a third of Aboriginal men aged 60-64 in other urban and rural locations participated in the labour force. The differences between participation rates for Aboriginal and non-Aboriginal men were particularly pronounced in rural areas (see Figure 3).

Aboriginal women also had lower participation rates than non-Aboriginal women in each location. As for men, the differences were most pronounced in rural locations. This was particularly true for those women over 40 years of age where Aboriginal participation rates were less than half those of non-Aboriginal women.

The typical life cycle labour force participation behaviour of women differs from that of men. After the initial period of schooling, the majority of men show a continuing attachment to the formal labour market until retirement age. The typical pattern for women is more of an 'M' shape with a reduction in participation during the late 20's and early 30's, probably associated with child rearing. This pattern was apparent for non-Aboriginal women in each of the three locations and to a lesser extent for Aboriginal women in the two urban areas. The group which did not fit into the typical pattern was Aboriginal women in rural areas. Among this group, labour force participation did not vary with age up to the age category 35-39 nor was there any evidence of a resurgence in labour market activity between aged 40 and 49 as was found for non-Aboriginal women in rural areas.

There are three aspects of labour force participation which ideally should be considered. First, the decision whether or not to participate in the labour force at all; second, how many weeks a year an individual works; and finally, the number of hours worked each week. Evidence from the 1986 Census shows that Aborigines were less likely to be found in the formal labour market than the rest of the population. Unfortunately, the Census does not include a question on the number of weeks worked each

Table 1. Hours worked by section-of-State for employed men and women aged 15 and over, Australia, 1986.^a

Section-of-State	Aborigines (per cent)	Women Total (per cent)	Aborigines (per cent)	Men Total (per cent)
Major urban				
1-15 hours	9.6	14.2	4.2	3.6
16-34 hours	17.0	21.6	6.9	5.7
35 or more hours	73.5	64.1	89.0	90.7
Other urban				
1-15 hours	13.1	17.4	5.7	3.2
16-34 hours	19.6	23.3	6.9	5.8
35 or more hours	67.3	59.3	87.4	91.0
Rural localities ^b				
1-15 hours	18.6	19.8	8.8	3.7
16-34 hours	30.7	24.3	16.0	7.0
35 or more hours	50.7	55.8	75.2	89.3
Other rural ^b				
1-15 hours	20.9	15.2	9.8	3.3
16-34 hours	28.8	20.3	14.4	5.9
35 or more hours	50.3	64.5	75.8	90.8
Total				
1-15 hours	13.6	15.0	6.4	3.5
16-34 hours	21.2	21.9	9.5	5.8
35 or more hours	65.2	63.1	84.0	90.7

a. Excludes those who did not state their hours of work and those who reported zero hours. In the section-of-State tables for the total population, the sex of those reporting zero hours of work or 'not stated' was not reported. These categories accounted for 6.1 per cent of the relevant population in major urban areas, 7.5 per cent in other urban, 8.3 per cent in rural localities and 7.4 per cent of other rural. The Aboriginal figures were presented for each sex. Among Aboriginal women, 9 per cent of those living in major urban areas did not state their hours or worked zero hours, 11.6 per cent in other urban areas, 13 per cent in rural localities and 11.7 per cent in other rural areas. For Aboriginal men the comparable percentages were 8.1 in major urban areas, 10.6 in other urban areas, 10.8 in rural localities and 9.2 in other rural.

b. In this table, the category 'rural' is divided into two components; rural localities including towns with 200-999 people and other rural which includes people living in communities of less than 200 people (for example on pastoral properties and outstations).

Source: Full count of the 1986 Census of Population and Housing.

year, but evidence from case studies indicates that Aboriginal employment is often found in casual and seasonal work (see references in Altman and Nieuwenhuysen 1979; Fisk 1985; Miller 1985).

The Census however, did include a question on hours worked each week and these results are presented in Table 1. They show that even those Aboriginal men who were employed were less likely to work full-time (35 or more hours per week) than employed men in general. Differences between the male Aboriginal population and the male population in general were once again more pronounced in the rural areas than in the urban areas. This may reflect either Aboriginal supply decisions or employer demand decisions. Aboriginal men may have been less willing to commit themselves to a full-time job than other men (a labour supply decision) or employers may have been less willing to employ them on a full-time basis than they were other Australian men (a labour demand decision).

While rural Aboriginal women were less likely to work full-time than other rural women, the opposite was true in the urban areas. Part-time work was far less important for Aboriginal women in major urban centres than for Aboriginal women living in other locations. In the major urban areas, full-time employment (35 or more hours per week) was more important among Aboriginal women than for all women.

In summary, the evidence from the 1986 Census shows a lower attachment to the formal labour market among Aboriginal men and women than for the rest of the population. This is apparent in both the labour force participation rate and, for men, the number of hours worked.

The results of estimation of participation equations for men and women

The model and choice of variables

The purpose of this section is to consider the effect of Aboriginality on labour force participation once a range of other factors have been controlled for in a rigorous statistical framework. Aborigines may have lower labour force participation rates because they are endowed with characteristics, like lower levels of education, which are associated with low levels of attachment to the work force. Alternatively, there may be something uniquely associated with Aborigines which influences their attachment to the formal labour market quite separately from the other factors that have been taken into account. For example, Aborigines living

a traditional lifestyle may attach less importance to the accumulation of wealth than other Australians. If this were true, the labour force participation rates of Aborigines who were identical in every other measured respect to a group of non-Aborigines (or non-traditional Aborigines), would be lower. Results are also presented which consider the interaction between Aboriginality and the control variables. For example, does an additional year of schooling have the same effect on the probability of participation for an Aboriginal person as for a non-Aboriginal person? Results from participation equations are presented separately for men and women aged 15-64.

The choice of variables used in the analysis has taken account of earlier empirical results from studies of participation behaviour in Australia.⁸ The estimated equations have taken the following general form:

$$\text{Participation} = f(\text{age, education, marital status, number of dependents, other family income, location, Aboriginality and English speaking ability}) \quad (1)$$

The human capital model suggests that both education and labour market experience should be important determinants of attachment to the labour force. Numerous studies show that education and experience raise earnings so the opportunity cost of being outside the labour force is greatest for those with large amounts of education and labour market experience.⁹

There is however, no direct measure of labour market experience in the Australian Census. Many studies use a measure of potential experience (current age minus age left school) as an approximate measure of actual working experience. The presentation of the age data in the 1 per cent sample of the Census in the form of 5 year categories limits the possible calculation of potential experience. Any estimates of potential experience using the mid-points of the categories to represent current age will introduce errors of measurement in the explanatory variable and bias the estimated coefficient. In order to avoid the introduction of this source of error, dummy variables for each age category have been used. Age is closely correlated with potential experience ($r = 0.98$). This procedure however, will not eliminate all biases as, at any given age, those with higher education have less potential experience than those with less education and this is likely to bias the estimated education coefficients.

Family characteristics are expected to have different effects on the participation behaviour of men and women. In a standard nuclear family, the additional responsibilities of children might be expected to encourage

a man into the labour force while the presence of children has been shown to reduce female labour supply.¹⁰ High income from other family members is expected to have a negative influence on labour supply.¹¹

The results of earlier Australian studies of labour force participation behaviour show varying results for the importance of location as a determinant of attachment to the labour market.¹² Differences in participation behaviour between locations may reflect both demand and supply factors. Jobs in the formal labour market are more readily available in large cities and there are fewer opportunities for 'informal' gainful employment (such as hunting and gathering) outside the market sector.

The influence of location on participation behaviour is of particular interest in the context of Aborigines. The division of the Aboriginal population into those living in settled Australia and those living in the remote areas has been widely canvassed in the literature (see Altman and Nieuwenhuysen 1979; Fisk 1985) and is used as a framework for discussing the different problems facing Aborigines living in these locations. In this analysis a question of interest is whether Aborigines living in remote areas behave differently to Aborigines in urban centres in terms of their attachment to the formal labour market. The answer to this question has important policy implications as successful policy may require different approaches according to geographic region.

Ability to communicate in English, which has been shown to be an important determinant of labour force participation for migrant groups, has been included because it is of relevance to some groups of Aborigines.¹³ While the 1986 Census shows that 95 per cent of the total population of Aborigines were proficient in English, about 40 per cent of those living at Northern Territory outstations spoke English either 'not well' or 'not at all' (see Taylor forthcoming). It is expected that those who are less able to communicate in English will be less likely to participate in the labour market.

The final variable included in this analysis is Aboriginality. Both supply and demand factors may affect the participation rates of Aborigines compared with other Australians.¹⁴ On the supply side, those Aborigines living more traditional lifestyles may be less likely to join the formal labour market than otherwise identical people. On the demand side, the existence of any discrimination in the workplace against Aborigines may reduce the demand for Aboriginal workers where wages are fixed, and encourage them to leave the labour force as soon as possible. It will not be possible to distinguish between these two sources of lower

participation rates among Aborigines using the data currently available, but if location can be used as a proxy for a traditional lifestyle more detailed data for particular locations could suggest some answers to this important question.

The data

This analysis is based on the 1 per cent sample of the 1986 Census. There were about 1,200 Aborigines of working age included in this sample but the exclusion of individuals whose answers to particular questions were 'not stated' reduced the number of Aborigines to about 700. An Australian Bureau of Statistics study of potential biases in the count of the Aboriginal population concluded that there were no serious problems, but the possibility of biases arising from non-response in this particular sample remains, and this important qualification to the results should not be overlooked.¹⁵ As a comparison of Tables 2 and 3 shows, the sample used in this analysis under-represents Aborigines aged 15-19 and Aborigines living outside the major urban areas.

The mean values of the variables for both Aboriginal and non-Aboriginal men and women are presented in Table 3. They are consistent with the results of other comparisons between the Aboriginal and non-Aboriginal

Table 2. Mean values of selected variables for Aborigines using the whole of the 1 per cent sample.

Variable	Men	Women
Age		
15-19	0.23	0.23
20-34	0.44	0.44
35-49	0.21	0.23
50-64	0.11	0.10
Marital status		
single	0.59	0.45
married	0.33	0.39
widowed, separated, divorced	0.08	0.16
Location		
urban	0.27	0.27
other urban	0.41	0.43
rural	0.32	0.30

Source: 1 per cent sample of the 1986 Census.

Table 3. Means of the variables used in the participation equations for men and women.

	Men		Women	
	Aboriginal	non-Aboriginal	Aboriginal	non-Aboriginal
Participation rate	0.72	0.89	0.44	0.60
Age 15-19	0.18	0.07	0.16	0.07
Age 20-34	0.49	0.40	0.53	0.40
Age 35-49	0.22	0.32	0.20	0.31
Age 50-64	0.12	0.22	0.11	0.22
Years of primary and secondary school	8.91	9.78	8.98	9.66
Educational qualification	0.13	0.48	0.12	0.31
Single	0.57	0.31	0.44	0.22
Married	0.34	0.60	0.40	0.64
Widowed, separated divorced	0.10	0.08	0.17	0.14
Number of dependents	1.15	0.86	1.40	0.91
Poor English	0.02	0.02	0.03	0.03
Other family income (\$'000)	8.88	8.93	10.78	16.13
Urban	0.32	0.64	0.29	0.65
Other urban	0.38	0.21	0.41	0.22
Rural	0.30	0.15	0.30	0.13
Number of observations	381	9,866	364	9,522

Source: 1 per cent sample of the 1986 Census.

populations (Teskfaghiorghis and Altman 1991). Aboriginal men and women in this sample had less education, were younger, were more likely to be single and had more dependents than non-Aboriginal people. They were also more likely to live in other urban and rural locations than the rest of the Australian population.

The estimated results

The results of the estimation of participation equations are presented in Appendix Table A3 for men and Table A4 for women. Three equations are reported for each sex. The first allows Aboriginality to have a one-off effect on participation with no interaction with other variables. The results of this regression can be used to answer the question, for any given set of the other explanatory variables such as education and age, does Aboriginality by itself affect the probability of participation. This

functional form implies that the effect of all the other variables such as age and education, on participation is the same for Aborigines as for non-Aborigines.

The second equation includes both a shift effect of Aboriginality and interaction terms between Aboriginality and all the remaining variables. This allows for a different effect of all the other variables on labour force participation for Aborigines compared with the rest of the population. Both Aboriginal and non-Aboriginal people are included in one equation to enable easier identification of an 'Aboriginal effect'. For example, the effect of being married on participation for an Aborigine can be calculated by adding the coefficient on 'married' to the coefficient on the variable 'Aborigine*married'. The latter variable will take the value of zero for non-Aborigines and one for Aborigines. If the 't' statistic on the latter coefficient is less than 1.96, using conventional levels of significance, the null hypothesis that there is no difference in the effect of marriage on participation for Aborigines and non-Aborigines is accepted. The large standard errors (small 't' statistics) on most of the Aboriginal interaction terms may reflect the small number of observations and it remains important to repeat the exercise on a larger sample.

The third equation reported in the appendix tables is the preferred equation. For each sex, it only includes the interaction terms between Aboriginality and other variables which had 't' statistics greater than one in equation (2) of Tables A3 and A4; that is, the estimates suggest that there is a different effect of these variables for Aborigines than for the rest of the population. For example, for the general population, living in a rural area was not associated with a statistically significantly lower level of participation than for people in the major urban centres (see equation (2) Tables A3 and A4). However, the statistically significant coefficient on Aboriginal times rural for both men and women indicates a strong negative effect on the probability of participation for Aborigines in this sort of location.

The constant term in each equation relates to a single non-Aboriginal person aged 15-19 with no qualifications and living in a major urban area. The coefficients on the other variables show the effect of particular changes to this benchmark. The results from these participation equations can be summarised as follows: for all men, including Aborigines, years of primary and secondary schooling, the completion of high school or some post-secondary qualification, marriage and additional dependent children were associated with higher probabilities of labour force participation. Men aged 20-49 were more likely to participate in the formal labour

market than men aged 15-19 who in turn, were more likely to be in the labour force than men aged 50-64. A poor ability to communicate in English, the existence of other sources of income for the family and residence outside the major urban areas were associated with lower participation. Aboriginality was associated with a lower probability of participation.

Education was also an important positive influence on participation for women, but marital status and the number of dependent children had a

Table 4. The effect of marginal changes at the mean value of the dependent variable.

	Men		Women	
	Mean of dep. var. = 0.89 (1)	(3)	Mean of dep. var. = 0.59 (1)	(3)
Age 20-34	0.07	0.07	-0.07	-0.07
Age 35-49	0.02	0.03	-0.02	-0.02
Age 50-64	-0.15	-0.15	-0.41	-0.41
Years of primary and secondary school	0.03	0.03	0.01	0.01
Educational qualification	0.03	0.03	0.10	0.10
Married	0.08	0.08	-0.17	-0.17
Widowed, separated divorced	0.04	0.03	-0.17	-0.18
Number of dependents	0.01	0.01	-0.09	-0.09
Poor English .	-0.06	-0.06	-0.10	-0.09
Other family income (\$'000)	-0.00	-0.00	0.00	0.00
Other urban	-0.02	-0.01	-0.06	-0.06
Rural	-0.00	0.00	0.00	0.01
Aborigine	-0.13	-0.11	-0.16	-0.11
Ab.*age 35-49		-0.04		-
Ab.*widowed, sep. divorced		0.14		-
Ab.*poor English		-0.16		-
Ab.*other family income (\$'000)		0.00		0.00
Ab.*other urban		-0.06		-0.17
Ab.*rural		-0.08		-0.18

Source: Appendix Tables A3 and A4.

negative effect on participation in contrast to the positive effect for men. The probability of participation was lower in all age categories than in the 15-19 category. Poor English and residence outside a major urban area were associated with lower participation probabilities. Aboriginality was associated with a lower probability of participation, holding everything constant.

Table 4 presents the effects of marginal changes in each variable on the mean participation probability for the sample of each sex as a whole. The estimation of marginal impacts uses equations (1) and (3) reported in Tables A3 and A4 for each sex. For example, for the person with the characteristics which were associated with the average participation probability for men of 89 per cent, a change in the age category from 15-19 to 20-34, using the results reported in equation (1), would increase participation by 6.5 percentage points. A change in race from non-Aborigine to Aborigine is associated with a reduction in the probability of participation for men by 13 percentage points. The coefficients estimated in equation (1) Table A4 for women suggest a larger effect of race on participation among women. A change in race from non-Aborigine to Aborigine is associated with a reduction in the probability of participation by 16 percentage points.

The marginal effects derived from the preferred equation (3) Tables A3 and A4 including selected Aboriginal interaction terms, show very similar effects for changes in age category, education, marital status and location as reported from equation (1) Tables A3 and A4 for each sex. There is also additional information about particular aspects of Aboriginality that affect participation. For Aboriginal men, poor English reduced the probability of participation by an additional 16 percentage points and living in a rural area reduced the participation probability by a further 8 percentage points compared with Aborigines in urban areas. Aboriginal women had a lower probability of participation than non-Aboriginal women and living in a rural area reduced the probability of participation by a further 18 percentage points compared with Aboriginal women living in major urban areas. Additional calculations of the marginal impact of changes in variables at the mean participation rate for Aboriginal men and women are presented in Table A5. At the lower mean level of participation for Aboriginal men, the marginal effects were substantially larger than those reported in Table 4 but there was little change for women.

Conclusions and some policy implications

The evidence presented here shows that both Aboriginal men and women have a lower attachment to the work force than other Australians. This difference was particularly pronounced in rural areas. The statistical analysis presented shows that even after controlling for such things as education, marital status and location, an 'Aboriginal effect' on participation in the formal labour market remains. This may reflect supply side factors. For example, many Aborigines living traditional lifestyles may not be interested in entering the formal labour market. Alternatively, those in remote areas may have been discouraged by the absence of jobs in these regions and ceased to think of themselves as members of the formal labour market. This 'discouraged worker' effect may also apply in the more settled parts of Australia if employers discriminate against Aborigines and are unwilling to employ them at the award wages set by the Industrial Relations Commission.

The results presented here are preliminary findings from an analysis of the one per cent sample of the 1986 Population Census. They have a number of implications for further research and for policy.

First, the participation equations need to be estimated over a larger sample of Aborigines to confirm or refute the findings that for most variables there is no 'Aboriginal effect' which differs from the effect of these variables on the labour force participation of the population in general.

Second, the results show that the effect of Aboriginality on attachment to the labour force is greatest outside major urban areas. This adds weight to the argument that different policies are needed for Aborigines in these areas than in the major urban areas (see Altman and Sanders 1991 for a fuller discussion of this issue). If Aborigines living in urban areas behave like non-Aborigines in terms of their attachment to the formal labour market, then policies aimed at promoting their employment prospects through education and training are likely to be of most benefit. In those areas where labour force attachment is low, the scope for improvements in Aboriginal welfare through raising their ability to compete in the formal labour market is limited and successful policy needs to recognise this.

Third, in order to achieve employment equity by the year 2000, it may be necessary to further redefine 'employment' to take account of cultural differences among rural Aborigines wishing to pursue traditional lifestyles. The issue of the determinants of employment will be considered

in another paper (Daly forthcoming) but the results of the analysis presented here show that a commitment to the formal labour market as measured by the participation rate, was low among rural Aborigines. It will be difficult to establish mainstream employment in these areas where attachment to the formal labour market is low for reasons which relate to both demand and supply sides of the labour market. The recognition of the productive employment of hunter-gatherers outside the formal labour market is a necessary part of equality of employment opportunity, although such recognition may have a negative impact on income support options which would be counter to the Federal Government's goal of income equality for Aboriginal people by the year 2000 (Altman forthcoming).

Fourth, an inability to communicate in English appears to have a strong negative effect on participation rates among Aboriginal men. If the aim of the AEDP is to bring Aborigines into the mainstream labour market this is an important barrier to attachment to the formal labour market as measured by participation.

Finally, the evidence produced here does not suggest that additional education will have a particularly large effect on Aboriginal participation beyond the effect of education on participation among the population as a whole.

Appendix

Table A1. Male participation rates by age and location, 1986 Census.^a

Age	Major urban		Other urban		Rural	
	Ab.	non-Ab.	Ab.	non-Ab.	Ab.	non-Ab.
15-19	57.28	53.56	52.37	57.11	52.91	54.16
20-24	84.90	88.71	79.58	92.33	70.15	92.63
25-29	84.21	94.81	81.97	96.54	72.71	94.08
30-34	84.59	95.23	82.23	95.73	74.72	94.52
35-39	81.82	95.38	77.73	95.31	73.08	95.41
40-44	77.64	94.53	69.18	93.81	69.76	93.50
45-49	72.09	93.27	70.68	91.60	65.92	90.32
50-54	62.10	88.88	56.69	87.83	58.95	88.20
55-59	53.98	79.99	47.46	73.32	48.00	77.94
60-64	33.81	49.62	26.55	42.01	29.74	57.89

a. Excludes the 'non-stated' category.

Source: 1986 Census. The figures for Aborigines were calculated from published tables covering the whole of the Australian Aboriginal population. A similar age breakdown was not available for participation rates among the rest of the Australian population so the figures here were calculated from the 1 per cent sample of the full Census.

Table A2. Female participation rates by age and location, 1986 Census.^a

Age	Major urban		Other urban		Rural	
	Ab.	non-Ab.	Ab.	non-Ab.	Ab.	non-Ab.
15-19	47.70	51.78	39.93	53.27	33.71	48.65
20-24	55.64	79.28	46.98	70.43	38.64	69.64
25-29	42.80	66.16	38.00	53.16	37.30	55.97
30-34	40.41	61.31	37.53	54.27	37.27	55.49
35-39	45.91	64.24	39.70	59.51	37.78	66.25
40-44	45.62	67.25	37.15	62.16	32.72	66.20
45-49	39.42	63.00	33.25	61.38	28.27	62.48
50-54	29.50	49.85	24.07	41.69	22.29	53.82
55-59	24.15	31.34	17.15	25.34	17.00	37.80
60-64	12.33	12.95	8.07	10.28	6.81	22.27

a. Excludes the 'non-stated' category.

Source: As for Table A1.

Table A3. Participation equations for men, 1986 Census.

	(1)	(2)	(3)
Constant	0.6369 (4.86**)	0.6030 (4.36**)	0.6374 (4.81**)
Age 20-34	0.3406 (4.91**)	0.3483 (4.71**)	0.3439 (4.95**)
Age 35-49	0.1250 (1.54)	0.1598 (1.85)	0.1511 (1.82)
Age 50-64	-0.8028 (-9.55**)	-0.7834 (-8.83**)	-0.7981 (-9.46**)
Years of school	0.0430 (3.87**)	0.0459 (3.91**)	0.0426 (3.82**)
Educ. qualification	0.1456 (3.61**)	0.1429 (3.48**)	0.1448 (3.58**)
Married	0.4383 (8.22**)	0.4256 (7.64**)	0.4374 (8.17**)
Widowed, separated, divorced	0.1961 (2.75**)	0.1558 (2.11**)	0.1628 (2.23**)
No. of dependents	0.0591 (3.08**)	0.0613 (2.95**)	0.0573 (2.96**)
Poor English	-0.3331 (-3.27**)	-0.2990 (-2.84**)	-0.3040 (-2.90**)
Other family income (\$'000)	-0.0025 (-1.43)	-0.0033 (-1.87)	-0.0033 (-1.85)
Other urban	-0.0821 (-1.87)	-0.0726 (-1.59)	-0.0739 (-1.62)
Rural	-0.0067(-0.13)	0.0243 (0.45)	0.0235 (0.44)
Aborigine	-0.6684 (8.69**)	-0.2172 (-0.51)	-0.5519 (-3.51**)
Ab.*age 20-34		-0.0155 (-0.07)	-
Ab.*age 35-49		-0.4464 (-1.67)	-0.3543 (-1.98*)
Ab.*age 50-64		-0.1535 (-0.47)	-
Ab.*years of school		-0.0342 (-0.90)	-
Ab.*educ.qualification		-0.0336 (-0.14)	-
Ab.*married		0.1586 (0.77)	-
Ab.*widowed, sep. divorced		0.6398 (2.10*)	0.5681 (2.12*)
Ab.*no. of dependents		-0.0372 (-0.63)	-
Ab.*poor English		-0.6295 (-1.24)	-0.5413 (-1.09)
Ab.*other family income (\$'000)		0.0197 (2.45**)	0.0179 (2.37**)
Ab.*other urban		-0.2647 (-1.41)	-0.2497 (-1.36)
Ab.*rural		-0.4459 (-2.18*)	-0.4308 (-2.17*)
Log-likelihood	-3085.9	-3075.3	-3076.1
Restricted log-likelihood	-3604.4	-3604.4	-3604.4

The variables are defined as follows: There were 4 age categories defined, 15-19, 20-34, 35-49, 50-64; years of primary and secondary school were calculated as age left school minus 5 with a maximum value of 12; educational qualification took a value of 1 for those who had completed high school or some post-secondary qualification; married took a value of 1 for those who were married and widowed, separated or divorced took a value of 1 for those with one of these marital statuses; number of dependent children in the family recorded the number of children with a maximum of 8; poor English took a value of 1 for those who registered an inability to communicate easily in English; other family income was the recorded income of the family less the income of the particular individual, other urban took a value of 1 for those living in urban settlements of between 1,000 and 99,999 inhabitants and rural took a value of 1 for those living in smaller settlements; Aborigine took a value of 1 for those who identified themselves as Aborigines or Torres Strait Islanders.

Source: 1 per cent sample of the 1986 Census.

Table A4. Participation equations for women, 1986 Census.

	(1)	(2)	(3)
Constant	0.3860 (3.13**)	0.4036 (3.17**)	0.3838 (3.11**)
Age 20-34	-0.1744 (-2.55**)	-0.1699 (-2.34**)	-0.1749 (-2.56**)
Age 35-49	-0.0421 (-0.58)	-0.0364 (-0.47)	-0.0415 (0.57)
Age 50-64	-1.0605 (-13.65**)	-1.0572 (-12.90**)	-1.0607 (-13.63**)
Years of primary and secondary school	0.0728 (6.74**)	0.0715 (6.45**)	0.0733 (6.78**)
Educational qualification	0.2646 (7.71**)	0.2614 (7.52**)	0.2627 (7.65**)
Married	-0.4285 (-9.39**)	-0.4403 (-9.24**)	-0.4323 (-9.45**)
Widowed, separated, divorced	-0.4500 (-8.20**)	-0.4668 (-8.20**)	-0.4550 (-8.28**)
No. of dependents	-0.2197 (-16.94**)	-0.2178 (-16.28**)	-0.2198 (-16.93**)
Poor English	-0.2505 (-3.00**)	-0.2441 (-2.88**)	-0.2409 (-2.88**)
Other family income (\$'000)	0.0008 (0.60)	0.0005 (0.40)	0.0006 (0.42)
Other urban	-0.1503 (-4.47**)	-0.1436 (-4.18**)	-0.1430 (-4.16**)
Rural	-0.0050 (0.12)	0.0255 (0.62)	0.0261 (0.63)
Aborigine	-0.4233 (-5.77**)	-0.7183 (-1.31)	-0.2785 (-1.87)
Ab.*age 20-34		-0.0682 (-0.30)	-
Ab.*age 35-49		-0.697 (-0.26)	-
Ab.*age 50-64		0.1463 (0.43)	-
Ab.*years of school		0.0441 (0.80)	-
Ab.*educational qualification		0.1278 (0.53)	-
Ab.*married		0.0998 (0.54)	-
Ab.*widowed, sep. divorced		0.1976 (0.85)	-
Ab.*no. of dependents		-0.0281 (-0.49)	-
Ab.*poor English		-0.0618 (-0.11)	-
Ab.*other family income (\$'000)		0.0102 (1.32)	0.0104 (1.48)
Ab.*other urban		-0.2574 (-1.45)	-0.2922 (-1.70)
Ab.*rural		-0.4544 (-2.30*)	-0.4934 (-2.61*)
Log-likelihood	-5754.3	-5748.4	-5749.8
Restricted log-likelihood	-6684.7	-6684.7	-6684.7

Note: The variable definitions are included in the notes to Table A3.

Source: 1 per cent sample of the 1986 Census.

Table A5. The effect of marginal changes at the mean value of the dependent variable for Aboriginal men and women.

	Men		Women	
	Mean of dep. (1)	var. = 0.7244 (3)	Mean of dep. (1)	var. = 0.4423 (3)
Age 20-34	0.11	0.11	-0.07	-0.07
Age 35-49	0.04	0.05	-0.02	-0.02
Age 50-64	-0.25	-0.25	-0.42	-0.42
Years of primary school	0.01	0.01	0.03	0.03
Educational qualification	0.05	0.05	0.10	0.10
Married	0.14	0.14	-0.17	-0.17
Widowed, separated, divorced	0.06	0.05	-0.18	-0.18
No. of dependants	0.02	0.02	-0.09	-0.09
Poor English	-0.10	-0.10	-0.10	-0.10
Other family income (\$'000)	-0.00	-0.00	0.00	0.00
Other urban	-0.03	-0.02	-0.06	-0.06
Rural	-0.00	0.01	0.00	0.01
Aborigine	-0.21	-0.17	-0.17	-0.11
Ab.*Age 35-49		-0.11		-
Ab.*Widowed, sep. divorced		0.18		-
Ab.*Poor English		-0.17		-
Ab.*Other family income (\$'000)		0.01		0.00
Ab.*Other urban		-0.08		-0.12
Ab.*Rural		-0.14		-0.19

Source: Tables A3 and A4

Notes

1. Tesfaghiorghis and Altman (1991) document the lower labour force participation and employment rates of Aborigines as recorded in the Censuses of 1971, 1976, 1981 and 1986. Some estimates based on population projections of the number of Aboriginal jobs needed to achieve the goal of equal employment are presented in Tesfaghiorghis and Gray (1991).
2. Other studies which have considered the effect of Aboriginality on employment and unemployment include Miller (1987 and 1991), Jones (1990 and 1991) and Ross (1990 and 1991).
3. In the 1986 Census the following questions (numbers 26 and 27) relating to labour force participation were asked: 'Last week, did the person have a full-time or part-time job of any kind?' and 'Did the person actively look for work at any time during the last 4 weeks?' (Actively looking for work means checking or being registered with the Commonwealth Employment Service, writing, telephoning or applying in person to an employer for work, or advertising for work.)

4. A discouraged worker is one who, 'particularly when unemployment is relatively high and vacancies are scarce, does not bother to seek work because they believe the prospects of obtaining it to be poor yet would work, or seek work, in more favourable conditions' (Norris 1989: 174).
5. A formal model of the work decision will not be presented here. For a survey of the theoretical model used by economists to explain the decision to join the labour force, see Killingsworth (1983). The simple neoclassical theory focuses on the decision at any point in time and considers the choice between marginal gains in money income from additional work and the cost of foregone leisure. Other models have attempted to take a lifetime perspective on an individual's labour supply choices. For a survey of life cycle models of the labour supply of men see Pencavel (1986) and for women see Killingsworth and Heckman (1986). Of particular relevance to Aboriginal groups living in remote regions, is the 'economics of home production' which takes account of the production of goods outside the market system and considers three choices facing an individual; market work, non-market work and leisure (see Gronau 1986).
6. The data which form the basis for these figures are presented in Tables A1 and A2.
7. The data presented here are, of course, cross-section data showing a snapshot of participation behaviour at a particular point in time. The experience of an individual ageing over time may vary from that suggested by the cross-section evidence. For example, different age cohorts may face different economic conditions at the time of entry to the labour market or may be offered different incentives for early retirement. For such reasons, the participation behaviour of cohorts may not exhibit the patterns suggested by the cross-section.
8. Among the cross-section studies using Australian data are Brooks and Volker (1985); Miller and Volker (1983); Ross (1986); and Beggs and Chapman (1988).
9. See, for example, Gregory, Anstie, Daly and Ho (1989) for results of earnings regressions for three countries, Australia, Great Britain and the United States, which show that both education and potential labour market experience are associated with higher earnings.
10. The result of lower participation among women with young children has been found in numerous studies in a variety of countries. For example using Australian data see Brooks and Volker (1986); Miller and Volker (1983); Ross (1986) and Beggs and Chapman (1988).
11. Empirical results are mixed. Miller and Volker (1983) and Brooks and Volker (1986) found an inverse relationship between labour force participation for married women and husbands income. Ross (1986) found that family income and husband's wage had an insignificant effect on participation among a sample of married women in Sydney.
12. Brooks and Volker (1986) found that location was not important in explaining participation. Miller and Volker (1983) found that the Local Government Areas (LGAs) in New South Wales and Victoria where a relatively large proportion of the population was classified as rural had higher participation rates for married women.
13. See Brooks and Volker (1986).

14. See Tyler (1990) for a discussion of the effects of Aboriginality on labour market performance in the Northern Territory.
15. Australian Bureau of Statistics (1989). The issue of non-response raises the problem of selectivity bias. Given the literacy skills and motivation on the part of the individual required to complete the Census questionnaire, it is possible that the individuals for whom all the data are available are not representative of the whole population.

References

Altman, J.C. (forthcoming). *Appropriate Income Support for Aboriginal Australians: Options for the 1990s*, CAEPR Discussion Paper No. 12. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Altman, J.C. and Nieuwenhuysen, J.P. 1979. *The Economic Status of Australian Aborigines*. Cambridge: Cambridge University Press.

Altman, J.C. and Sanders, W.G. 1991. 'Government initiatives for Aboriginal employment: equity, equality and policy realism', in J.C. Altman (ed.) *Aboriginal Employment Equity by the Year 2000*. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Altman, J.C. and Taylor, L. 1989. *The Economic Viability of Aboriginal Outstations and Homelands*, Report to the Australian Council for Employment and Training. Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics 1989. *Census 86: Data Quality - Aboriginal and Torres Strait Islander counts*, Cat. No. 2602.0. Canberra: Australian Bureau of Statistics.

Australian Government 1987. *Aboriginal Employment Development Policy Statement. Policy Paper No. 1*. Canberra: Australian Government Publishing Service.

Beggs, J. and Chapman, B. 1988. *The Foregone Earnings From Child Rearing in Australia*, Discussion Paper No. 190. Canberra: Centre for Economic Policy Research, Australian National University.

Brooks, C. and Volker, P. 1985. 'Labour market success and failure: an analysis of the factors leading to the workforce destinations of the Australian population', in Volker P. (ed.) *The Structure and Duration of Unemployment in Australia*, Bureau of Labour Market Research Monograph Series No. 6. Canberra: Australian Government Publishing Service.

Daly, A. (forthcoming). *The Employment of Aboriginal Australians in the Labour Market*, CAEPR Discussion Paper No. 7. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Fisk, E. K. 1985. *The Aboriginal Economy in Town and Country*. Sydney: George Allen and Unwin.

Gregory, R., Anstie, R., Daly, A. and Ho, V. 1989. 'Women's pay in Australia, Great Britain, and the United States: the role of laws, regulations, and human capital', in R. Michael, H. Hartmann, and B. O'Farrell (eds) *Pay Equity*. Washington: National Academy Press.

Gronau, R. 1986. 'Home production - a survey', in O. Ashenfelter and R. Layard (eds) *The Handbook of Labor Economics*, Vol 1. New York: Elsevier Science Publishers BV.

Jones, F. L. 1990. 'Ethnicity, gender and immigration generation: some results from the 1986 Census', paper presented at the Annual Meetings of the Australian Sociological Association, University of Queensland, St Lucia.

Jones, F. L. 1991. 'Economic status of Aboriginal and other Australians: a comparison', in J.C. Altman (ed.) *Aboriginal Employment Equity by the Year 2000*. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Killingsworth, M. 1983. *Labor Supply*. Cambridge: Cambridge University Press.

Killingsworth, M. and Heckman, J. 1986. 'Female labor supply', in O. Ashenfelter and R. Layard (eds) *The Handbook of Labor Economics*, Vol 1. New York: Elsevier Science Publishers BV.

Miller, M. (Chairman) 1985. *Report of the Committee of Review of Aboriginal Employment and Training Programs*. Canberra: Australian Government Publishing Service.

Miller, P.W. and Volker, P.A. 1983. 'A cross-section analysis of the labour force participation of married women in Australia', *Economic Record*, 59 (1): 28-42.

Miller, P.W. 1987. *The Structure and Dynamics of Aboriginal and non-Aboriginal Youth Unemployment*. Canberra: Australian Government Publishing Service.

Miller, P.W. 1991. 'Aboriginal youth unemployment', in J.C. Altman (ed.) *Aboriginal Employment Equity by the Year 2000*. Canberra: Centre for Aboriginal Policy Research, Australian National University.

Norris, K. 1989. *The Economics of Australian Labour Markets*. Melbourne: Longman Cheshire.

Pencavel, J. 1986. 'Labor supply of men: a survey', in O. Ashenfelter and R. Layard (eds) *The Handbook of Labor Economics*, Vol 1. New York: Elsevier Science Publishers BV.

Ross, R. 1986. 'Analysis of the 1980 Sydney survey of work patterns of married women: further results', *Economic Record*, 62 (3): 325-37.

Ross, R. 1990. *A Probit Analysis of the Factors Influencing Labour Market Success of Aborigines in New South Wales*, Discussion Paper No. 27. Sydney: Social Policy Research Centre, University of New South Wales.

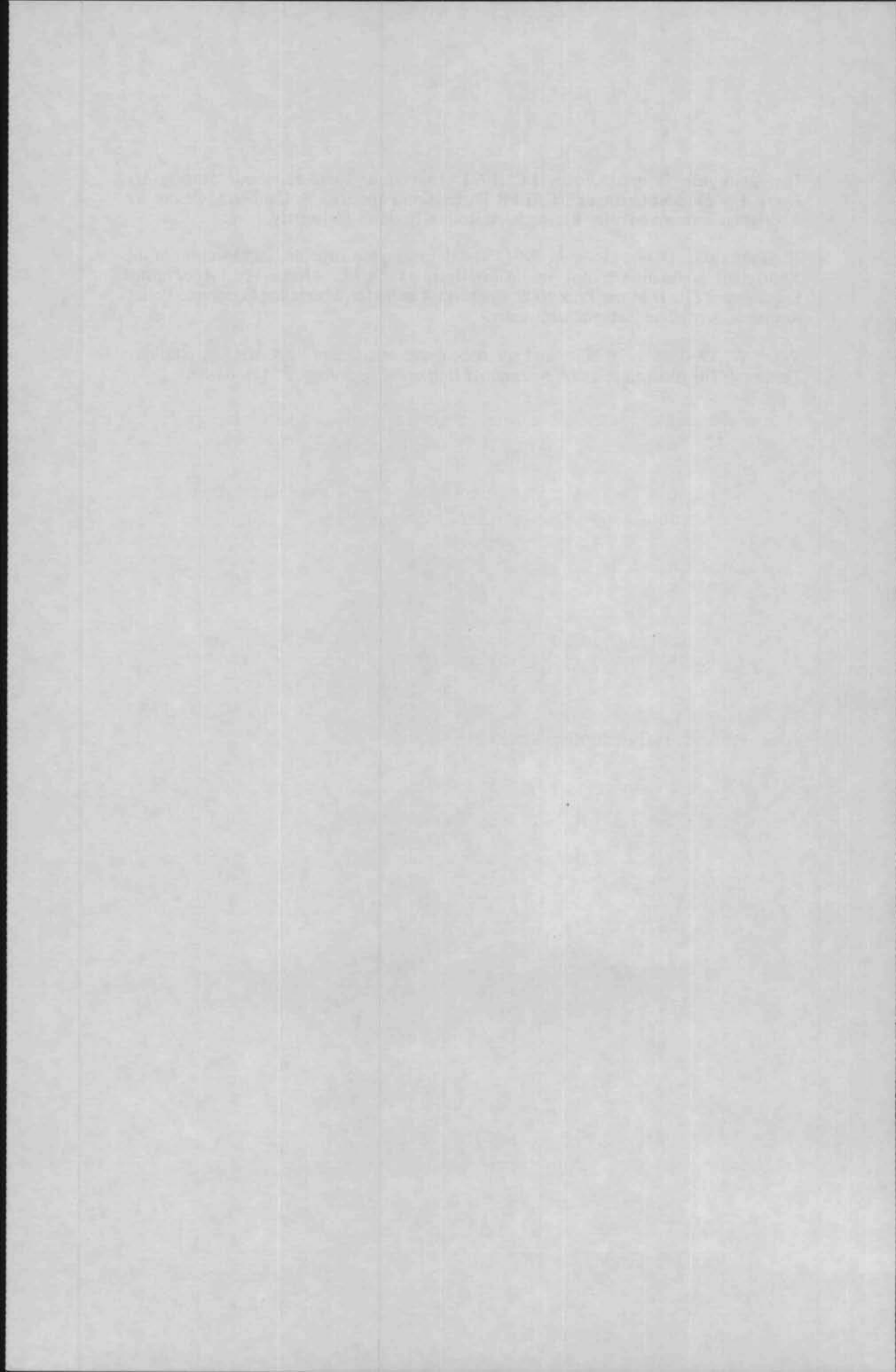
Ross, R. 1991. 'Employment prospects for Aborigines in NSW', in J.C. Altman (ed.) *Aboriginal Employment Equity by the Year 2000*. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Taylor, J. (forthcoming). *Geographical Location and Aboriginal Economic Status: A Census-based Analysis of Outstations in the Northern Territory*, CAEPR Discussion Paper No. 8. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Tesfaghiorghis, H. and Altman, J.C. 1991. *Aboriginal Socio-economic Status: Are There Any Evident Changes?*, CAEPR Discussion Paper No. 3. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Tesfaghiorghis, H. and Gray, A. 1991. 'The demographic structure and location of the Aboriginal population: employment implications', in J.C. Altman (ed.) *Aboriginal Employment Equity by the Year 2000*. Canberra: Centre for Aboriginal Economic Policy Research, Australian National University.

Tyler, W. 1990. 'Aboriginality and socioeconomic attainment in Australia's Northern Territory', *The Australian and New Zealand Journal of Sociology*, 26 (1): 68-85.



**CENTRE FOR ABORIGINAL ECONOMIC POLICY
RESEARCH (CAEPR) DISCUSSION PAPERS:**

1. 'From exclusion to dependence: Aborigines and the welfare state in Australia' by J.C. Altman and W. Sanders (March 1991).
2. 'Geographic variations in the economic status of Aboriginal people: a preliminary investigation' by H. Tesfaghiorghis (March 1991).
3. 'Aboriginal socio-economic status: are there any evident changes?' by H. Tesfaghiorghis and J.C. Altman (March 1991).
4. 'Indigenous economic development in the Torres Strait: possibilities and limitations' by W.S. Arthur (March 1991).
5. 'The CDEP scheme: administrative and policy issues' by J.C. Altman and W. Sanders (September 1991).
6. 'The participation of Aboriginal people in the Australian labour market' by A.E. Daly (September 1991).
7. 'The impact of welfare on the economic status of Aboriginal women' by A.E. Daly (September 1991).
8. 'Geographic location and Aboriginal economic status: a census-based analysis of outstations in the Northern Territory' by J. Taylor (September 1991).
9. 'Aboriginal expenditure patterns: an analysis of empirical data and its policy implications' by D.E. Smith (September 1991).
10. 'Toward an Aboriginal household expenditure survey: conceptual, methodological and cultural considerations' by D.E. Smith (September 1991).

