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The Determinants of Earnings for Indigenous Australian Workers

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Abstract

Reducing the disadvantages faced by Indigenous Australians in relation to employment outcomes has become an important issue. There have been several studies which have focused on the factors associated with Indigenous Australians' labour force status. There is, however, only limited research on the factors which influence the earnings of Indigenous men and women. This paper enhances this literature by providing a detailed analysis on the factors which determine the earnings for Indigenous Australian workers, conditional on them being employed. The paper also estimates how Indigenous men and women's labour force participation decisions respond to changes in their potential earnings. The paper focuses on the extent to which human capital theory can explain the earnings of Indigenous Australians. It finds that the earnings of Indigenous Australians can largely be explained by their education levels and a number of demographic and job characteristics. The paper also finds that Indigenous Australians' labour force participation decisions respond positively to increases in their potential earnings. The results suggest that the human capital framework is appropriate for explaining Indigenous Australians' earnings.

Keywords: Economics of minorities, Labour force and employment, Wage level and structure

JEL Classification: J15, J21, J31

1. Introduction

It has been widely established that Indigenous Australians are disadvantaged in terms of employment and work conditions. Recent data suggests that only 51.5 per cent of Indigenous men and 41.4 per cent of Indigenous women are employed (Australian

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Bureau of Statistics, ABS, 2012). Most research on the employment outcomes of Indigenous Australians focuses on the factors associated with labour force status. There is limited research on the factors associated with the outcomes of those who are employed. Specifically, there is limited research on the factors associated with the earnings of Indigenous Australian workers.

It has been reported that the two main influences on the earnings of Indigenous Australians are their age (to proxy their labour market experience) and their education level.[1] The relationship between age and earnings for Indigenous Australians is consistent with human capital theory in terms of the earnings premiums associated with labour market experience. It has been commonly reported that there is an 'n' shaped pattern between earnings and Indigenous Australians' age (Daly and Hunter, 1999; Nepal and Brown, 2012; Daly and Liu, 1997 and Junankar and Liu, 2003). For example, Stephens (2009) suggests that the earnings for Indigenous Australians peak around the age group of 25 to 34 years for men and 35 to 44 years for women. Junankar and Liu (2003) suggest that earnings peak at age 44 for Indigenous men and age 40 for Indigenous women. These findings are of similar magnitudes to what has been reported for the total Australian population (see Preston, 2001).

It has also been suggested that Indigenous Australians' earnings are positively associated with their education level (Junankar and Liu, 2003; Daly, 1995; Hunter, 2006; Hunter and Gray, 2001; Jones, 1993 and Daly and Hunter, 1999). For instance, Daly (1995) reports that Indigenous men with certificate qualifications have earnings that are 15 per cent higher than the earnings of Indigenous men without post-school qualifications. Daly and Hunter (1999) suggest that Indigenous men and women with degrees or diplomas have earnings that are 20 and 27 per cent larger than the earnings of their counterparts without post-school education.

It appears that the relationship between education and earnings for Indigenous Australians is less pronounced than that for the total population. For example, Preston (2001) found that Australian men and women with degree level educational attainment have earnings that are 61.1 and 53.2 per cent higher than the earnings of men and women who have not completed high school. Moreover, it has been suggested that traditional economic theory, such as human capital theory, can only partially explain the earnings for Indigenous Australians and that other theories such as segmented labour market theory may be more relevant (see Stephens, 2010 for studies which examine this theory). This theory suggests that there are primary labour markets which offer many career opportunities and there are secondary labour markets which offer little opportunities. It has been suggested that Indigenous Australians are more likely to face this secondary labour market.

There are a number of limitations in the existing literature on the determinants of earnings for Indigenous Australians. First, most studies use data that is now fairly outdated. For example, Stephens (2009) used data from 2002 and Junankar and Liu (2003) used data from 1991. It is possible that the determinants of earnings for Indigenous Australians have changed. Given that the Australian Government has set

[1] The review in Stephens (2009) suggests that other demographic and household characteristics, such as health and marital status also impact Indigenous Australians' earnings, though the impact of these characteristics varies across studies.

a target of reducing the gap between the labour market outcomes of Indigenous and non-Indigenous Australians by 2018, it seems important to provide an analysis of the determinants of earnings for Indigenous Australians using recent data.[2] Moreover, given the recent improvements in the educational attainment of Indigenous Australians, it also seems important to revisit the question of whether human capital theory can now explain the earnings of Indigenous Australians.[3]

Second, most of the literature on the determinants of earnings for Indigenous Australians does not control for the potential of sample selection bias in the estimation of earnings. Most studies examine the determinants of earnings for Indigenous Australians by restricting the samples to those who work. The theory of labour supply suggests that potential biases can occur when estimating earnings without controlling for the probability of being employed (Heckman, 1979 and Killingsworth, 1983). This issue may be of importance to Indigenous Australians given their relatively lower employment rates. The study by Birch (2005b) found that there were substantial differences in the determinants of earnings when controlling for and not controlling for sample selection bias for groups of women with low employment rates.

Finally, most studies on the earnings of Indigenous Australians do not examine how improvements in earnings may potentially impact on labour force participation decisions. It is possible that Indigenous Australians have positive labour force participation elasticities with respect to potential earnings. Analysing how Indigenous Australians' labour force participation may respond to changes in their potential earnings may provide researchers and policymakers with a greater understanding of the potential options to increase labour force participation for Indigenous Australians.[4]

The purpose of this paper is to provide a detailed analysis of the earnings for Indigenous Australians who work using recent data from 2008. The paper estimates the determinants of earnings controlling for the probability that the individual works full-time, based on the two-stage procedure developed by Heckman (1979). The paper considers the determinants of earnings separately for Indigenous men and women. It is structured as follows. Section 2 discusses the data, theoretical model and estimation procedure. Section 3 presents the empirical results. A summary, including potential policy implications, is presented in section 4.

2. Data, Theoretical Model and Estimation Procedures

The data used in the empirical analyses are drawn from the 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) conducted by the ABS. The NATSISS contains detailed information on the socioeconomic characteristics of

[2] This target is part of the 'Closing the Gap' initiatives introduced by the Australian Government in 2008 (see Macklin, 2008)

[3] For example, the proportion of Indigenous Australians who had completed Year 12 or a skilled vocational qualification more than doubled from 16 per cent in 1994 to 37 per cent in 2008 (ABS, 2011).

[4] This paper focuses on the labour supply of Indigenous Australians and does not consider demand side factors. Gray *et al*. (2012) suggest that the employment rates of Indigenous Australians are influenced by a number of demand side factors including difficulties in finding work due to being located in areas with fewer jobs, competing with non-Indigenous Australians with higher levels of education and training, prejudices amongst employers, and having lower levels of health.

individuals who identify themselves as being of Aboriginal or Torres Strait Islander origin. The survey covers Indigenous Australians living in remote and non-remote areas of Australia and is the most recent and national survey specific to the Indigenous population (see ABS, 2009 for further details on the NATSISS). The data sample is restricted to Indigenous Australians aged 15 to 64 years and excludes individuals who were missing information on the variables considered in the analysis. The overall data sample is comprised of 3,137 men and 4,128 women.

A limitation of the 2008 NATSISS is that it does not contain information on an individual's earnings, only their personal income. To overcome this and facilitate an analysis on the factors associated with earnings, the study focuses on the weekly personal income of Indigenous Australians who are employed full-time (i.e., work 35 or more hours a week) and who report that their principal source of weekly personal income is from their employer as well as report that they do not receive Government pensions or allowances.[5] Approximately 37.3 per cent of the sample of Indigenous Australian men and 15.4 per cent of the sample of Indigenous Australian women fit these criteria.[6]

To estimate the determinants of earnings conditional on working, the paper first estimates the probability that the individual is employed on a full-time basis. It then estimates earnings taking into account the fact that the individual works. Following a model analogous to the standard labour supply theory outlined in Killingsworth (1983), the individual's decision to work full-time is based on a comparison of their potential market wage (i.e., the wage that they would earn if they worked in full-time employment), their non-wage income and reservation wage (measured by the value placed on not working full-time and proxied by variables such as children). The probability that the individual is employed full-time for the j^{th} person can be written as:

$$\Pr(j\ works) = \Pr\left(\beta_{w_0} + \beta_{w_1} A_{w_j} + \varepsilon_{w_j} > \beta_{r_0} + \beta_{r_1} V_j + \beta_{r_2} A_{r_j} + \varepsilon_{r_j}\right). \quad (1)$$

Where A_{w_j} is a vector of observable characteristics which affect the market wage (w), A_{r_j} is a vector of observable characteristics which affect the individual's reservation wage (r), V_j represents the individual's non-wage income, ε_{w_j} is the mean-zero random error term representing the unobserved characteristics which affect the individual's market wage such as motivation, and ε_{r_j} is a mean-zero error term representing the

[5] This eliminates Indigenous Australians who receive auxiliary Government payments such as the Family Tax Benefit.

[6] Most literature on the earnings of Indigenous Australians is based on personal income rather than actual wages due to data limitations (the exception being Daly and Hunter (1999) who used wage data from the 1994 NATSISS). It is noted that the measure of earnings used in this paper may capture income from sources other than wages and salaries. However by placing the described restrictions on earnings, other income transfers are somewhat eliminated. Earnings equations are also estimated on samples restricted to couple only families to eliminate potential payments of child support for lone parents. The Indigenous earnings studies by Daly (1995) and Jones (1993) also restrict their samples to full-time workers. Daly (1995) indicates that this is to provide an adequate indicator of earnings when using personal income as the measure. In addition, Preston (2001) notes that most Australian studies on the broader population which examine earnings use income as the dependent variable.

unobserved characteristics which affect the individual's reservation wage such as desire for leisure time. Equation (1) is estimated using a Probit model where the market wage and reservation wage are specified in their reduced-form and the error term becomes ε_{d_j} (where $\varepsilon_{d_j} = \varepsilon_{w_j} - \varepsilon_{r_j}$).

The estimates obtained from equation (1) are then used to construct a sample selection bias correction term, λ. Based on Heckman (1979), this is given by:

$$\lambda = f\left(\frac{-K_j}{\sigma_d}\right) \Big/ \left(1 - F\left(\frac{-K_j}{\sigma_d}\right)\right). \tag{2}$$

Where f is the standard normal density function and F is the standard normal cumulative density function.

The second stage of the analysis is to estimate the determinants of earnings for workers correcting for selection bias ($\hat{\lambda}_j$). Hence the market wage equation can be written as:

$$w_j = \beta_{w_0} + \beta_{w_1} A_{w_j} + \beta_{w_2} \hat{\lambda}_j + \upsilon_j. \tag{3}$$

Killingsworth (1983, p.159) suggests β_{w_2} should be interpreted as an estimation of the covariance of the ratio of σ_{wd}/σ_d where σ_{wd} is the covariance between (ε_{w_j}) and the error term in the reduced-form model to estimate the probability of working full-time (ε_{d_j}). Equation (3) is estimated using Ordinary Least Squares (OLS) and market wages are measured by the log of weekly earnings.[7] The individual's earnings are modelled as a function of their education, computer usage, age, language spoken at home, disability status, marital status, locality of residence, whether they live in a household with only Indigenous persons and a number of cultural and behavioural characteristics.[8] An extended market wage model is also estimated controlling for a number of job characteristics of workers.

Overall, the mean weekly earnings for full-time workers are $1,021 for Indigenous men and $940 for Indigenous women. As shown in figure 1, consistent with human capital theory, there is considerable variation in weekly earnings by educational attainment. For Indigenous men working full-time, their weekly earnings vary by approximately 60 per cent, from $846 for those with Year 8 or lower educational attainment to $1,381 for those with degree or higher levels of educational attainment. The weekly earnings of Indigenous women working full-time vary by over 90 per cent from $645 for women with Year 8 or lower levels of education to $1,232 for those with degree or higher education levels.

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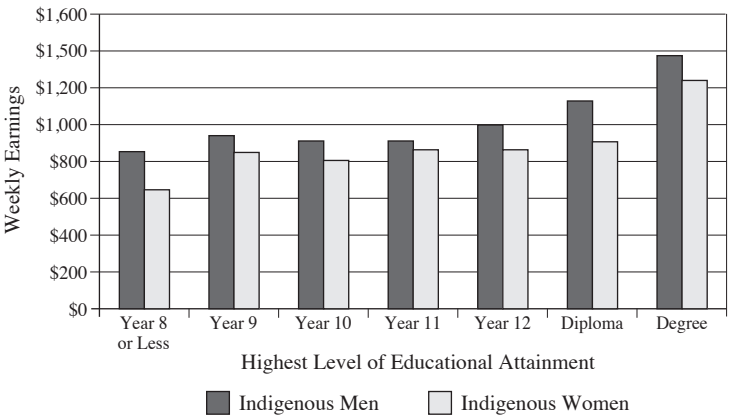
[7] It is not possible to estimate the hourly earnings of full-time workers as the 2008 NATSISS only has broad hours of work categories (i.e., '35-39 hours', '41-48 hours' and '49+ hours') for those working full-time. The hours included in these categories are too wide to use the mid-points to construct a continuous variable for hours of work which would then be used to construct hourly earnings.

[8] Table A1 of the Appendix contains a description of the variables used to estimate earnings. The sample includes 12 Indigenous Australians who are participants in Community Development Employment Projects (CDEP).

Figure 1 - Mean Weekly Earnings of Indigenous Australians Working Full-Time by Educational Attainment



To estimate how Indigenous Australians' labour force participation may respond to changes in potential earnings, labour force participation elasticities are estimated.[9] These elasticities essentially show how the probability of participating in the labour market is influenced by a change in potential earnings (based on the earnings of those who are employed and working on a full-time basis). To compute the labour force participation elasticities with respect to potential earnings, the estimates obtained from the second stage of the Heckman procedure (i.e., the estimation of equation (3)) are used to form a predicted wage variable. This estimate of predicted wages is then included in a labour force participation model. The model to estimate the probability of participation in the labour market is similar to equation (1) except for the fact it estimates the labour force participation decision (in place of the estimation of the probability of working full-time) and includes an estimate of predicted wages ($\hat{w}$) in place of the vector of observable characteristics which influence market wages (i.e., in place of β_{0w_j}). In other words, the estimation of the labour force participation elasticity with respect to earnings is obtained by:

$$LFPN = \beta_0 + \beta_1 \hat{w}_j + \beta_3 V_j + \beta_4 A_{r_j} + \varepsilon_{d_j}. \quad (4)$$

Where *LFPN* is equal to one if the individual participates in the labour market and is equal to zero otherwise. Equation (4) is estimated using a Probit model. Following Birch (2005b), the estimation of the labour force participation elasticity with respect to wages is then determined by:

[9] As noted in Birch (2005a) is it also conventional for labour supply studies to estimate hours of work elasticities with respect to earnings. Hours of work elasticities have not been estimated in this paper due to the fact that they require the estimation of how predicted wages influence the number of hours worked (usually using a continuous hours of work variable, see Birch, 2005b). As noted above there is not suitable information in the NATSISS to construct a continuous hours of work variable for full-time workers.

$$LFPN \text{ elasticity} = \partial LFPN/\partial \hat{w} \cdot \hat{w}/LFPN \quad (5)$$

Where $\partial LFPN/\partial w = \phi(\hat{\beta}_1 x_1)\hat{\beta}_{\hat{w}}$ and ϕ is the standard normal density function, x_1 is the set of regressors included in the market wage equation (equation (3)), $\hat{\beta}_1$ is the associated estimated coefficients of the regressors included in the market wage equation and $\hat{\beta}_{\hat{w}}$ is the estimated coefficient of the predicted wage variable. The elasticities are evaluated at the mean labour force participation rate. A limitation of the estimation of the elasticities is that it is not possible to examine the relationship between labour force participation and hourly earnings or the relationship between hours of work and hourly earnings due to the data limitations. As such, the elasticities only establish a relationship between Indigenous Australians' labour force participation decisions and their potential earnings.

The empirical analysis estimates the determinants of earnings conditional on working, as well as the labour force participation elasticities with respect to earnings using separate samples of Indigenous men and women as well as for samples of Indigenous men and women from couple only families.

3. Empirical Results

The results from the estimation of the determinants of earnings for Indigenous men and women, conditional on them working 35 or more hours per week are presented in tables 1 and 2, respectively.[10] The dependent variable for the analyses is the logarithm of weekly earnings and each model controls for sample selection bias. Overall, the earnings model performs relatively well. The adjusted R^2s indicate that variables included in the model account for 18.0 to 23.1 per cent of the variation in earnings for Indigenous men and 27.8 to 33.8 per cent of the variation in the earnings for Indigenous women. Whilst the adjusted R^2s are smaller than what have been reported in comparable studies for the general Australian population (i.e., Preston, 2001 reports adjusted R^2s of 0.437 and 0.412 for earnings models on men and women), they are on par with those reported in other Australian studies on Indigenous earnings such as Junankar and Liu (2003) who report adjusted R^2s of 0.230 for Indigenous Australian men and 0.190 for Indigenous Australian women.

Tables 1 and 2 show that Indigenous Australians' earnings are positively associated with their levels of education. For example, the earnings of Indigenous men and women whose highest education level is the completion of high school (*Year 12*) are 23.0 and 20.1 per cent higher than the earnings of Indigenous men and women whose highest education level is less than Year 9. The earnings for those with diplomas (*Diploma*) are 28.1 and 18.8 per cent higher than the earnings of Indigenous men and women without the completion of Year 9 and Indigenous men and women with degrees (*Degrees*) have earnings that are 40.9 and 38.6 per cent higher than the earnings of their counterparts with less than Year 9 education. The strong positive relationship between education and earnings presented in tables 1 and 2 may suggest that human capital theory is relevant in explaining the earnings of Indigenous men and women.

[10] The results from the estimation of the probability of working full-time are presented in table A2 of the Appendix. The results are consistent with other studies using the 2008 NATSISS data by Kalb *et al*. (2012) and Savvas *et al*. (2011).

The impact of education on earnings found in this study is more pronounced than in other studies on Indigenous earnings using earlier data (e.g., Stephens, 2009 and Daly, 1995). It is possible that there have been improvements in the earnings of Indigenous Australians with post school qualifications in the past decade given that the results are moving closer in magnitude to the earnings premiums for educational attainment for the general Australian population (see Preston, 2001 for a review of studies). The fact that the earnings premiums associated with educational attainment for Indigenous Australians are still lower than that for the wider Australian population may indicate that many Indigenous Australians may face the 'secondary labour market' which offers fewer career opportunities. Additionally, it may also reflect discrimination in earnings for Indigenous Australian workers.

Tables 1 and 2 indicate that the earnings premiums associated with education are lower for Indigenous women than Indigenous Australian men with the gap in the earnings premium being 2.9 percentage points for those holding a Year 12 qualification, 9.3 percentage points for those holding diplomas and 2.3 percentage points for those holding degree qualifications. The gender differentials for the earnings premium associated with education are consistent with the findings reported in many earnings studies for the general population (see Preston, 2001 for a review of studies). Miller (2005, p.408) suggests that the lower earnings returns to education experienced by women can be linked to the fundamental operations of the Australian labour market which systematically disadvantages women and regardless of the type of jobs and education that women have, they receive lower earnings than men.

Consistent with most studies in the literature, tables 1 and 2 show that the earnings of Indigenous Australians vary according to their age. The earnings for Indigenous Australians peak at 47 years for men and 44 years for women. These ages are relatively on par with the Junankar and Liu (2003). They are also relatively consistent with earnings studies on the general population, based on measures of labour market experience.[11]

Indigenous Australians whose main language spoken at home is a language other than English (No English) were found to have lower earnings than those who speak English at home. For Indigenous men, speaking a language other than English at home is associated with a reduction in earnings of 13.8 per cent. For Indigenous women, the reduction in earnings is 27.5 per cent. The negative impact of speaking a language other than English at home on earnings is similar to other Australian studies that have found that immigrants who speak a language other than English at home face significant disadvantages in the labour market including lower earnings (e.g., Chiswick and Miller, 1995). It may indicate that English language skills are an important aspect in improving Indigenous Australians' earning capacity. Alternatively, these results

[11] Most studies on Indigenous Australians' labour market outcomes use age as a proxy for labour experience over the standard proxy of labour market experience commonly used in wage studies on the general population (where experience is measured as age minus years of schooling minus five). This may be due to difficulties in measuring years of schooling for Indigenous Australians given the high level of Indigenous students who repeat a year of schooling (see Anderson, 2013) and difficulties in accurately measuring years spent working due to Indigenous Australians' high movement among labour states (e.g., employed, unemployed and not in the labour market) (see Gray and Hunter, 2005).

Table 1 - Results From the Estimation of the Determinants of Weekly Earnings for Indigenous Men[a]

	Panel (i) All Indigenous Men				*Panel (ii) Indigenous Men in Couple Families*			
	Without Job Characteristics		*With Job Characteristics*		*Without Job Characteristics*		*With Job Characteristics*	
Variable	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*
Constant	6.070 (0.239)***	NA	5.945 (0.239)***	NA	6.116 (0.237)	NA	6.088 (0.231)	NA
Education Characteristics:								
Year 9	0.167 (0.119)		0.165 (0.115)		0.111 (0.090)		0.077 (0.082)	
Year 10	0.124 (0.116)		0.125 (0.112)		0.061 (0.084)		0.046 (0.078)	
Year 11	0.150 (0.117)		0.143 (0.116)		0.024 (0.090)		0.010 (0.084)	
Year 12	0.207 (0.125)*	0.230	0.212 (0.125)*	0.236	0.112 (0.089)		0.092 (0.084)	
Diploma	0.247 (0.120)**	0.281	0.260 (0.124)**	0.296	0.167 (0.083)**	0.182	0.156 (0.079)**	0.169
Degree	0.343 (0.157)**	0.409	0.348 (0.195)*	0.410	0.334 (0.094)***	0.397	0.317 (0.093)***	0.373
Computer	0.026 (0.041)		0.013 (0.042)		0.082 (0.040)***	0.055	0.065 (0.039)*	
Demographic Characteristics:								
Age	0.029 (0.009)***		0.027 (0.008)***		0.023 (0.010)***		0.017 (0.010)*	
$Age^2/100$	-0.030 (0.010)***		-0.029 (0.010)***		-0.022 (0.010)***		-0.015 (0.010)	
No English	-0.149 (0.072)**	-0.138	-0.144 (0.068)**	-0.134	-0.208 (0.082)***	-0.188	-0.199 (0.076)***	-0.181
Disability	-0.003 (0.034)		-0.014 (0.035)		-0.015 (0.031)		-0.030 (0.030)	
Household Characteristics:								
Married	0.117 (0.045)***	0.124	0.119 (0.040)***	0.119	0.177 (0.056)***	0.193	0.166 (0.056)***	0.181
ATSI Household	0.014 (0.030)		0.200 (0.031)		-0.009 (0.037)		0.003 (0.036)	
Geography:								
Remote	0.047 (0.045)		0.037 (0.050)		0.074 (0.043)*	0.077	0.082 (0.042)*	0.084
Behavioural Characteristics:								
Homelands	-0.017 (0.029)		-0.011 (0.028)		-0.024 (0.033)		-0.004 (0.032)	
Smokes	0.021 (0.032)		0.005 (0.029)		0.004 (0.032)		-0.001 (0.030)	
Jail	-0.030 (0.051)		-0.045 (0.051)		-0.072 (0.053)		-0.086 (0.050)*	-0.082
Discriminated	0.090 (0.036)**	0.094	0.084 (0.036)**	0.087	0.092 (0.038)***	0.097	0.078 (0.035)**	0.080

Table 1 - Results From the Estimation of the Determinants of Weekly Earnings for Indigenous Men[a] (continued)

	Panel (i) All Indigenous Men				*Panel (ii) Indigenous Men in Couple Families*			
	Without Job Characteristics		*With Job Characteristics*		*Without Job Characteristics*		*With Job Characteristics*	
Variable	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*
Job Characteristics:								
Casual	[b]		0.093	0.097	[b]		0.065	
			(0.040)***				(0.047)	
Overtime	[b]		0.208	0.231	[b]		0.214	0.238
			(0.029)***				(0.029)***	
Mutli Job	[b]		-0.079		[b]		0.015	
			(0.081)				(0.053	
Temporary	[b]		-0.105	-0.100	[b]		-0.142	-0.132
			(0.043)***				(0.051)***	
Manager	[b]		0.137	0.147	[b]		0.139	0.149
			(0.064)***				(0.072)*	
Professional	[b]		0.092		[b]		0.115	0.122
			(0.093)				(0.063)*	
Trade	[b]		0.042		[b]		0.031	
			(0.041)				(0.049)	
Communication	[b]		0.040		[b]		0.042	
			(0.051)				(0.061)	
Admin	[b]		0.100	0.106	[b]		0.114	0.120
			(0.056)*				(0.062)*	
Sales	[b]		0.001		[b]		0.044	
			(0.071)				(0.091)	
Drivers	[b]		0.113	0.119	[b]		0.167	0.180
			(0.048)***				(0.047)***	
Selection Correction:								
$\hat{\lambda}$	-0.250	NA	-0.182	NA	-0.192	NA	-0.145	NA
	(0.058)***		(0.059)***		(0.065)***		(0.063)**	
Sample Size:		1,172		1,172		852		852
F-test:		15.860		14.190		10.660		10.130
Adjusted R^2		0.180		0.231		0.222		0.305
Mean of *w*		6.806		6.806		6.854		6.854

Notes: [a] The robust standard errors are in parentheses, where the symbol *** represents statistical significance at the one per cent level, ** represents statistical significance at five per cent level and * represents statistical significance at the 10 per cent level. Marginal effects are only reported for dummy variables of statistical significance and following Halvorsen and Palmquist (1980) are determined ($\exp(\beta_0) - 1$). The marginal effects for the age variable are reported within the text.
[b] Not included in the estimating equation.

Table 2 - Results From the Estimation of the Determinants of Weekly Earnings for Indigenous Women[a]

	Panel (i) All Indigenous Women				*Panel (ii) Indigenous Women in Couple Families*			
	Without Job Characteristics		*With Job Characteristics*		*Without Job Characteristics*		*With Job Characteristics*	
Variable	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*
Constant	5.432 (0.268)***	NA	5.412 (0.283)***	NA	5.157 (0.311)***	NA	5.199 (0.319)***	NA
Education Characteristics:								
Year 9	0.248 (0.100)**	0.281	0.227 (0.097)***	0.254	0.184 (0.134)		0.241 (0.146)*	0.273
Year 10	0.108 (0.091)		0.143 (0.089)		0.223 (0.130)*	0.250	0.259 (0.133)*	0.295
Year 11	0.133 (0.103)		0.146 (0.101)		0.267 (0.142)*	0.306	0.272 (0.145)*	0.313
Year 12	0.183 (0.101)*	0.201	0.179 (0.101)*	0.196	0.363 (0.135)***	0.437	0.357 (0.137)**	0.429
Diploma	0.173 (0.097)*	0.188	0.170 (0.097)*	0.186	0.334 (0.128)***	0.397	0.358 (0.130)***	0.431
Degree	0.326 (0.128)**	0.386	0.262 (0.133)**	0.300	0.502 (0.143)***	0.652	0.457 (0.144)***	0.580
Computer	0.178 (0.092)*	0.195	0.122 (0.101)		0.252 (0.126)**	0.286	0.182 (0.148)	
Demographic Characteristics:								
Age	0.051 (0.009)***		0.048 (0.009)***		0.050 (0.013)***		0.045 (0.012)***	
$Age^2/100$	-0.005 (0.001)***		-0.005 (0.001)***		-0.005 (0.001)***		-0.005 (0.001)***	
No English	-0.321 (0.149)***	-0.275	-0.312 (0.144)**	-0.268	-0.115 (0.110)		-0.118 (0.118)	
Disability	0.029 (0.034)		0.036 (0.033)		0.035 (0.039)		0.050 (0.038)	
Household Characteristics:								
Married	0.030 (0.045)		0.031 (0.044)		0.149 (0.073)**	0.161	0.131 (0.067)*	0.140
ATSI Household	0.044 (0.042)		0.033 (0.039)		-0.023 (0.049)		-0.024 (0.047)	
Geography:								
Remote	0.007 (0.040)		0.005 (0.040)		0.056 (0.048)		0.045 (0.048)	
Behavioural Characteristics:								
Homelands	0.032 (0.036)		0.012 (0.035)		-0.006 (0.047)		-0.025 (0.045)	
Smokes	-0.004 (0.031)		0.004 (0.031)		-0.015 (0.038)		-0.002 (0.039)	
Jail	-0.029 (0130)		-0.005 (0.105)		0.081 (0.120)		0.068 (0.108)	
Discriminated	0.073 (0.034)**	0.076	0.053 (0.034)		0.053 (0.043)		0.028 (0.044)	

Table 2 - Results From the Estimation of the Determinants of Weekly Earnings for Indigenous Women[a] (continued)

	Panel (i) All Indigenous Women				*Panel (ii) Indigenous Women in Couple Families*			
	Without Job Characteristics		*With Job Characteristics*		*Without Job Characteristics*		*With Job Characteristics*	
Variable	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*	*Estimated Coefficient*	*Marginal Effect*
Job Characteristics:								
Casual	[b]		-0.011		[b]		-0.095	
			(0.068)				(0.094)	
Overtime	[b]		0.134	0.144	[b]		0.153	0.165
			(0.043)***				(0.050)***	
Mutli Job	[b]		-0.157	-0.145	[b]		-0.123	-0.116
			(0.068)***				(0.074)*	
Temporary	[b]		-0.068		[b]		-0.114	
			(0.067)				(0.074)	
Manager	[b]		0.262	0.300	[b]		0.134	
			(0.109)**				(0.147)	
Professional	[b]		0.266	0.305	[b]		0.218	0.243
			(0.089)***				(0.125)*	
Trade	[b]		-0.018		[b]		-0.075	
			(0.098)				(0.130)	
Communication	[b]		0.105		[b]		-0.030	
			(0.084)				(0.118)	
Admin	[b]		0.124		[b]		0.092	
			(0.089)				(0.120)	
Sales	[b]		0.039		[b]		-0.070	
			(0.100)				(0.142)	
Drivers	[b]		0.316	0.372	[b]		0.130	
			(0.110)***				(0.070)	
Selection Correction:								
$\hat{\lambda}$	-0.143	NA	-0.119	NA	-0.112	NA	-0.068	NA
	(0.059)**		(0.058)**		(0.067)*		(0.065)	
Sample Size:		638		638		402		402
F-test:		13.700		11.660		9.420		8.740
Adjusted R^2		0.278		0.338		0.318		0.392
Mean of *w*		6.751		6.751		6.748		6.748

Notes: [a] The robust standard errors are in parentheses, where the symbol *** represents statistical significance at the one per cent level, ** represents statistical significance at five per cent level and * represents statistical significance at the 10 per cent level. Marginal effects are only reported for dummy variables of statistical significance and following Halvorsen and Palmquist (1980) are determined ($\exp(\beta_0) - 1$). The marginal effects for the age variable are reported within the text.
[b] Not included in the estimating equation.

may suggest that Indigenous Australians who speak a language other than English at home are discriminated against in terms of earnings in the Australian labour market.

Tables 1 and 2 show that the earnings of Indigenous Australian men are positively associated with being married. Married men have earnings that are 12.4 per cent higher than the earnings of non-married men. Similar earnings premiums for marriage among Indigenous men have been reported in the studies by Junankar and Liu (2003) (premium of 14.0 per cent) and Daly and Hunter (1999) (premium of 11.1 per cent). This relationship is consistent with economic theory which suggests that married men have higher earnings due to higher levels of productivity (see Birch and Miller, 2006).

The estimation of the extended earnings model shows that a number of job characteristics have an impact on the earnings of Indigenous men and women. Indigenous Australian men who work overtime (*Overtime*) (based on working more than 40 hours per week) have earnings that are 23.1 per cent larger than the earnings of their counterparts who do not work overtime (based on those working 35 to 40 hours in a usual week). Indigenous women working overtime have earnings which are 14.4 per cent higher than those who do not. The earnings premiums associated with working overtime for the Indigenous population are of similar magnitudes to studies on the general Australian population. For example, the national study by Preston (2001) reports that Australian men and women who work more than 40 hours per week have earnings that are 21.8 and 12.4 per cent higher than those working 35 to 40 hours per week. The findings are also consistent with standard labour supply theory of a positive association between hours worked and earnings.

Indigenous men who are employed in casual or shift work (*Casual*) positions have higher earnings than those who work standard hours each week. This earnings premium is 9.7 per cent. Indigenous men who work in temporary positions (*Temporary*) have earnings which are 10.0 per cent lower than the earnings of Indigenous Australian men working in jobs which are permanent. Indigenous women working two or more jobs (*Multi job)* have earnings which are 14.5 per cent lower than the earnings of Indigenous women working only one job.

There are also differences in the earnings of Indigenous men and women employed in the highest ranked occupation and lowest ranked occupation.[12] Indigenous men and women who are employed full-time as managers (*Manager*) have 14.7 and 30.0 per cent higher earnings than the earnings of Indigenous men and women employed as labourers. This relatively distinct occupational hierarchy even after controlling for human capital endowments is a common feature in earnings studies for the general population (see Preston, 2001). However, the variation in earnings by occupation for Indigenous Australian men is far less pronounced than what has been reported for the general Australian population for males.[13] For instance, using similar controls for occupation as in this study, Rodgers (2004) and Eastough and Miller (2004) report that Australian men experience a 33 to 38 percentage point variation in earnings by occupation. Preston (2001) suggests that there is a 66 percentage point

[12] Preston (2001) argues that Australian studies on earnings typically rank managers as the highest occupation and rank labourers as the lowest occupation.

[13] The variation in earnings by occupation for Indigenous Australian women is close to what has been reported in the literature for the overall Australian population.

variation in earnings by occupation for Australian men using more detailed controls for occupation than those used in this study. The difference in the variation in earnings by occupation for Indigenous men and the wider population may be further evidence that Indigenous Australian men face a more secondary labour market.

The earnings model was also estimated on Indigenous Australians from couple families to examine the validity of the measure of earnings (as the sample of couple families would reduce other potential sources of income for full-time employees, such as child support payments to parents without partners). These results are presented in Panel (ii) of tables 1 and 2. The results from these analyses are fairly comparable to the estimates from the full sample of Indigenous men and women in terms of the signs and significance of the estimated coefficients. As such, it is possible to suggest that the measure of earnings is fairly robust, (assuming that the earnings of men and women working full-time from couple families provides a more accurate measure of earnings). There are some noticeable differences in the estimated impacts of the earnings premiums associated with human capital endowments for Indigenous Australians living in couple families and those for the wider Indigenous population. The earnings premiums from educational attainment and potential labour market experience (measured by age) are lower for Indigenous men from couple families than all Indigenous males. There is an opposite pattern for Indigenous women. These finding may reflect differences in earnings determination for the population groups. Creedy *et al*. (2001) and McKenna and McNabb (1989) report that the determinants of earnings vary by family type for the Australian population. The findings also may also highlight problems in accurately measuring earnings for Indigenous Australian workers.

Finally, a key feature of the estimation of the determinants of earnings for Indigenous Australians is that the variable to correct for sample selection bias is significant in most of the earnings equations.[14] As such, it is possible to suggest that correcting for selection bias is of importance in studies which estimate the determinants of earnings for Indigenous Australians. The negative sign of the selection bias correction term ($\hat{\lambda}$) and the size of the coefficients are relatively similar to the results produced in studies for the general Australian population (see Preston, 2001). The negative sign of the $\hat{\lambda}$ term implies that the error term in the probability of working full-time model (ε_{d_j}) is negatively correlated with the error term in the model to estimate earnings (ε_{w_j}). In other words, it implies that the unobserved factors which are negatively associated with the probability of working full-time are positively associated with earnings. For Indigenous Australians these may reflect welfare payments for not working or the age and timing of dependent children. These factors (which are not observed in the data set) may have a negative impact on decisions to work full-time but have a positive impact on the motivation of workers which results in higher earnings.[15]

[14] It is noted that results from the Heckman (1979) selection procedure should be treated cautiously as they are subject to model specification and that there is a high degree of correlation between the selection bias term and variables included in the wage model. Preston's (2001) review on studies controlling for selection bias concluded 'the problems introduced to the wage equation using the selectivity bias correction term are in fact greater than the bias associated with analysis of a non-random sample in the first place' (Preston, 2001, p.27).

[15] The estimated coefficients from earnings models estimated without controls for selection bias were generally larger than the models controlling for selection bias. These results are available from the author.

Table 3 presents the labour force participation elasticities with respect to predicted earnings. The elasticities are obtained from using a probit model to estimate the probability of participating in the labour force using the predicted earnings of full-time workers. These elasticities essentially show the relationship between Indigenous Australians' labour force participation decision and the predicted earnings from working full-time to provide some insight into the relationship between earnings and labour force participation decisions. The elasticities are evaluated at the mean labour force participation rate.

As shown in table 3, Indigenous men and women's labour force participation decisions respond favourably to increases in their potential earnings. For Indigenous men, the labour force participation elasticity with respect to weekly earnings is 0.714. This elasticity implies that a one per cent increase in the weekly earnings of men working full-time is associated with, on average, a 0.7 per cent increase in labour force participation.[16] The labour force participation elasticity with respect to weekly earnings for Indigenous women is 1.607. The elasticities for Indigenous men and women in couple families are lower than those for the wider Indigenous population, being 0.663 and 1.287, respectively. This finding is consistent with the views in Dandie and Mercante (2007) who report that married men and women's labour force participation decisions are less responsive to changes in earnings than their non-married counterparts.

Table 3 - Estimated Labour Force Participation Elasticities with Respect to the Weekly Earnings of Full-Time Workers

Sample	*Elasticity (Earnings with $\hat{\lambda}$)*	*Elasticity (Earnings without $\hat{\lambda}$)*	*Mean Labour Force Participation Rate*
All Indigenous Men	0.714	0.705	0.749
Indigenous Men in Couple Families	0.663	0.642	0.799
All Indigenous Women	1.607	1.539	0.552
Indigenous Women in Couple Families	1.287	1.251	0.599

The elasticities for men are higher than those reported in the review of labour force participation elasticities with respect to earnings for Australian men by Dandie and Mercante (2007) (ranging from 0.03 to 0.23). The elasticities for women are at the upper-end of the range of labour force participation elasticities reported in Birch (2005a). However, the reviews in Dandie and Mercante (2007) and Birch (2005a) are based on labour force participation and hourly earnings and therefore are not directly comparable with the results presented in this study which uses the predicted weekly earnings of full-time workers. In addition, the existing literature on the labour force participation elasticities with respect to earnings has not directly

[16] The elasticities were estimated using alternative predicted earnings based on the variables included in the market wage equation and did not vary considerably by specification. The results from the labour force participation model and elasticities using alternative predicted earnings are available from the author.

focused on Indigenous Australians. Birch (2005a) suggests that the elasticity estimates can be sensitive to model specification, year of the data and variables included in the estimating equations.

4. Summary

This paper has examined the determinants of earnings for Indigenous Australians using recent data. The purpose of the paper was to shed 'new light' on the determinants of earnings for Indigenous Australians and to assess whether human capital theory is relevant to earnings studies on Indigenous Australians. The paper estimated the determinants of earnings for Indigenous men and women, conditional of them being employed full-time. It also estimated how Indigenous Australians' labour force participation decisions are likely to respond to changes in their earnings.

The analysis also found that Indigenous Australians' earnings could be explained by human capital theory. The earnings of Indigenous Australians were strongly influenced by their education level, with those with higher levels of education experiencing higher earnings. The analysis of the determinants of earnings also found that Indigenous Australians' earnings were influenced by their age, marital status, language skills and some cultural and behavioural characteristics. The findings from the extended earnings model showed that a number of job characteristics including occupation had an impact on Indigenous Australians' earnings. The estimation of the labour force participation elasticities with respect to earnings found that the probability that Indigenous Australians participate in the labour force is positively associated with their potential earnings.

Many of the findings reported in this study are similar to those reported in studies for the general Australian population. There are three noticeable exceptions to this. First, the explanatory power of the earnings model used in this study is smaller than similar earnings models applied to the wider Australian populations (in terms of the adjusted R^2). Second, the earnings premiums associated with educational endowments are lower for Indigenous Australians than studies using data on the general Australian population and third, the earnings premiums associated with occupation are lower for Indigenous men than the wider population of males. These results may reflect the fact that the earnings of Indigenous Australians are still linked to segmented labour markets or that Indigenous Australians face wage discrimination. Alternatively, there may be other factors not captured in the data set which also influence Indigenous Australians earnings.

A limitation of this study is that the current data available in Australia does not contain information on all the factors that potentially influence earnings or labour supply of Indigenous Australians, including the fact that it does not contain information on actual earnings. In addition, this data set is cross-sectional so it is difficult to fully understand the causal link between some of the variables examined and labour market outcomes which could be achieved using panel data. To obtain a more detailed picture of the determinants of labour supply and earnings for Indigenous Australians, future surveys would benefit from the collection of information on individual's actual earnings from paid employment as well as more accurate measures of unearned income and job characteristics.

Nevertheless, there are a number of implications for researchers and policymakers from the findings presented in this paper. First, the analysis has shown that the earnings for Indigenous Australians vary by education level. As such, policy aimed at improving the education of Indigenous Australians, particularly post-school education should have an improvement on their earnings potential. Second, the analysis has found that controlling for the probability of working full-time when estimating earnings for Indigenous Australians via the inclusion of a sample selection bias correction term appears to be important. Future studies on the earnings of Indigenous Australians should consider the use of such controls. Finally, the analysis has shown that Indigenous Australians respond positively in terms of working to increases in their potential earnings. Therefore, policies aimed at improving the earnings of Indigenous Australians should have a positive impact on their labour force participation decisions. There may be merit in exploring ways of improving the earnings of existing Indigenous workers, via on the job training or educational attainment, as an approach of also encouraging labour force participation among the Indigenous population.

Appendix

Table A1 - Description of Variables Used to Estimate Earnings[a]

Variable Name	*Description*	*Mean*	*Std Dev*
Dependent Variable:			
w	Earnings based on the logarithm of weekly self-reported personal income for those working 35 or more hours per week, whose principal source of personal income is from their employer and who do not receive a Government pension or allowance.	6.786	0.517
Independent Variables:			
Year 9	Highest educational attainment is Year 9.	0.129	0.335
Year 10	Highest educational attainment is Year 10.	0.232	0.423
Year 11	Highest educational attainment is Year 11.	0.116	0.320
Year 12	Highest educational attainment is Year 12.	0.115	0.320
Diploma	Highest educational attainment is a certificate or diploma.	0.218	0.413
Degree	Highest educational attainment is a degree or higher degree.	0.052	0.222
Year 8	Omitted Category: Highest educational attainment is Year 8 or less.	0.138	0.345
Computer	Used a computer in the past 12 months.	0.671	0.470
No Computer	Omitted Category: Did not use a computer in the past 12 months.	0.329	0.470
Age	The individual's age.	35.019	13.321
No English	Main language spoken at home is a language other than English.	0.140	0.347
English	Omitted Category: Main language spoken at home is English.	0.860	0.347
Disability	Has disability affecting their activities.	0.510	0.500
No Disability	Omitted Category: Does not have a disability affecting their activities.	0.490	0.500
Married	Married individuals.	0.465	0.499
Not Married	Omitted Category: Not married individuals.	0.535	0.499
ATSI Household	Lives in a household with only Indigenous persons.	0.628	0.483
Mixed Household	Omitted Category: Lives in a household with Indigenous and non-Indigenous persons.	0.372	0.483

Table A1 - Description of Variables Used to Estimate Earnings[a] (continued)

Variable Name	*Description*	*Mean*	*Std Dev*
Remote	Lives in 'remote' or 'very remote' communities based on the Accessibility/Remoteness Index of Australia (ARIA), which is an index measuring the remoteness of an area on the physical road distance to the nearest urban centre. ARIA is published as a 1 kilometre grid that covers the whole of Australia and areas which score more than 5.92 are considered remote.	0.330	0.470
Non-Remote	Omitted Category: Lives in 'major cities', 'inner' and 'outer' regional areas measured by those areas with a score on the ARIA of less than 5.92.	0.670	0.470
Homelands	Recognises an area as homelands or traditional country.	0.735	0.441
No Homelands	Omitted Category: Does not recognise an area as homelands or traditional country.	0.265	0.441
Smokes	Smokes cigarettes.	0.501	0.500
No Smokes	Omitted Category: Does not smoke cigarettes.	0.499	0.500
Jail	Has been in jail.	0.097	0.297
No Jail	Omitted Category: Has not been in jail.	0.903	0.297
Casual	Job is defined as casual or shift work.	0.120	0.326
Not Casual	Omitted category: Jobs defined as full-time which refers to those working standard work hours during a standard working week.	0.880	0.326
Overtime	Works more than 40 hours per week.	0.368	0.482
Regular	Omitted category: Works 35 to 40 hours per week.	0.632	0.482
Multi Job	Works more than one job.	0.112	0.315
Not Multi Job	Omitted category: works one job.	0.888	0.315
Temporary	Employed in a temporary position or who do not know the type of job contract.	0.098	0.297
Permanent	Omitted category: Employed in a permanent position.	0.902	0.297
Manager	Employed as managers.	0.073	0.261
Professional	Employed as professionals.	0.154	0.361
Trade	Employed as technicians or trade workers.	0.155	0.362
Communication	Employed as community or personal services workers.	0.140	0.347
Admin	Employed as clerical or administrative workers.	0.148	0.355
Sales	Employed as sales workers.	0.033	0.178
Drivers	Employed as machinery operators and drivers.	0.135	0.342
Labourers	Omitted Category: Employed as labourers and those who do not adequately define their occupation.	0.162	0.369

Note: [a] The means and standard deviations are for the full sample except for the variables relating to earnings and job characteristics, which are for workers only. A description of the variables used to estimate the probability of working full-time or participating in the labour force is available from the author.

Table A2 - Results From the Estimation of the Probability of Working Full-Time for Indigenous Men and Women[a]

	All Indigenous Men	*All Indigenous Women*	*Indigenous Men in Couple Families*	*Indigenous Women in Couple Families*
Variable	*Estimated Coefficient*	*Estimated Coefficient*	*Estimated Coefficient*	*Estimated Coefficient*
Constant	-.3834	-4.177	-4.211	-4.230
	(0.299)***	(0.334)***	(0.378)***	(0.469)***
Year 9	0.129	0.017	-0.031	-0.040
	(0.111)	(0.162)	(0.141)	(0.219)
Year 10	0.250	0.336	0.201	0.395
	(0.098)**	(0.138)**	(0.124)	(0.183)**
Year 11	0.305	0.108	0.223	0.103
	(0.115)***	(0.160)	(0.142)	(0.212)
Year 12	0.463	0.616	0.385	0.737
	(0.115)***	(0.147)***	(0.142)***	(0.193)***
Diploma	0.364	0.616	0.290	0.747
	(0.101)***	(0.136)***	(0.125)**	(0.182)***
Degree	0.540	1.093	0.366	1.295
	(0.153)***	(0.155)***	(0.184)**	(0.203)***
Study	-0.180	0.051	-0.054	0.114
	(0.082)**	(0.076)	(0.106)	(0.099)
Computer	0.231	0.614	0.276	(0.015)***
	(0.067)***	(0.097)***	(0.083)***	
Demographic Characteristics:				
Age	0.086	0.087	0.113	0.100
	(0.014)***	(0.016)	(0.018)***	(0.023)***
Age^2	-0.001	-0.001	-0.001	-0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
No English	-0.467	-0.299	-0399	-0.252
	(0.098)***	(0.127)**	(0.118)***	(0.171)
Disability	-0.269	-0.115	-0.297	-0.075
	(0.057)***	(0.065)*	(0.071)***	(0.083)
Exvg	0.778	0.242	0.843	0.037
	(0.130)***	(0.145)*	(0.164)***	(0.183)
Good	0.713	0.351	0.791	0.094
	(0.129)***	(0.142)**	(0.162)***	(0.180)
Fair	0.393	0.018	0.451	-0.161
	(0.139)***	(0.154)	(0.174)***	(0.196)
Household Characteristics:				
Married	0.737	-0.124	0.593	0.188
	(0.107)***	(0.130)	(0.127)***	(0.160)
1 Child	-0.009	-0.641	0.081	-0.540
	(0.079)	(0.081)***	(0.093)	(0.099)***
2 Children	0.002	-0.949	0.102	-0.859
	(0.082)	(0.933)***	(0.095)	(0.113)***
3 Children	-0.126	-1.302	-0.069	-1.310
	(0.104)	(0.141)***	(0.117)	(0.172)***
4 Children	-0.151	-1.044	-0.199	-0.846
	(0.143)	(0.159)***	(0.157)	(0.185)***
5+ Children	-0.116	-1.407	-0.150	-1.334
	(0.139)	(0.231)***	(0.154)	(0.282)***
ATSI Household	-0.158	-0.185	-0.135	-0.201
	(0.067)**	(0.078)**	(0.086)	(0.097)**

Table A2 - Results From the Estimation of the Probability of Working Full-Time for Indigenous Men and Women[a] (continued)

	All Indigenous Men	*All Indigenous Women*	*Indigenous Men in Couple Families*	*Indigenous Women in Couple Families*
Variable	*Estimated Coefficient*	*Estimated Coefficient*	*Estimated Coefficient*	*Estimated Coefficient*
3+ Adults	-0.114	0.016	-0.149	-0.065
	(0.064)*	(0.071)	(0.080)*	(0.092)
Lone Parent	0.234	-0.201	[b]	[b]
	(0.111)***	(0.138)		
Other Fam	0.704	0.268	[b]	[b]
	(0.125)***	(0.157)*		
Geography:				
Remote	0.170	0.455	0.112	0.465
	(0.081)**	(0.088)***	(0.103)	(0.116)***
Transport Characteristics:				
1 Car	0.461	0.516	0.415	0.446
	(0.085)***	(0.106)***	(0.123)***	(0.193)***
2 Cars	0.647	0.718	0.512	0.690
	(0.095)***	(0.118)***	(0.132)***	(0.195)***
3 Cars	0.863	0.816	0.749	0.886
	(0.106)***	(0.130)***	(0.143)***	(0.206)***
Public Transport	-0.022	0.072	-0.055	0.135
	(0.068)	(0.079)	(0.083)	(0.100)
Behavioural Characteristics:				
Culture	-0.012	0.214	-0.032	0.228
	(0.061)	(0.072)***	(0.078)	(0.092)***
Homelands	-0.056	-0.026	-0.102	-0.034
	(0.066)	(0.072)	(0.084)	(0.091)
Removed	-0.149	-0.060	-0.257	-0.072
	(0.100)	(0.111)	(0.135)*	(0.151)
Alcohol Risk	-0.246	0.158	-0.421	0.145
	(0.097)**	(0.148)	(0.128)***	(0.210)
Smokes	-0.045	0.002	-0.045	0.012
	(0.057)	(0.067)	(0.071)	(0.081)
Victim	-0.020	-0.210	-0.013	-0.040
	(0.074)	(0.095)**	(0.097)	(0.134)
Jail	-0.242	-0.353	-0.157	-0.035
	(0.077)***	(0.241)	(0.098)	(0.295)
Discriminated	-0.064	0.031	-0.099	0.095
	(0.063)	(0.069)	(0.080)	(0.093)
Non-Wage Income Characteristics:				
Support	0.179	0.253	0.211	0.108
	(0.056)***	(0.065)***	(0.071)***	(0.083)
Raise Funds	0.475	0.296	0.494	0.224
	(0.058)***	(0.066)***	(0.075)***	(0.090)***
Sample Size:	3,137	4,128	1,966	2,206
Chi^2:	1066.740	11127.440	676.470	587.910
Pseudo R^2 Square:	0.257	0.317	0.251	0.281
Log Likelihood:	-1539.706	-1213.500	-1006.981	-753.365
Proportion *EMP*:	0.374	0.154	0.433	0.182

Notes: [a] The standard errors are in parentheses, where the symbol *** represents statistical significance at the one per cent level, ** represents statistical significance at five per cent level and * represents statistical significance at the 10 per cent level. [b] Not included in the estimating equation.

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