ACADEMY OF THE SOCIAL SCIENCES IN AUSTRALIA

Edited by J.C. Altman

ABORIGINAL EMPLOYMENT EQUITY BY THE YEAR 2000

Aboriginal Employment Equity by the Year 2000

Edited by
J.C. Altman

Published for the
Academy of the Social Sciences in Australia

by

Centre for Aboriginal Economic Policy Research
Australian National University, Canberra

Research Monograph No. 2
1991

First published in Australia 1991.

Printed in Australia by the Australian National University.

© Centre for Aboriginal Economic Policy Research, Australian National University and the Academy of Social Sciences in Australia.

This book is copyright. Apart from any fair dealings for the purpose of private study, research, criticism or review as permitted under the *Copyright Act 1968*, no part may be reproduced by any process without written permission. Inquiries should be directed to the publisher, Centre for Aboriginal Economic Policy Research, Australian National University, GPO Box 4, Canberra, ACT 2601, Australia.

National Library of Australia
Cataloguing-in-publication entry

Aboriginal employment equity by the year 2000.

Bibliography.
ISBN 0 7315 1215 4.

[1]. Aborigines, Australian - Employment - Government policy. 2. Affirmative action programs - Australia. 3. Discrimination in employment - Australia. I. Altman, Jon C., 1954- . II. Australian National University. Centre for Aboriginal Economic Policy Research. III. Academy of the Social Sciences in Australia. (Series: Research monograph (Australian National University. Centre for Aboriginal Economic Policy Research); no. 2).

331.1330994

Front cover designed by Denis French, Aboriginal Studies Press, Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra.

11. Aboriginal employment, income and human capital: towards a conceptual framework

B.J. Chapman

Prior to this workshop, there was little research in labour economics in Australia oriented towards an understanding of the relative economic status of Aboriginal people, some major exceptions being the work of Treadgold (1980), Ross (1988), and Miller (1989). This paper is motivated by the view that there are important potential benefits from further development of the tools of economics to address more generally issues related to Aboriginal incomes.

Modern labour economics has been dominated by the 'human capital revolution', the essence of which is the treatment of skill acquisition as an investment process. Workers are seen to face choices concerning training, including education and on-the-job skill attainment, in that gaining skills entails costs, the most important of these being the foregone income associated with the training. The benefits to workers from the process are seen to accrue in the form of improved job opportunities, most obviously with regard to increased wages and reduced unemployment probabilities.

While the economics profession generally accepts the usefulness of human capital theory, there is evidence emerging that it is a more powerful tool for understanding the impact of changes at the margin than as a general framework for explaining the large differences in economic outcomes between groups. In the first category, the investment perspective seemingly predicted well the overall implications for the demand for higher education as a consequence of the institution of the Higher Education Contribution Scheme (Chapman and Chia 1989). But as far as the second area is concerned, it is apparent that variations in the measurable human capital between men and women in Australia and the United States contribute almost nothing to an explanation of the large differences in the sex earnings ratios between the two countries (Gregory and Ho 1985).

One possibility, then, is that human capital theory has little to contribute to the important debate concerning the factors behind the extraordinarily large differences between the labour market outcomes of Aboriginal and non-Aboriginal Australians. Indeed, implicitly this is the conclusion reached by Miller (1989) in an analysis of youth unemployment.

The aim of what follows is to propose a method that might be useful in testing the impact on Aboriginal relative incomes of changes in

policy-relevant human capital characteristics. Some preliminary estimates are made to illustrate how the framework might be used to explore the impact of changes in one area of human capital, namely education, on the Aboriginal labour market experience. There is potential to generalise the perspective to enable some understanding of the empirical relevance for incomes of other factors, such as location, and the model is developed to incorporate this aspect.

Human capital theory and Aboriginal incomes: towards a framework

Several important simplifications are used in what follows. In particular, only the effects of educational attainment are considered initially, and these are examined only for average weekly earnings and employment prospects. This means that the effect of schooling on hourly wage rates, labour force participation and hours worked are not considered separately. Conceptually, extending the analysis to these other disaggregations is a straightforward exercise.

Skills have impacts on individual earnings in at least two distinct ways: through the effect on the value of output in a given job, and thus in this model, on the wage; and in terms of influencing the probability that prospective workers have jobs, assuming that persons with greater observable skills receive more job offers than others. In what follows it is assumed that education is a skill, and that more schooling increases both wages and the probability of employment. Because the major interest is in determining ultimately the empirical magnitudes involved, it is useful to be explicit about the assumed form of these relationships.

Ignoring rents and other non-labour income, except for unemployment benefit, the average weekly income of Aboriginals (AWA) is given by:

$$AWA = xAWE + (1-x)AWU \qquad [1]$$

where AWE is the average weekly earnings of employed Aborigines, AWU is the average weekly income of unemployed (or not in the labour force) Aborigines, and x is the proportion of Aborigines in employment.

In the human capital perspective AWE is influenced by schooling in a way assumed to be given by the following form:

$$AWE = a + bYOS \qquad [2]$$

where a is a constant, b is positive, and YOS is number of years of schooling. This means that average weekly earnings for employed persons increase by b dollars for each additional year of schooling.

Further, under the assumption that education influences the chances of finding employment, it is possible to specify the employment probability as a function of YOS as follows:

$$x = g + dYOS \qquad [3]$$

which means that the probability of gaining employment increases by d with each additional year of schooling.

The effect of changing schooling on average Aboriginal incomes can be illustrated by substituting within the equations. It can be shown that the average weekly income of Aboriginals increases with schooling, but the interrelationships are complex, non-linear, and depend on both the initial level of education and the dollar size of unemployment benefits.

Put very simply, the equations and reasoning set out above imply that it is possible to gain some understanding of the empirical magnitude of changing Aboriginal education for average Aboriginal incomes. It is a straightforward framework to use and how it can be operationalised is considered below.

The above modelling may be generalised to allow insights into the effect on Aboriginal incomes of changing other economic variables. For example, there is little doubt that living in isolated communities affects economic outcomes, a useful question being: 'what would be the consequences for average Aboriginal incomes of a change in the proportion of Aborigines living in such areas?'. An extension of the framework can be developed to address this question.

If the average weekly income of Aborigines living in isolated communities is given by AWAIC, and the average weekly income of Aborigines living in non-isolated communities is given by AWANIC, it follows that:

$$AWA = aAWAIC + (1-a)AWANIC \qquad [4]$$

where a is the proportion of Aborigines living in isolated communities.

It is useful to break this down further, as follows:

$$AWAIC = bAWEICE + (1-b)AWEICU \qquad [5]$$

and $$AWANIC = cAWENICE + (1-c)AWENICU \qquad [6]$$

where AWEICE and AWEICU are respectively the average weekly incomes of employed and not-employed Aborigines living in isolated

communities, and AWENICE and AWENICU are respectively the average weekly incomes of employed and not-employed Aborigines living in non-isolated communities.

Assuming that there is no difference between AWEICU and AWENICU, and that income differences between locations exist because both wages and employment probabilities differ for any given level of education (the framework could easily be modified to allow a relaxation of this restriction), it follows that:

$$AWEICE = bAWENICE \quad [7]$$

where $0<b<1$.

Further, assuming that employment probabilities differ by location, it follows that:

$$x = ca + d(1-a) \quad [8]$$

where c and d are respectively the employment probabilities associated with living in isolated and non-isolated communities.

Clearly, then, it is possible to incorporate location into the model. Through such an approach the implications for Aboriginal average incomes of locational changes may be ascertained. Other potentially important variables may be modelled in similar ways.

An empirical application

In what follows various pieces of research are used in combination with the first model to explore the question: if Aboriginal years of schooling were increased by particular amounts, and nothing else changed, what would be the implications for average Aboriginal incomes? It is possible to address this question so long as there is information available on several variables and relationships made explicit in the formal analysis.

Specifically, it is necessary to know the effect of changing schooling on both employed Aboriginal weekly earnings and on the probability of non-employed Aborigines gaining jobs. As well, because the size of the relationship changes as a consequence of the existing levels of schooling, employment probabilities and non-employment incomes, information is required in these areas.

The work of Tesfaghiorghis and Altman (1991), Ross (this volume) and Jones (this volume) offer useful information concerning the empirical relevance of the framework presented above. Tesfaghiorghis and Altman present data from the 1986 Census on Aboriginal employment rates, Ross has estimated the relationship between years of schooling and Aboriginal

employment probabilities for a sample living in non-urban New South Wales in 1986-87, and the data used by Jones in an investigation of Aboriginal and non-Aboriginal earnings from the 1986 Census allow the derivation of the average relationship between education and hourly earnings.

Ross's analysis also includes estimates of the average years of schooling for his sample, and it is possible to approximate the average weekly income of non-employed Aborigines by using the amount of unemployment benefit. For the example following weekly unemployment benefits are assumed to be $150 per recipient.

The most straightforward way to illustrate the effects of increasing education is to ask, for a particular group like, say, men: what are average weekly earnings at existing levels of education, and what would be their percentage increase given our framework of raising schooling by, for example, two, three and four years? The estimates do not change anything else that could matter, such as location.

Tesfaghiorghis and Altman (1991) show that the employment probability of Aboriginal men aged 15 years and more was 0.40; from Ross (this volume) the probability of employment increases by around 4.6 percentage points for an additional year of schooling (with the average years of schooling being about nine for employed Aborigines), and from Jones (this volume) the change in average weekly earnings from an additional year of schooling in 1986 dollars is estimated to be $14.0 (about 40 cents per hour over a 35 hour week). As well, from Ross, the average weekly earnings of employed Aboriginals was $235. Inserting these figures into equation [1] gives:

$$AWA = 0.40(235) + 0.60(150) = \$184$$

It is now possible to address the question of how much male Aboriginal average incomes would increase if their average years of schooling increased by one year. There are two effects: first, the proportion of Aboriginals employed increases by 4.6 percentage points, to 0.446; and second, the average income of employed Aborigines increases by $14. Thus for ten years of schooling, the level of income would be:

$$AWE = 0.446.\ (249) + 0.554\ (150) = \$194.2$$

That is, increasing Aboriginal education by a year (or around 11 per cent) results in about a $10 increase in incomes in this model, or about 5.4 per cent. Table 11.1 sets out the data for various other levels of education and earnings.

Table 11.1 The impact of additional education on Aboriginal male incomes (1986 Census).

Years of schooling	Average weekly earnings	Percentage change
9	$184.0	
10	$194.2	5.4
11	$205.6	5.9
12	$218.3	6.2

These data imply that changing schooling only does not have a profound effect on the absolute size of Aboriginal male incomes. Interestingly, taking Aboriginal education to the level of 12 years is similar to that experienced by the non-Aboriginal Australian male, but in 1986 this latter groups' average weekly incomes were of the order of $321 (Jones this volume), or 42 per cent higher than those predicted here for Aboriginal males at this level of education. In other words, the framework reveals that even a profound change in the level of male Aboriginal education has only a modest influence on relative incomes: the initial disparity of $137 is reduced by $34 or about 25 per cent.

The above exercise implies that there are many forces at work influencing relative Aboriginal incomes, apart from education, and demonstrates that some of the tools of labour economics have the potential to help unravel the factors pertinent to an understanding of relative Aboriginal economic disadvantage. There is a case for further analysis along these lines, the obvious goal being the eventual empirical estimation of all relevant factors, the most important probably being location, public sector employment, and the role of labour market programs. Such a process should allow some indications of the nature, extent and income consequences of racially discriminatory practices.

Concluding comments

The exercise undertaken here suggests that it is possible to develop a generalised framework to determine the empirical size of the forces underlying the relative income disadvantage of Aboriginal Australians. The conceptual basis of the model is drawn from labour economics, with an example using an important aspect of the mainstream economic paradigm, human capital theory. An empirical application of the method implies that this perspective falls a long way short of explaining average income differences between Aboriginal and non-Aboriginal males.

The important research implication is that it seems to be feasible to incorporate some of the lessons of economic modelling, and some of the results of applied econometrics, to further our understanding of the Aboriginal labour market situation. This lesson is also a contribution of the work of other economists reported elsewhere in this volume.

References

Chapman, B.J. and Chia, T.T. 1988. 'Private rates of return and externalities in the context of the tertiary tax', *Discussion Paper No. 239*, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.

Gregory, R.G. and Ho, V. 1985. 'Equal pay and comparable worth: what can the US learn from the Australian experience?', *Discussion Paper No. 123*, Centre for Economic Policy Research, Australian National University, Canberra.

Miller, P.W. 1989. 'The structure of Aboriginal and non-Aboriginal youth unemployment', *Australian Economic Papers*, 28 (5): 39-56.

Ross, R.T. 1988. 'The labour market position of Aboriginal people in non-metropolitan New South Wales', *Australian Bulletin of Labour*, 15 (1): 29-56.

Tesfaghiorghis, H. and Altman, J.C. 1991. 'Aboriginal socio-economic status: are there any evident changes?', *CAEPR Discussion Paper No. 3*, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.

Treadgold, M.L. 1980. 'Aboriginal incomes: an aggregative analysis of the 1976 Census results', *Australian Bulletin of Labour*, 7 (1): 31-46.