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**The determinants of Aboriginal
employment income**

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SERIES NOTE

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- 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.

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ABSTRACT

According to the 1986 Census, the average Aboriginal male in full-time employment had an income which was 71 per cent of that of the average non-Aboriginal male. The gap between the incomes of the average Aboriginal and non-Aboriginal female was less by 11 percentage points. This study uses Ordinary Least Square (OLS) regression techniques to decompose this gap into that part which can be attributed to differences between Aborigines and non-Aborigines in certain measured characteristics, for example education and labour market experience, and that part which remains unexplained by these measured differences. Differences between groups in the monetary rewards received for a given set of labour market endowments may arise because of discrimination between groups or because of differences in their labour supply behaviour. The results of this study show that most of the difference in income between Aboriginal and non-Aboriginal men can be accounted for by differences in their labour market endowments but there remains some part which is attributed to different rewards for these endowments. Endowment differences were less important in accounting for differences in the income of Aboriginal and non-Aboriginal women. The paper concludes with some discussion of the implications for policy.

Acknowledgements

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Foreword

In April 1992, Dr Anne Daly, Research Fellow at the Centre for Aboriginal Economic Policy Research (CAEPR), Australian National University, took up a concurrent half-time Australian Bureau of Statistics (ABS) Research Fellowship granted to her in November 1991. The ABS objectives in providing Research Fellowships are to allow greater use of ABS data in academic research and to encourage the development of new techniques for data analysis. In Dr Daly's case, a principal aim of applying for this competitive Fellowship was to allow unimpeded access to the Aboriginal population sub-file, so that statistical analysis from the conceptual framework of human capital theory could be undertaken for the first time. Dr Daly's Fellowship runs to 30 June 1993, and in this time she plans to complete a monograph tentatively titled 'Aboriginal and Torres Strait Islander People in the Australian Labour Market'.

This discussion paper, based on 1986 Census data, provides an analysis of the determinants of Aboriginal employment income. It is the first publication produced by Dr Daly from her work at ABS and will form a chapter in her monograph when updated with 1991 Census data. It is also one paper in a series in which Dr Daly has examined determinants of Aboriginal labour force participation and employment. Future discussion papers will examine a range of issues, with a focus on the comparative labour market status of various sections of the Aboriginal population, such as youth, women, the self-employed and those located in rural and remote regions.

Dr Daly is publishing this work that forms part of a larger project for two main reasons. First, it is important that the results of her research at CAEPR and ABS are made widely available as soon as they are completed. Second, Dr Daly is seeking feedback, especially from academic economists, on this work-in-progress that might assist her overall project. The active collaboration between CAEPR and ABS in this research project is a very welcome development in the Aboriginal affairs policy environment. This first tangible outcome is a positive portent of forthcoming economic research in this area.

Jon Altman
Series Editor
November 1992

Census data show that the Aboriginal population has relatively low levels of income. In 1986, the median income of Aboriginal people was 65 per cent of that of the Australian population in general. Employed Aboriginal people, however, had incomes which were, on average, 2.5 times those of Aboriginal people not in employment (Treadgold 1988). This paper focuses on this relatively affluent group of Aboriginal people. Although their incomes were high by Aboriginal standards, the average income of employed Aboriginal people is below that of the rest of the Australian population. In 1986, the average employed Aboriginal male had an income of 71 per cent of that of the average employed non-Aboriginal male, and, for the average Aboriginal female, 89 per cent of that of an employed non-Aboriginal female. While there had been some improvement in the relative income status of Aboriginal women over the decade 1976-86, the relative position of employed Aboriginal men remained unchanged. In 1976, the average employed Aboriginal male had an income of 72 per cent of that of the average male, while an employed Aboriginal women had an income of 83 per cent of her counterpart in the general population (Treadgold 1988).

There is an extensive literature which aims to explain differences in income according to racial group and gender.¹ A framework which is frequently adopted, and will be used here, is the human capital model. This model treats activities such as education, on-the-job training, migration and health care as forms of investment which raise productivity and therefore earnings. The individual's problem is to maximise lifetime earnings, given the costs and benefits associated with any investment in human capital. In this framework, the lower levels of education and working experience are important determinants of the lower income of employed Aboriginal people.

Time spent in education can be seen as an investment in income generating skills, as more highly educated people are likely to be more productive and therefore to be paid more. Even if education in itself does not directly raise productivity, if educational qualifications are taken as a signal of competence and motivation to work, it may be worthwhile for individuals to acquire these qualifications as an entry requirement to higher paying jobs. On-the-job training is one method by which individuals can acquire productivity-enhancing skills outside a formal classroom environment. As it is difficult to find data on the money or time spent in on-the-job training, the extent of this form of investment has been approximated by a measure of working experience (Mincer 1974). The preferred measure of actual time spent in employment is rarely available, and, therefore, a measure of potential experience, (actual age less the age on leaving education) is frequently used. The human capital model predicts that most investment in productivity-enhancing skills will be undertaken by young people. Among older

workers, income may actually decline with additional years in the workforce, as investment in new skills ceases and existing skills deteriorate and become obsolete.

Even with the same levels of education and work experience Aboriginal people may be paid less than their non-Aboriginal counterparts. In other words, they may not receive the same financial rewards for investment in human capital as non-Aboriginal people. This may arise through discrimination against Aborigines in the labour market so that otherwise identical Aboriginal people are paid less than non-Aboriginal people.² Alternatively, it may reflect decisions by Aborigines not to maximise their money incomes but rather to place greater emphasis on non-pecuniary benefits. An example of this would be a nursing aide who chose to work for a lower salary in a familiar Aboriginal community rather than seek promotion involving a move to the city.

There are many other reasons why income may differ between individuals, such as inherited abilities, motivation and good luck. Another factor is the nature of the work; and the theory of compensating differentials formally takes this factor into account.³ According to this theory, workers require additional monetary incentives to take on dangerous or unpleasant work or to move to undesirable locations. This theory offers a plausible explanation of the result to be discussed below, i.e., that non-Aboriginal people receive a premium for working in remote parts of Australia.

These are the main factors which will be considered as possible sources of the differences between Aboriginal and non-Aboriginal income in the income functions to be reported below: first, the differences between the Aboriginal; and second non-Aboriginal population in their measured human capital endowments and the rewards for these endowments, specifically the effect of location of residence on income.

The model

The earnings equations to be estimated here include variables suggested by the human capital model. Each can be thought of as an 'hedonic price function which reflects the equilibrium of the supply and demand for workers at each level of schooling and experience (Willis 1986:529)'. The earnings function will be estimated in the semi-log form following Mincer (1974).

The basic equation to be estimated separately for Aboriginal and non-Aboriginal men and women is the following:

Gross weekly income = f(education, potential experience, family characteristics, location of residence, English-speaking ability). (1)

A detailed description of the variables is included in Appendix A.

Education and experience are included as central variables in the human capital model. Education has been included in two forms: one variable which measures the years spent at primary and secondary school; and a second group of variables relating to educational qualifications. The coefficient on the years-of-schooling variable shows the percentage increase in income with each additional year of primary and secondary schooling. This enables an estimation of the effect of additional schooling on the income of those who did not have any educational qualifications. Receiving a qualification is a further measure of educational attainment. Four education groups have been distinguished here: those who have not completed high school (the unqualified); those who were at least 17 when they left secondary school and are assumed to have a school leaving certificate of some sort (high); those who have completed some post-secondary qualification including a recognised trade qualification (post secondary); and finally those who have completed a university degree either at a bachelor or higher degree level (graduates).

Experience is measured as potential experience in the labour market (current age minus estimated years of full-time education minus 5). A preferred measure of the variable of real interest, the time spent in on-the-job training, is the time actually spent in employment, but this is unavailable in the census. If actual experience in employment is substantially less than an individual's potential experience, this will reduce the estimated impact of experience on income. The difference between potential and actual experience is important for particular groups, such as those which characteristically have an intermittent attachment to the labour force. For the purposes of this study, potential experience may be a particularly inappropriate measure of the labour market experience of Aboriginal people. There is case study evidence to suggest that Aboriginal people are more likely to be employed in casual and seasonal work and that the unemployment rate is much higher than for the rest of the population (Smith 1991). For these reasons potential experience is likely to overestimate the actual labour market experience of these people.

Many studies of the determinants of income have included family characteristics as important control variables.⁴ An individual's marital status is likely to affect their range of employment opportunities, the type of work they are willing to accept and their level of motivation. Given the traditional patterns of the division of labour within the family, the

number of dependent children is expected to have a negative effect on women's income from employment.

Location of residence has been shown to be an important determinant of economic status for both the Aboriginal and non-Aboriginal populations.⁵ Two variables which measure different aspects of location have been included here: the section-of-State variable which relates to settlement size and a second variable which divides Australia into remote and non-remote (settled) parts. A number of government agencies and academics have divided Australia into remote and settled parts, and the use of different criteria has produced very similar divisions of the country (see Taylor 1991 for a survey). Taylor's 1991 classification of Australia into remote and settled areas was based on these consensus views, with one exception. His classification included Townsville and Cairns in remote Australia in recognition of their importance as foci for internal migration among those in the remote areas of northern Australia. Here the more standard classification has been adopted of including Townsville and Cairns in settled Australia, as each of these towns is of sufficient size to have a developed formal labour market.

The coefficients on these locational variables can be seen as measuring the size of the compensating differential required to encourage people to live in particular places. Specifically, for non-Aboriginal people with a preference for living in the non-remote parts of Australia, a premium is required to encourage them to move to employment in the remote areas. In a perfect competitive labour market, where wages would not differ according to race, Aborigines already living in remote areas would also benefit from this income premium. Similarly, under the award system, Aboriginal people employed in remote areas are entitled to any special benefits (remote area allowance, airfares to the east coast etc.) outlined in the relevant award. Any difference between the size of the differential for Aboriginal and non-Aboriginal people suggests that they are apparently not considered as good substitutes in the labour market. This may result from discrimination against Aboriginal people by non-Aboriginal employers or fellow workers, or from differences between the two groups in their preferences for different types of employment. For example, Aboriginal people may prefer seasonal and casual work because it allows time for their own particular cultural activities. There may, however, be a financial cost to retaining this flexibility.

Ability to communicate in English has been included, as other studies have found this to be an important determinant of employment status and income (Jones 1990, 1991; Daly 1991). Those with poor English language skills are more likely not to be in employment than those with good language skills. Jones (1990) found that speaking a language other

than English was correlated with lower incomes for Aboriginal Australians.

The data

The data to be used in this analysis come from a randomly selected sample of Aboriginal and non-Aboriginal people of working age, taken from the 1986 Population Census. The sample was specifically created by the Australian Bureau of Statistics (ABS) for this research project. It consists of 25,240 Aborigines and 25,649 non-Aborigines.

The census has a number of shortcomings for the purpose of this analysis. The preferred measure of income from employment is hourly earnings. However, since 1976, the census has not included a question about sources of income. Consequently, there is no direct information on any individual's earnings from employment. Nor did the census seek detailed information on the number of hours worked each week, but it included broad categories of hours worked. This makes it very difficult to estimate hourly income where the categories cover a broad range of hours (for example 1-15 hours of work per week). In an attempt to reduce the problems associated with these two sources of measurement error in the dependent variable, the estimation presented here has been restricted to full-time workers (those working between 35 and 49 hours per week). The Income and Housing Survey conducted by the ABS in 1985-86 showed that 85 per cent of the income of those employed full-time came from employment. Thus, the census income figures for this group are probably an adequate indicator of earnings.

As already noted, the census question relates to current employment status. This means that a certain proportion of those currently in full-time employment may not have been in such employment for the year over which their income has been measured, and that their actual working experience may differ substantially from their potential experience.

Table 1 presents the mean incomes of Aboriginal and non-Aboriginal full-time workers according to their location of residence. In this sample, Aboriginal men in full-time employment had an average income of 75 per cent of non-Aboriginal men (column 3). The gap between the two groups was larger in remote areas than in settled areas. The Aboriginal average was 30 per cent below that of non-Aborigines in remote areas and 22 per cent below in the settled areas (column 3). While the average income of Aboriginal men in full-time employment in settled areas was higher than in remote areas, non-Aboriginal men on average earned slightly more in remote areas.

Table 1. Mean incomes of Aboriginal and non-Aboriginal full-time workers, 1986.

	Males			Females		
	Aboriginal (1)	Non- Aboriginal (2)	1/2 (3)	Aboriginal (4)	Non- Aboriginal (5)	4/5 (6)
Location						
Remote						
Income	\$279	\$401	0.70	\$259	\$289	0.90
Sample size	930	206		411	86	
Settled						
Income	\$309	\$398	0.78	\$269	\$312	0.86
Sample size	2308	5935		1189	3128	
Total						
Income	\$300	\$398	0.75	\$266	\$311	0.86
Sample size	3238	6141		1600	3214	

Source: 1986 Census.

Table 2. Mean values of the variables used in the income equations.

	Males		Females	
	Aboriginal	Non- Aboriginal	Aboriginal	Non- Aboriginal
Unqualified	0.70	0.40	0.65	0.48
High school	0.13	0.17	0.19	0.22
Post secondary	0.16	0.34	0.14	0.23
University graduate	0.01	0.09	0.02	0.07
Years of primary and secondary school	10.02	10.68	10.56	10.88
Experience	16.58	20.17	13.42	15.95
Single	0.48	0.32	0.52	0.41
Married	0.44	0.62	0.35	0.48
Widowed, separated divorced	0.08	0.06	0.13	0.11
Number of dependents	3.10	0.90	2.70	0.60
Poor English	0.01	0.02	0.01	0.02
Urban	0.32	0.68	0.41	0.72
Other urban	0.42	0.21	0.42	0.19
Rural	0.26	0.11	0.17	0.09
Remote	0.29	0.03	0.26	0.03

Source: 1986 Census.

Each group of women had higher average incomes in settled areas than in remote areas (columns 4 and 5), but the income gap between the groups was smaller in remote areas than in settled areas. Aboriginal women in full-time employment, on average, had an income of 86 per cent of that of non-Aboriginal women (column 6).

Table 2 presents the average characteristics of full-time workers in the samples. On average, the Aboriginal male in the sample had lower levels of education and experience. Aboriginal men were less likely to be legally married and had many more dependent children than non-Aboriginal men. They were more likely to live in remote areas, 29 per cent living there compared with 3 per cent of non-Aboriginal men. They were also more likely to live outside the major urban centres, two-thirds of Aboriginal men lived in other urban or rural locations compared with one-third of non-Aboriginal men.

Many of these differences applied also to women. Aboriginal women had less education in terms of qualifications than non-Aboriginal women although the difference in the number of years of primary and secondary schooling was smaller for women than for men. Aboriginal women were younger and had less potential labour market experience. They were less likely to be legally married and had more dependent children. Aboriginal women, as with Aboriginal men, worked in different locations to their non-Aboriginal counterparts. Over half of the Aboriginal women working full-time lived outside major urban areas compared with 27 per cent of non-Aboriginal women. A quarter of them lived in remote areas compared with a much smaller 3 per cent of non-Aboriginal women.

The regression results for equation (1) are reported in Table 3 for Aboriginal and non-Aboriginal men and women. The constant term in these equations relates to an unqualified urban dweller who is single, has no dependants, no qualifications or years of schooling, no labour market experience and is fluent in English. For each sex, this constant term shows a higher income for Aborigines than for non-Aborigines. But given that such an individual is hardly representative of either group, this result could not be used to argue that there was no discrimination against Aboriginal people. This point will be considered further below. The results for men and women will be considered in turn.

The education coefficients in the two equations relating to males show that there were substantial differences between Aborigines and non-Aborigines in the returns to an additional year of schooling and in the relative benefit of a university degree. Non-Aboriginal men were estimated to receive a four per cent addition to income with each additional year of schooling compared with 1 per cent for Aboriginal men. This result of a lower return to schooling for Aborigines was also

Table 3. Income of Aboriginal and non-Aboriginal men and women working full-time.

	Males		Females	
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
Intercept ^a	5.1009 (105.94**)	4.8752 (97.11**)	5.0482 (55.26**)	4.7769 (60.02**)
High school	0.1106 (5.04**)	0.0929 (5.66**)	0.1135 (3.90**)	0.1169 (5.22**)
Post-secondary	0.1886 (10.24**)	0.1714 (14.71**)	0.1727 (5.98**)	0.2038 (10.68**)
Graduates	0.6023 (7.64**)	0.5058 (25.87**)	0.5737 (8.12**)	0.4704 (15.77**)
Years of primary and secondary schooling	0.0149 (3.53**)	0.0390 (8.49**)	0.0110 (1.34)	0.0447 (6.06**)
Experience	0.0304 (15.18**)	0.0411 (25.16**)	0.0422 (13.38**)	0.0431 (17.81**)
Experience ²	-0.0005 (-12.28**)	-0.0007 (-20.64**)	-0.0009 (-11.71**)	-0.0008 (-15.34**)
Married	0.1443 (8.54**)	0.1112 (7.63**)	0.0012 (0.05)	0.0013 (0.07)
Widowed, separated, divorced	0.0943 (3.57**)	0.0519 (2.30*)	0.0574 (1.66)	0.0367 (1.32)
No. dependants	0.0059 (2.90**)	-0.0075 (-1.56)	-0.0003 (0.10)	-0.0741 (-9.74**)
Other urban	-0.0109 (-0.68)	-0.0365 (-2.99**)	-0.0216 (-0.95)	-0.0875 (-4.68**)
Rural	-0.1379 (-6.66**)	-0.1460 (-9.53**)	-0.1792 (-5.77**)	-0.2067 (8.55**)
Remote	-0.0257 (-1.54)	0.0576 (2.12*)	0.0432 (1.71)	0.0505 (1.12)
Poor English	0.0334 (0.55)	-0.1681 (-4.87**)	-0.3450 (-3.81**)	-0.0881 (-1.70)
R ²	0.25	0.35	0.23	0.28
Mean of dependent variable	5.6241	5.8910	5.5038	5.6476

a. The constant term measures the natural logarithm of income for an unqualified urban dweller who is single, has no dependants, no qualifications or years of schooling, no labour market experience and is fluent in English.

't' statistics are in brackets. Significant test statistics at the 5 per cent level are indicated by a * and those at the 1 per cent level by **.

Source: 1986 Census.

found by Jones (1991). Aboriginal men with high school or a post-secondary qualifications received similar additions to their income relative to an unqualified male as non-Aboriginal men. In comparison with an unqualified Aboriginal male with ten years schooling, Aboriginal graduates earned 63 per cent more, which is 5 per cent higher than the difference between the non-Aboriginal unqualified with ten years of schooling and graduates. It would appear that taking all the education variables into account, Aboriginal men gained less income from education compared with an unqualified male of their race than did non-Aboriginal men. The one exception was university graduates. This may reflect the influence of Affirmative Action programs on the employment of university graduates.

The returns to labour market experience were higher for non-Aboriginal than Aboriginal men. Non-Aboriginal men gained more from an additional year of experience than Aboriginal men until 26 years of experience, but towards the end of their working lives the negative effects of experience were smaller for Aboriginal men than non-Aboriginal men. It is, however, important to remember when making these comparisons between the two groups of men that potential experience may particularly overestimate the time spent in employment and on-the-job training for Aboriginal men compared with non-Aboriginal men. If there is a substantial difference, the returns to actual work experience may not differ as greatly as these estimates suggest.

The coefficients on the variables related to family characteristics suggest that these variables have different impacts on the earnings of Aboriginal than non-Aboriginal men. Married Aboriginal men earned relatively more than single Aboriginal men compared with married non-Aboriginal men relative to their single counterparts. While the presence of dependent children had a small but significantly positive effect on the income of Aboriginal men, dependants had a negative effect on the income of non-Aboriginal men. Perhaps living with dependent children is correlated with a more stable attachment to the workforce for Aboriginal men.

Living in a rural rather than an urban location has reduced income for both Aboriginal and non-Aboriginal men. The effect of living in a remote area including both rural and urban components, however, differed between the two groups. A positive and significant effect of remoteness was estimated for non-Aboriginal men. The results show that after holding everything else constant, for non-Aboriginal men, those living in the remote areas could be expected to earn an additional 6 per cent over those in the settled areas. The difference in after-tax income would be even greater, as there are tax rebates for people living in remote areas. In contrast, Aboriginal men in remote areas had less income than Aboriginal men in the settled areas, although the differences

were not statistically important at conventional levels of significance, and the null hypothesis stating that there was no real difference between the groups cannot be rejected.

The addition of the two coefficients on the remote and rural variables shows the effect on income for each of the groups, of residence in a remote rural area compared with a settled urban area, holding all other measured factors constant. The results show that non-Aboriginal men living in rural areas, on average, had higher incomes in remote than settled areas but lower incomes than those living in major urban areas.

The results do not show that poor English language skills had a negative effect on the income of Aboriginal men. But for the non-Aboriginal population it was associated with lower levels of income. Non-Aboriginal men with poor English skills could be expected to earn 17 per cent less than men of the same group with good English language skills.

The differences between non-Aboriginal and Aboriginal women were, in general, less pronounced than for men. Just as for men, Aboriginal women gained less for an additional year of schooling than non-Aboriginal women; a one per cent increase in income compared with 4 per cent for non-Aboriginal women. The results show lower returns to qualifications compared with an unqualified female with ten years of schooling for Aborigines. There was, however, further evidence that Aboriginal university graduates are particularly successful compared with their unqualified counterparts. These results show that an Aboriginal female with a university degree earned 60 per cent more than an unqualified Aboriginal female with ten years of schooling. But a non-Aboriginal female with a degree earned an additional 56 per cent more than a female with no qualifications and ten years of schooling.

Initially, the effect of additional potential experience on income was similar between Aboriginal and non-Aboriginal women. On average, for the whole sample, an additional year of experience raised income by 1.3 per cent for Aboriginal women and 1.7 per cent for non-Aboriginal women. Additional experience was estimated to continue to raise the incomes of both Aboriginal and non-Aboriginal women for thirty years, at which point income began to fall with further years of experience. The decline was more pronounced for Aboriginal than for non-Aboriginal women.

While marital status does not appear to be an important determinant of income for women, the number of dependent children had a significantly negative effect on the incomes of non-Aboriginal women. This result provides some support for the hypothesis that children restrict the

employment and income choices of women. However, this relationship was not significant for Aboriginal women.

Living outside a major urban area had negative effects on income for both Aboriginal and non-Aboriginal women. There was some evidence of an income premium in remote areas for each group of women, but the coefficient was not statistically significant. The results for Aboriginal people of both sexes therefore do not suggest that living in a remote area, compared with a settled area, is detrimental to the income status of Aborigines in full-time employment. This is, of course, only one aspect of the economic status of all Aborigines living in these areas, and location may have important implications for the probability of gaining full-time employment in the first place.

The sources of income differences

This section considers the sources of income differences between Aborigines and non-Aborigines for each sex in terms of endowments of human capital attributes and the rewards to these attributes. The question of whether there are differences between the labour market endowments of male and female Aboriginal people or whether they are rewarded differently for the same measured human capital will also be considered.

Any difference in the income of people of different race can be considered in three parts: one which is attributable to differences in human capital endowments; one which is attributable to differences in the rewards to these endowments; and one which is attributable to the error component in the regression (Oaxaca 1973; Blinder 1973).

$$y_{na} - y_a = (y_{na} - X_{na}b_{na}) - (y_a - X_a b_a) + (X_{na}b_{na} - X_a b_a) \quad (2)$$

$$\text{where } (X_{na}b_{na} - X_a b_a) = (X_{na} - X_a)b_a + X_{na}(b_{na} - b_a) \quad (3)$$

Where y is actual weekly income, X is a vector of endowments, b the estimated regression coefficients. The subscripts a and na refer to the Aboriginal and non-Aboriginal populations. The final term in equation 2 can be broken down into that part attributable to differences in endowments (the first term in equation 3) and that part attributable to coefficient differences (the second term in equation 3). This latter term will include any biases introduced by such things as the omission of relevant variables or measurement errors in the included variables, as well as differences between Aborigines and non-Aborigines in the 'true' coefficients. The decomposition can be best thought of as an accounting exercise.

The results of this exercise are presented in Table 4. For each racial group and sex the regression coefficients reported in Table 3 can be used to calculate predicted income for the average in the sample, using both the Aboriginal and non-Aboriginal coefficients. The results show that for men, 70 per cent of the estimated difference in predicted earnings can be accounted for by the lower level of human capital endowments of Aboriginal men compared with non-Aboriginal men. The lower levels of education and the greater proportion of Aboriginal men living in remote Australia, outside of the major urban areas, were important sources of the endowment differences. However, differences in the rewards to these endowments also played a part in accounting for their lower income. Thirty per cent of the gap can be accounted for by the lower returns Aboriginal men receive for a given set of endowments. Similar exercises, which try to explain the difference between the employment income of black and white Americans, have found that between 50 and 80 per cent of the difference can be accounted for by differences in the measured endowments (Ehrenberg and Smith 1987: 537).

Table 4. Estimated sources of income differences between Aboriginal and non-Aboriginal males and females.

	Males	Females
Predicted income		
Aborigines	\$280.2	\$243.9
Non-Aborigines	\$356.5	\$287.1
Income gap to explain (%) ^a	24.0	16.3
Attributed to endowments (%)	16.8	7.1
percentage of difference	70.0	44.0
Attributed to coefficients (%)	7.1	9.2
percentage of difference	30.0	56.0

a. The calculation is based on equation 3. Alternative calculations can be made, using the non-Aboriginal coefficients to measure the endowment difference. The results based on these alternative weights show that endowment differences were slightly more important in accounting for the income gap between Aboriginal and non-Aboriginal men and much more important in explaining the income gap between Aboriginal and non-Aboriginal women.

Source: 1986 Census.

The results presented in Table 4, column 2, for women, show that the gap between the income of Aboriginal and non-Aboriginal women working full-time was smaller than between men. Endowment differences were less important in accounting for the gap than they were for men. Forty-

four per cent of the difference was attributed to differences in endowments. Location of residence outside of the major urban areas, their larger number of dependent children and their lower educational attainment were factors which reduced the relative income of Aboriginal women. The remaining 56 per cent of the gap was attributable to coefficient differences. Particularly important were the small returns to additional years of schooling for Aboriginal compared with non-Aboriginal women.

Table 5. Predicted income for the average male and female working full-time.

	Aboriginal coefficients	Non-Aboriginal coefficients
Males	\$330.89	\$355.76
Difference due to coefficients	7.0 per cent	
Females	\$261.61	\$286.23
Difference due to coefficients	9.0 per cent	

Source: Tables 2 and 3.

Table 5 presents the results of an additional test of the importance of differences in the rewards to endowments. In this table, the characteristics of the average male and female in the Australian population who worked full-time have been used as a basis for comparing the overall effects of differences in the coefficients for Aboriginal and non-Aboriginal people. As Aborigines only account for a little over 1 per cent of the working-age population, the averages used here are very close to the averages for the non-Aboriginal population (see Table 2). The results show that both the average Australian male and the average Australian female in full-time employment would receive a lower income if their endowments were rewarded according to the Aboriginal rather than the non-Aboriginal coefficients of each sex. The average male would have an income 7 per cent lower if paid according to Aboriginal coefficients, and the average female, 9 per cent less.

It is tempting at first glance to attribute these differences to discrimination against Aboriginal people, and this may indeed be a part of the explanation of the lower returns which Aboriginal people receive for their human capital attributes. There have been few systematic attempts to collect evidence of discrimination against Aboriginal people although it is frequently assumed to exist. One study by Larsen et al.

(1977) found evidence of discrimination against Aboriginal people in Townsville in the areas of employment, housing and hotel access.⁶

There are, however, alternative explanations of the lower returns to human capital amongst Aborigines. Aboriginal people may make employment choices which do not maximise their monetary income potential. Those living in remote areas and unwilling to migrate to more lucrative employment may find themselves restricted in their choice of employment to jobs which do not use their skills fully. Even if such work existed, they may prefer to take casual work which gives them greater flexibility in their use of time. The estimates presented here do not make possible a further decomposition of the sources of difference in the coefficients into that part which is attributable to factors on the demand side of the labour market (discrimination) and that part attributable to supply side factors.

A third possibility is that the coefficient differences arise because of measurement problems. The explanatory variables included are the best available estimates of a range of underlying factors which are expected to have an important influence on income. As already discussed, the lower returns to labour market experience for Aboriginal men may reflect the fact that the difference between actual and potential labour market experience is greater for Aboriginal men than for non-Aboriginal men. Another example is the years-of-schooling variable. American evidence suggests that, on average, black Americans have in the past received lower quality schooling than white Americans. Several studies have attributed part of the growth in relative black incomes in the 1960s and 1970s to raising the quality of schooling (Smith and Ward 1989; Card and Krueger 1992). The schooling received by Aboriginal Australians may also be of inferior quality, but this will not be measured by the crude count of the number of years of schooling. The lower return to years of schooling for Aboriginal people may just reflect the fact that they have received less schooling over a given number of years than their non-Aboriginal counterparts. The results can, however, be taken as a signal that schooling is an important policy variable requiring further analysis.

Although it is perhaps safer to think of the coefficient differences as a 'measure of our ignorance', rather than at this stage to attribute the differences to any particular source (for example discrimination), these results could be used to argue that lower levels of educational attainment and location of residence outside major urban areas are important factors accounting for the lower income of Aboriginal people. The fact that a greater proportion of Aboriginal people live in remote parts of Australia, however, may work to their advantage. Non-Aboriginal people receive an income premium for working in these areas, which Aboriginal people

can also benefit from. This is not to suggest that there are any easy solutions to the problems of employment in remote areas (see Taylor (1988) and Altman and Smith (1990) for a discussion of some of the problems encountered in recruiting Aboriginal people to work in the mining and tourist industries in remote areas). One of the main issues is whether Aboriginal people really want to be employed in mainstream labour market activities.

Finally, in Table 6, the incomes of Aboriginal men and women working full-time are compared. The average Aboriginal male had an income 13.9 per cent higher than the average Aboriginal female. The decomposition

Table 6. Estimated sources of income differences between Aboriginal men and women.

	Male coefficient	Female coefficient
Income gap to explain ^a	13.9	
Attributed to endowments	1.3	1.4
percentage of difference	9.4	10.1
Attributed to coefficients	15.1	12.5
percentage of difference	108.6	89.9

a. The calculation is based on equation 3.

Source: 1986 Census.

of this gap into endowment and coefficient differences is presented, using both sets of coefficient weights. The results show that endowment differences accounted for a relatively small part of the income differences (about 10 per cent). Coefficient differences were the major source of lower incomes for working Aboriginal women. Among these, the lower returns to education for Aboriginal women and the different effects on income of family characteristics were most important. Family characteristics also had different effects on the income of non-Aboriginal men and women. This more general result probably reflects the division of labour within the family.

Conclusion

Although Aboriginal people in full-time employment have lower incomes, on average, than non-Aboriginal people in full-time employment, they are a privileged group in terms of income, when

compared with other Aboriginal people. This paper has used the framework of human capital theory to decompose the differences in income for Aboriginal and non-Aboriginal men and women in full-time work into that part which can be accounted for by differences in the labour market attributes of Aboriginal people and unexplained differences in the rewards to these endowments.

The results show that Aboriginal males gained less from education than non-Aboriginal men and had lower returns to labour market experience. While income was lower for all men living outside the major metropolitan areas, remoteness had a different effect on the income of Aboriginal compared with non-Aboriginal men. The regression results show that holding other things equal, non-Aboriginal men received a premium for living in remote areas. This result was not found for Aboriginal men. The income difference between these two groups of men was decomposed into that part which can be attributed to differences in measured endowments and that part which is attributable to coefficient differences. An important result of the study is that endowment differences are the major source of income differences between Aboriginal and non-Aboriginal men. However, different rewards for these endowments also made an important contribution to the total gap. The methodology used does not enable a further decomposition into that part attributable to factors on the demand side of the labour market (for example, discrimination) and that part attributable to factors on the supply side; for example, different preferences for market work among Aboriginal compared with non-Aboriginal men.

The income differences were smaller for women. This result is also found in American studies of the black/white earnings differential (Smith and Ward 1989). The returns to education were in general lower for Aboriginal women, but there was not a large difference in the returns to labour market experience. While residence outside a major urban area reduced income, there was not a statistically significant relationship between income and remoteness. The conclusion concerning the relative importance of endowments and coefficients in explaining the Aboriginal/non-Aboriginal income gap was more dependent on the choice of coefficient weights than for men. A minimum estimate is that 44 per cent of the gap could be attributed to endowment differences.

The results have several policy implications. They emphasise the role of education and working experience in raising income. An important issue requiring further investigation is the quality of education currently received by Aboriginal people. Evidence from the US suggests that raising the quality of education offered to black Americans made an important contribution to improvements in their relative income.

Another issue requiring further study is the mechanism by which labour market experience raises income. Aboriginal people employed under the Community Development Employment Projects (CDEP) scheme will be accumulating labour market experience. Unless this experience can be used to gain mainstream employment, it will not result in higher incomes, as the wage these people receive is based on welfare entitlements rather than work experience. This group is not included in the analysis presented here because they are not in full-time employment. The results, however, raise the issue of the relationship between experience and income for CDEP workers.

Better measures of actual labour market experience are required. The Census does not ask a question about the number of weeks worked in a year. A question on this topic in the forthcoming special survey of the Aboriginal population would be extremely useful for documenting the extent of intermittent labour supply among Aboriginal people (Daly 1992).

If the differences in the rewards to a given set of measured endowments reflects differences in the supply side preferences of Aboriginal people, rather than discrimination, affirmative action policies are unlikely to have a major impact, at least in remote areas. There are examples of unsuccessful attempts to encourage Aboriginal people into mainstream employment in remote areas (Altman and Smith 1990; Taylor 1988) which suggest that changes are required on both the supply and the demand sides of the labour market if Aboriginal people are to be encouraged into mainstream employment. For example, on the supply side, Aboriginal people may become discouraged by negative experiences in employment and not seek work. In this instance, affirmative action policies are likely to have a limited impact. The challenge for policy makers is to think of ways in which Aboriginal people could be encouraged to turn to their advantage what is often seen as the location disadvantage of living in remote areas.

Notes

1. For surveys of this literature see Ehrenberg and Smith (1987) and Siebert (1985).
2. For recent surveys of the discrimination literature see Blau and Ferber (1987) and Gunderson (1989).
3. The theory was originally expounded by Adam Smith in the *Wealth of Nations*. For a more modern treatment see Rosen (1986).
4. See Gregory et al. (1989) and Chapman and Mulvey (1986). Hill (1979) presents a survey of American evidence and a discussion of the reasons for including marital status in earnings regressions.

5. Geographical divisions of Australia have provided a framework for a number of studies of Aboriginal economic status. See, for example, Altman and Nieuwenhuysen (1979), Fisk (1985) and Tesfaghiorghis (1991a, 1991b). Location of residence has also been shown to be important for the income status of the Australian population in general. See, for example, Gregory et al. (1989) and Chiswick and Miller (1985).
6. Riach and Rich (1987) conducted a similar test for sexual discrimination among a group of Melbourne employers and concluded that women did face discrimination.

Appendix A

Definition of variables

Education

- i Years of schooling - years of primary and secondary schooling were calculated by age left school minus 5 with a maximum value of 12.
- ii Unqualified - a dummy variable taking the value of one for those who left school before the age of 17 and had no further post-secondary qualification.
- iii High - a dummy variable taking the value of one for those who left school with a minimum of twelve years of schooling but no further post-secondary qualification.
- iv Post-secondary - a dummy variable taking the value of one for those who had completed a trade or other post-secondary qualification.
- v University graduate - a dummy variable taking the value of one for those who had completed an undergraduate or postgraduate degree.

Experience

Experience - current age minus the estimated years in education minus five.

Family characteristics

- i Married - a dummy variable taking the value of one for those who were legally married.
- ii Widowed, separated and divorced - a dummy variable taking the value of one for those who were widowed, separated or divorced.
- iii Single - a dummy variable taking the value of one for those who had never been married.
- iv Number of dependent children - the number of dependent children in the family with a maximum value of eight.

Location

- i Major urban - a dummy variable taking the value of one for those who lived in major urban settlements, i.e. of more than 100,000 inhabitants.
- ii Other urban - a dummy variable taking the value of one for those who lived in other urban settlements, i.e. of between 1,000 and 99,999 inhabitants.
- iii Rural - a dummy variable taking the value of one for those who lived in rural areas, i.e. of less than 1,000 inhabitants. This category also included migratory people.
- iv Settled/remote - a dummy variable taking the value of one for those who lived in remote Australia as defined by Taylor 1991 with the modification that the Cairns and Townsville collection districts are included in settled Australia and zero for those in settled Australia.

Language

Poor English - a dummy variable taking the value of one for those who registered an inability to communicate easily in English.

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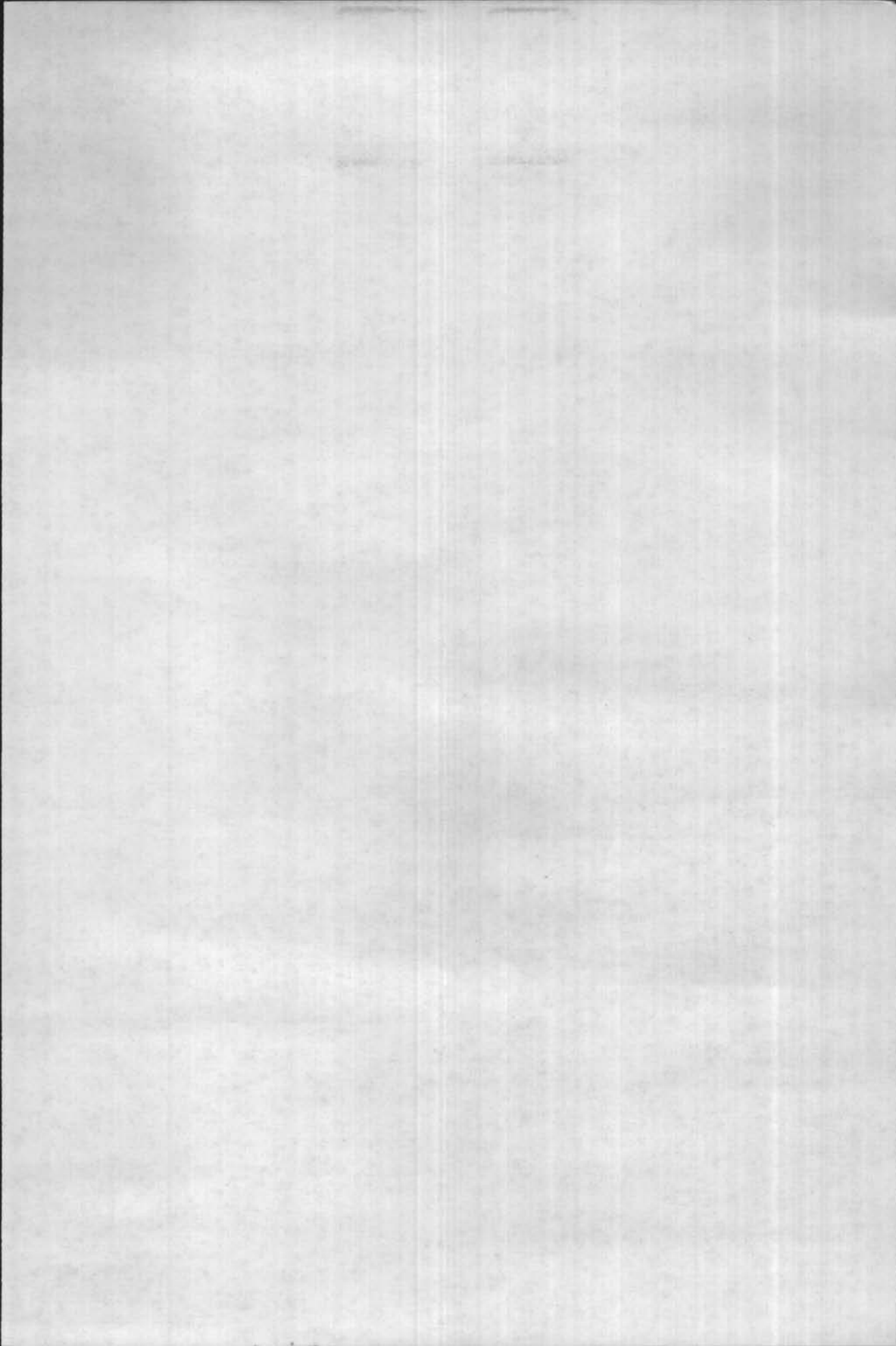
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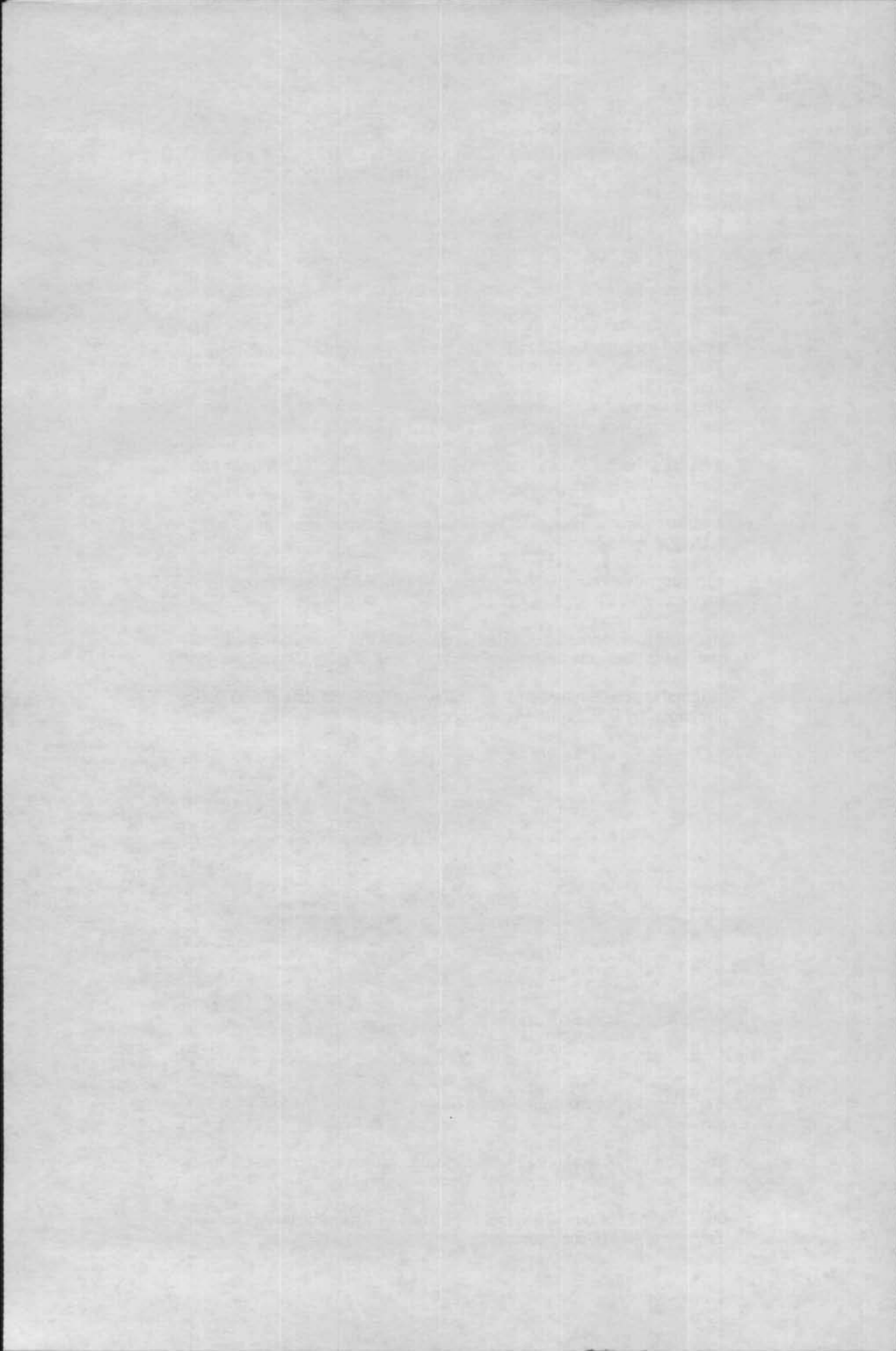
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