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Indigenous Migration and the Labour Market: A Cautionary Tale

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Abstract

During the last intercensal period there was a net transfer of Indigenous Australians to urban Australia from more remote parts of the country. With the withdrawal of a number of Indigenous specific labour market programs, this net migration is likely to intensify into the future. The aim of this paper is to consider the impact of this urbanisation on the labour market prospects of those Indigenous Australians who move and those Indigenous Australians already living in urban Australia. Using both aggregate and individual data, the results present somewhat of a cautionary tale. First, individual Indigenous Australians who move to urban areas do not appear to do as well in the labour market as those who stay behind. Second, inward migration from remote dispersed settlements is associated with a significant and substantial decline in the percentage of the population employed in the destination area. Although governments may have a fiscal motivation to encourage Indigenous Australians to move from non-urban to urban Australia, those who do move may struggle to compete in the private sector labour markets that they find there.

JEL Classification: J150; J680; R230

1. Introduction and Overview

Stable, well-paid employment remains one of the key protective factors against poverty and exclusion. This is true for both Indigenous and non-Indigenous Australians with, for example, substantially higher income and access to economics resources for those employed (Biddle, Taylor and Yap, 2008) and significantly lower levels of education attendance for those who live in households where no one is employed (Biddle, 2010). The link between mainstream employment and poverty is less obvious in remote Australia where there are greater options for sustainable livelihoods outside the cash

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economy (Altman, 2001). However, around three-quarters of the Indigenous population live in major cities and regional Australia (Taylor and Biddle, 2008).

It is not surprising, therefore, that reducing the disparity between Indigenous and non-Indigenous Australians in employment outcomes is one of the pillars of the Australian Government's Closing the Gap agenda. There are, however, a number of challenges to this commitment to 'halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade' (FaHCSIA, 2009). Most obviously, the large existing gap in employment (according to the 2006 Census, 46.0 per cent of the Indigenous population 15 years and over were employed compared to 61.7 per cent of the non-Indigenous population) and the projected rapid growth in the Indigenous working age population (ABS, 2009) means that jobs will need to be found for a very large number of Indigenous Australians. Biddle, Taylor and Yap (2009) estimate that, as a minimum, around 83,000 jobs will need to be found over the decade in question.

The projected number of jobs required is around two-thirds higher than the jobs created over the last inter-censal period when the overall economy was experiencing rapid economic growth. Furthermore, as shown in SCRGSP (2009) the skills, training and general level of human capital of those Indigenous Australians in and entering the labour force will make it very hard for them to compete for most new jobs that are created over the period.

An additional constraint on meeting the Australian Government's target of halving the gap in employment outcomes is the scaling back of the Community Development Employment Projects (CDEP) Program. In essence, the program allows Indigenous Australians in certain areas to forego social security benefits and instead receive a form of wages for employment. At least up until the time of the 2006 Census the CDEP Program made up a substantial component of the labour market. According to estimates in Biddle, Taylor and Yap (2008), employment in the program made up nearly one-quarter (23.4 per cent) of the total Indigenous labour force. However, employment in the scheme was primarily in remote Australia and there were 14 regions out of a total of 37 across Australia where those in CDEP jobs made up 50 per cent or more of the labour force.

In late 2008, the Australian Government announced a number of changes to the CDEP program that have the potential to have substantial impacts on the labour market prospects of Indigenous Australians. While the removal of CDEP positions from 'non-remote locations where the economy is well established' reflects a continuation of previous policy changes, the changes in remote Australia are potentially more drastic. In particular, there will be no new participants in remote Australia, current participants will be removed from the scheme permanently if they take a break from the scheme for more than two weeks and the scheme will be stopped entirely from the 30 June 2011. Once the removal of the CDEP scheme has been factored in to their projections, Biddle, Taylor and Yap (2009) estimate that a total of around 117,000 additional jobs will be required in total to meet the target of halving the employment gap.

The Australian Government has made a number of arguments as to why removing the CDEP scheme in such a way will be of net benefit to Indigenous Australians. Most of these relate to the incentives to seek and obtain employment in the mainstream labour market (Macklin, 2008). It should also be noted that a small

minority (around 2,000) of the CDEP jobs that will be lost will be replaced by other jobs directly related to government service delivery. As these jobs will attract standard award wages which are substantially higher than CDEP wages, there will potentially be offsetting boosts to the local economies in which these replacement jobs are located.

The aim of this paper is not to discuss the arguments for and against the removal of the CDEP scheme in detail. Rather, the focus is on the potential impact on remote to urban migration, the labour market outcomes of those who move and those Indigenous Australians who live in the areas where people are likely to move to. Ultimately, the paper aims to describe the potential implications of changes in the CDEP scheme for the government's Closing the Gap targets.

The remainder of the paper is structured as follows. The next section outlines a model of Indigenous migration alongside a description of the Indigenous migration patterns observed over the last inter-censal period (2001 to 2006), before the major changes to the CDEP program. This is followed by a section of empirical results on the relationship between migration and individual employment outcomes, followed by another section of empirical results on the relationship between inward migration and labour market outcomes of the native population. The final section summarises the main points from the analysis, outlines a number of key limitations to the empirical evidence (in particular the self-selective nature of migration) and provides a few policy related conclusions.

2. A Simple Model of Indigenous Internal Migration

Any model of migration needs to address two key related questions – who moves and where do people move to? This could be expressed at the individual or household level, in which case the decisions can be analysed jointly or sequentially. Alternatively, it could be expressed at the community or area level in which case gross and/or net flows would be analysed.

Under standard models of migration, individuals will change their place of usual residence if the benefits of doing so outweigh the costs (Harris and Todaro, 1970; White and Lindstrom, 2005). Letting expected income for individual i at time t in a person's current location j be $Y_{i,j,t}$ and the expected cost of living in the area be $C_{i,j,t}$, then they will move to a different area k if the present value of the alternative income stream minus the one-off cost of moving $\left(C_{jk,0}\right)$ is greater than the income stream in their current location. That is:

$$M_{i,jk,t} = 1 \qquad if \qquad \sum_{t=1}^{T} \frac{Y_{i,k,t} - C_{i,k,t}}{\left(1+r\right)^{r}} - C_{i,jk,0} - \sum_{t=1}^{T} \frac{Y_{i,j,t} - C_{i,j,t}}{\left(1+r\right)^{r}} > 0$$

While the above model is relatively straightforward, difficulties arises when trying to identify the precise costs of moving including both out-of-pocket and social/psychic costs (Greenwood, 1997), the way in which expectations are formed and the role of uncertainty (Khwaja, 2000) and the range of costs that individuals take into account when making the decision. Furthermore, the migration decision is often made at the family or household level and hence income gains (or losses) and costs of moving for other family/household members are likely to be important.

Despite these extensions and complexities, one of the clear implications of the model is that wage or employment probability differentials across areas will strongly influence the migration decision. Areas that have relatively favourable employment outcomes for a person with a given set of characteristics are likely to experience a net inflow of such people. Areas that have poor or worsening employment outcomes are likely to experience high rates of net outward migration. However, non-economic factors are likely to be important and may even have a particularly strong effect for Indigenous Australians, many of whom have on-going ties to the land and their country (Biddle and Hunter, 2006).

Individuals who are currently unemployed, underemployed or in other ways have a low attachment to the labour market are more likely to move. This is because $Y_{i,j,t}$ is relatively low. Related to this, in one of the more consistent findings of census-based analysis, it has long been recognised that nationally, Indigenous Australians change their place of usual residence more often than the non-Indigenous population.

Between 2001 and 2006, 46.5 per cent of the Indigenous population changed their place of usual residence, compared to 43.1 per cent for the non-Indigenous population. While many of these moves were local, a substantial majority (around 70 per cent) of those who changed usual residence also changed the area in which they lived.

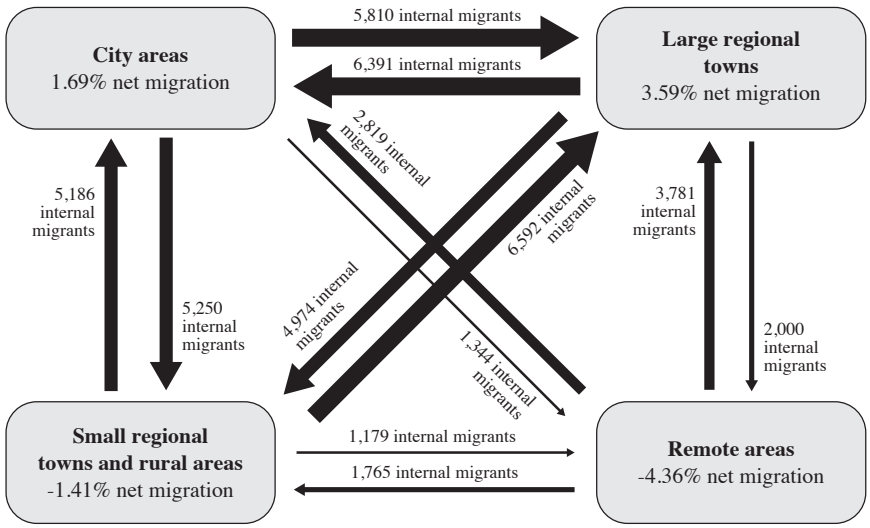
The simplified model is also informative for where people are likely to move from and where they are likely to move to. The following two figures summarise migration between 2001 and 2006 across four levels of geography: city areas (urban centres with populations greater than 100,000); large regional towns (non-remote urban centres with populations between 10,000 and 100,000); small regional towns and rural areas (non-remote urban centres with populations under 10,000); and remote Australia. This latter category includes remote towns, town camps and remote dispersed settlements (or outstations). These geographic classifications were first introduced in Taylor and Biddle (2008).

Figure 1 shows the number of Indigenous Australians identified as having moved between these four location groupings. The raw data that underlies these two figures and non-Indigenous results are available in Biddle (2009).

In general, there was net Indigenous migration from less to more urbanised parts of the country, reflecting the generally poor employment outcomes in remote Australia for the Indigenous population (Biddle, Taylor and Yap, 2009). The greatest net transfer (in absolute terms) was from remote areas to large regional towns or city areas as well as from small regional towns and rural areas to large regional towns.

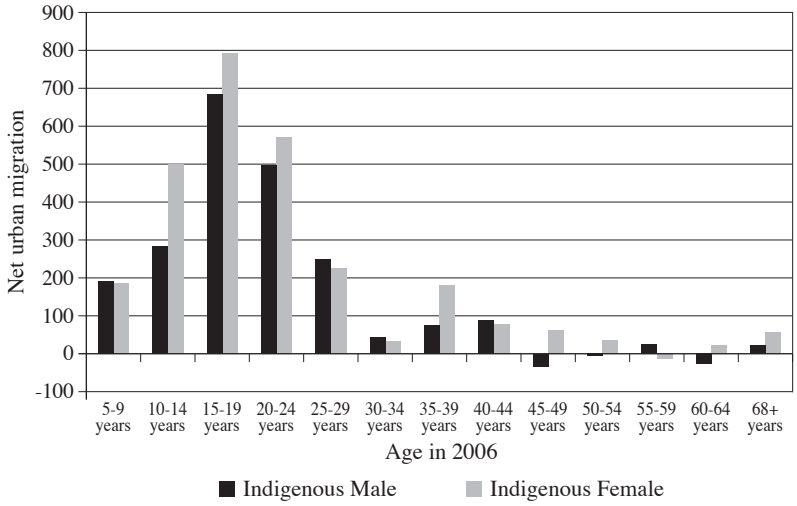
While figure 1 showed a great deal of movement between city areas and large regional towns for the Indigenous population and from non-remote to remote Australia, there still remains a net transfer from small regional towns, rural areas and remote Australia to more urbanised parts of the country. The reasons for migrating to urban areas are varied and include family, employment, and education reasons (Biddle and Hunter, 2006). Whatever the motivation, there are likely to be distinct lifecycle patterns to this net urban migration. As outlined in White and Lindstrom (2005: 323), 'union formation and dissolution, education and entry and exit from the labour force all shift the parameters of the decision for individuals.'

Figure 1 - 'Four-corner' Migration between Location Type Groupings – Indigenous Australians, 2001 to 2006



Source: Biddle (2009).

Figure 2 - Age distribution of net inward migration to urban areas (city areas and large regional towns) – Indigenous males and females, 2001 to 2006



Source: Biddle (2009).

Focusing on those Indigenous Australians who moved between urban Australia (city areas and large regional towns)[1] and non-urban Australia (small regional towns, rural areas and the four remote location types), figure 2 graphs the net transfer between 2001 and 2006 by a person's age at the end of the period. Indigenous males and females are presented separately with positive values signifying a greater number of people moving to urban areas than leaving.

For both males and females, the greatest level of net urban migration occurred amongst the group aged 15 to 19 years at the end of the period, 2006. Alone, this five year age group made up over 30 per cent of the net Indigenous transfer from non-urban to urban Australia over the period. Much of this movement (and that of the two age groups on either side) would have been to undertake formal education whether at secondary school or in post secondary education. There was some net transfer back to non-urban Australia amongst certain older age groups (45 to 49 years and 60 to 64 years for males and 55 to 59 years for females) however beyond the age of 45 years there was general stability in terms of net flows of the Indigenous population between urban and non-urban Australia. Relatively high rates of migration for those just entering the workforce is likely to be explained by income in their current location $\left(Y_{i,j,t}\right)$ and the costs of moving $\left(C_{jk,0}\right)$ being relatively low (White and Lindstrom, 2005). Furthermore, the potential number of years left for a person's future income stream (T-t) is likely to be high.

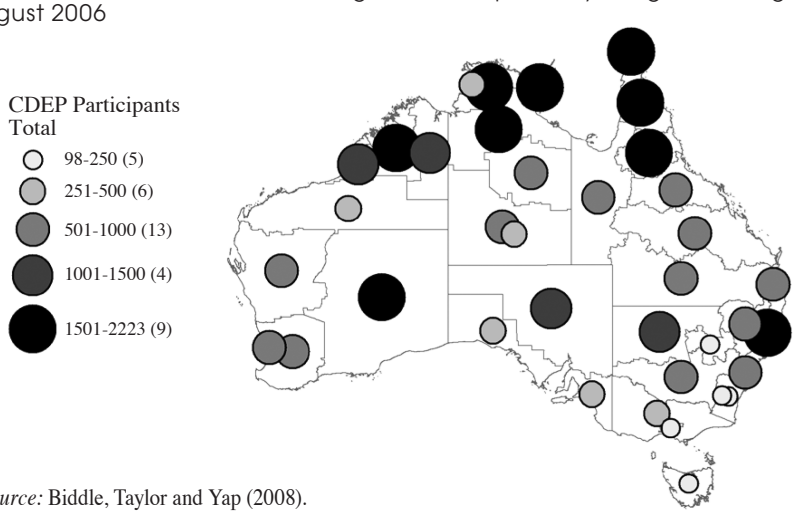
There are two aspects of the CDEP program and its forthcoming changes that point to an intensification of these patterns over the current inter-censal period (2006 to 2011) and beyond. Firstly, the CDEP program has always focussed on remote Australia with this being even more true in recent years as urban programs have gradually been withdrawn. This is demonstrated in figure 3 below which shows the number of CDEP program participants by Indigenous Region in 2006. In essence, removal of the CDEP scheme is likely to see the income and costs of moving of around 30,000 Indigenous Australians in remote regions fall, making potential employment in non-remote Australia relatively attractive.

The second aspect of the CDEP program that has implications for future migration patterns is the age structure of participants. As shown in figure 4 below, participation rates in the scheme (as of 2006) peaks amongst those in their early 20s. That is, removal of the CDEP scheme is likely to effect those Indigenous Australians for whom the costs of moving are at their lowest.

Taken together, when interpreted alongside the simplified model of migration choice presented earlier, figures 3 and 4 suggest that the removal of the CDEP program as outlined in the introduction to this paper is likely to see increased migration of young Indigenous Australians (and Indigenous males in particular) from remote to regional and urban Australia. The following two sections consider the potential impact of such migration on the individuals who move, as well as the destination area.

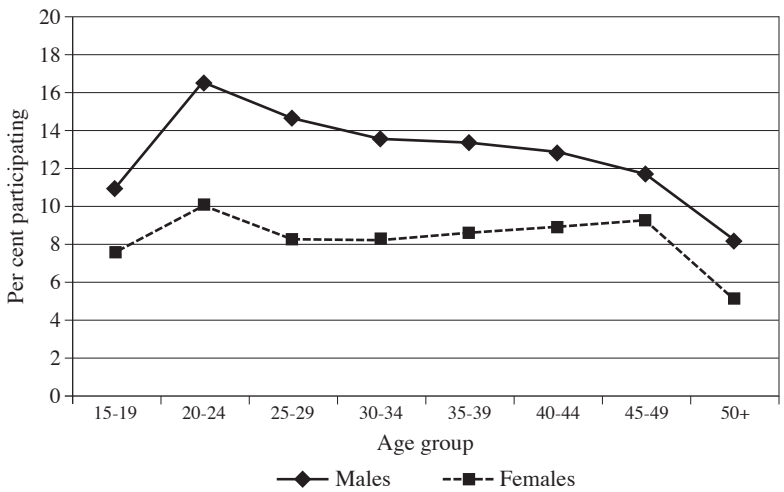
[1] Because of the large net inward migration experienced over the 2001 to 2006 period and the role it plays as a service hub in central Australia, Alice Springs is re-classified as urban Australia as opposed to a remote town for the purposes of this section. Conclusions are not sensitive to this inclusion with results available from the authors upon request.

Figure 3 - Distribution of CDEP Program Participants by Indigenous Region, August 2006



Source: Biddle, Taylor and Yap (2008).

Figure 4 - CDEP Participation Rates by Age and Sex, Australia, 2006



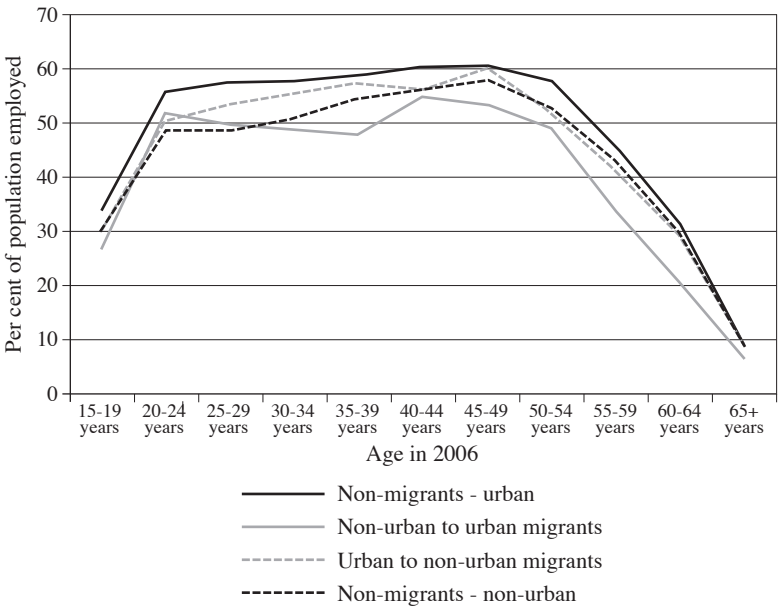
Source: Biddle, Taylor and Yap (2008).

3. Migration and Employment – Effects on the Individual

One of the motivations to move to urban areas over the 2001 to 2006 period was likely to have been improved access to labour markets. This is likely to intensify as Indigenous specific labour market programs like the CDEP program are withdrawn or substantially altered. However, there is likely to be an adjustment period with those

who have moved lacking the regional, local or firm-specific human capital that is valued in the labour market as well as the social and job networks that are crucial in obtaining employment. This poor relative employment performance of migrants to urban areas is demonstrated in figure 5 below.

Figure 5 - Per Cent of Population Employed by Age – Indigenous Urban and Non-urban Migrants and Non-migrants, 2001 to 2006



Source: Biddle (2009).

Figure 5 shows the per cent of four Indigenous migration groupings who were employed broken down by their age at the end of the period. It is clear from the figure that there is a large gap in the employment percentages between non-migrants and migrants. The gap is greatest amongst those of prime working age (around 35 to 39 years at the end of the period) with 59.2 per cent of non-migrants in that group employed compared to 48.0 per cent of urban migrants. However, there is a gap of at least four percentage points for all age groups (apart from those 65 years and over).

Figure 5 therefore provides prima facie evidence that those who move to urban areas are less likely to be employed relative to those who live in such areas at the beginning of the period. This may be because they are moving for non-work reasons (for example to undertake education). However, because the current policy targets are related to employment (as opposed to labour force participation), if this migration were to be indirectly encouraged through changes to the CDEP scheme then the effect on meeting the targets would be the same.

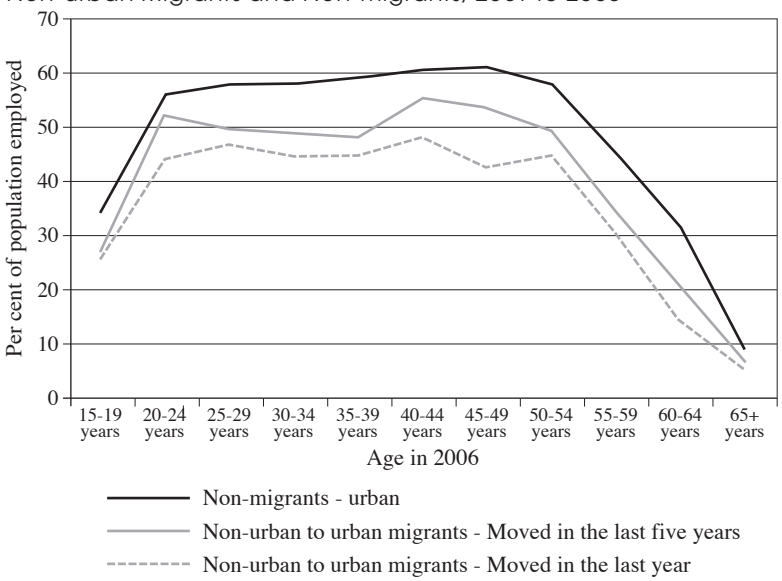
Because other human capital characteristics have not been controlled for in figure 5, it is not clear whether other differences between the populations explain much of this gap. It has been shown in a number of studies that employment outcomes are worse and education participation lower in remote areas (most recently by Biddle, 2010) so it

is likely that migrants to urban areas have lower levels of education and labour market experience than non-migrants. On the other hand, some of those who did move would have at least had in mind the possibility of the move paying off in economic terms.

Given these potential selection issues, comparisons between those who left non-urban areas and those who stayed there (the broken black line) are also instructive. The two lines stay somewhat close to one another up until those aged 35 to 39 years, though beyond this there is a reasonably consistent divergence with those who stayed in non-urban areas having higher rates of employment. It may be that those who stayed in non-urban Australia did so because they had better employment prospects relative to those who left and it is likely that employment in the CDEP program (which was still quite prominent in remote Australia in 2006) bolstered the labour market prospects of non-urban non-migrants. Nonetheless, whatever the sample selection issues and causal pathways, figure 5 shows that from a person's mid-thirties onwards, those Indigenous Australians who moved from non-urban to urban Australia between 2001 and 2006 had the worst employment percentages of all four migrant groups.

One piece of evidence that points to labour market adjustment explaining at least some of this relatively poor employment performance is a comparison between those who moved to urban areas between 2001 and 2006 and those who moved over a shorter time period (2005 to 2006).[2] The employment to population percentage of this group is given in a separate line in figure 6 alongside those who were in urban areas at the beginning of the period as well as those who moved there between 2001 and 2006.

Figure 6 - Per Cent of Population Employed by Age – Indigenous Urban and Non-urban Migrants and Non-migrants, 2001 to 2006



Source: Biddle (2009).

[2] Unfortunately, at the time of the analysis confidentiality constraints imposed by the ABS it is not possible to separately identify those who moved to urban areas between 2001 and 2005 from those who moved there between 2001 and 2006. If it was possible to do so, this would likely lead to a greater gap between long term and recent migrants.

While the difference is relatively small at the two extreme age groups when employment in general is low (15 to 19 years and 65 years and over) those who had only lived in urban areas for a maximum of one year had worse employment outcomes than those who had been there for a maximum of five years (not to mention those who had been in urban areas at the start of the period). Once again, there is a sample selection issue that makes definitive statements difficult in that those who moved to urban areas from 2001 who struggled in obtaining employment may have moved back to their original location. Nonetheless, the results present in figure 6 show that recent migrants to urban areas have substantially worse outcomes than those who have lived there for more than a year. However, even after five years, labour market outcomes still have not converged.

The selection issues raised in the previous discussion are unlikely to be resolved with existing data. Even if it was possible to observe labour market outcomes at the beginning as well as the end of the period[3] this would not show what the labour market outcomes would have been if those who did move had instead chosen to stay in the area in which they lived in 2001. However, it is possible to see whether the poorer employment outcomes are in any way related to characteristics which were observable in the Census. By presenting employment outcomes across the lifecycle, it is clear that the differences by migration status in figures 5 and 6 are not driven by age. However, they may be related to gender, education attainment and participation or other observable characteristics.

The results presented in table 1 test for differences in employment outcomes across four groups. Those who lived in a major city in 2001 and 2006 (the base case)[4], those who moved to a major city from the rest of Australia between 2001 and 2006, those who moved to the rest of Australia from a major city over the same period and those who remained in the rest of Australia over the period. The dependent variable is the probability of being employed at the end of the period with other explanatory variables including age and sex (included in the model but not the summary of results), education attainment and participation, English language ability, marital status, caring and child rearing status.

Parameters of the model are estimated using Maximum Likelihood Estimation of the Probit model. Results are presented as marginal effects or the difference in the probability of being employed between the base case and those with otherwise identical characteristics apart from that particular variable. Two models are used with the only difference being that, in the second model, whether or not a person changed usual residence at all over the period (regardless of whether it is next door or across Australia) is controlled for.

[3] While the Household Income and Labour Dynamics in Australia (HILDA) survey has information on employment before and after migration, the remote Indigenous sample is not sufficiently large to undertake meaningful analysis.

[4] Unfortunately, it was not possible with the publically available data to distinguish between those who lived in a regional compared to a remote area in either 2001 or 2006.

Table 1 - Marginal Effects for the Factors Associated with the Probability of being Employed – Indigenous Australians, 2006

	Marginal Effects	
Explanatory Variables	*Model 1*	*Model 2*
Moved to a major city from the rest of Australia	-0.023	-0.026
Moved from a major city to the rest of Australia	-0.023	-0.027*
Stayed in the rest of Australia	n.s.	n.s.
Changed usual residence in the last five years		-0.008
Secondary school student	-0.136	-0.128
Tertiary student	-0.095	-0.088
Part time student	0.040	0.036
Completed Year 9 or less	-0.117	-0.111
Completed Year 10 or 11	-0.033	-0.031
Does not have any qualifications	-0.114	-0.108
Has a Diploma or Certificate only	-0.020	-0.019
Speaks another language and English well	-0.010	-0.011
Speaks another language and English not well or not at all	-0.054	-0.053
Never married	-0.052	-0.047
Divorced, separated or widowed	-0.024	-0.021
Has had at least one child (for females)	-0.120	-0.112
Has a 'core activity' need for assistance	-0.288	-0.276
Provides unpaid child care (all)	n.s.	n.s.
Provides unpaid child care for children other than own	n.s.	n.s.
Provides unpaid assistance for someone with a disability	-0.025	-0.024
Probability of the 'base case'	0.955	0.960
Pseudo R-Squared	0.1872	0.1877
Number of observations	9,377	9,377

Source: Customised calculations using the 5 per cent Census sample. *Notes*: (a) Those variables that were not significant at the 10 per cent level of significance are labelled n.s. Those that were significant at the 10 per cent level of significance but not the 5 per cent level are marked with a *. (b) The base case for the total population is non-Indigenous. For all estimates the base case is aged 30 to 34 years and, in addition, lives in New South Wales, lived in a major city in 2001 and 2006, is not a student, has completed Year 12, has a university degree, speaks English only, is married and does not provide unpaid child care or assistance to someone with a disability. An additional characteristic of the base case in model 2 is that the person did not change usual residence between 2001 and 2006.

The coefficients and standard errors for the two models summarised in table 1 are given in appendix table 1 (including the extensive control for age, sex and State/Territory of usual residence). There are, however, three important things to note from the results. Firstly, the results from the education and other control variables generally follow *a priori* expectations. Importantly given one of the major motivations for migration for remote Indigenous Australians is to undertake education, those who are currently studying have lower levels of employment. Following the standard human capital model, so do those who have not completed a Year 12 or have a degree.

The second thing to note is that, even after controlling for education and other characteristics, those who move to a major city are less likely to be employed than those who lived in either a major city or the rest of Australia over the period. Admittedly, those who moved from a major city to the rest of the Australia also had a lower probability of employment, however, this is likely to reflect in part the poorer employment prospects in remote and regional areas in 2006.

The discussion earlier in this paper identified the likely impact of any large scale migration on employment prospects. This is especially the case for tied-movers (those who move because of employment changes of their spouse), however all those who move are likely to lose local contacts and firm specific human capital. This is captured in the second model where there is a small negative marginal effect for those who had any change in usual residence over the previous five years. The final important thing to note from table 1, however, is that even after controlling for those who had any change of usual residence, those who moved to a major city from the rest of Australia had poorer employment outcomes than both the base case and those who made other moves.

4. Migration and Employment – Effects on the Destination Area

While the main direct effect of migration is on population redistribution and the outcomes of those who do move, there are other indirect effects that are also important for policy design and delivery. Biddle (2008) showed a positive association between net migration and increases in the rate of overcrowding in the area. Specifically, each additional one per cent increase in the rate of net migration was associated with an increase in the particular measure of overcrowding of 0.218 percentage points. There was, however, no association with the net migration rate of the non-Indigenous population. These results give strong empirical support for the proposition that high rates of inward migration place significant additional burdens on the housing stock which, due to the slow nature of housing construction, is not made up for by an increase in the supply.

Inward migrants also compete with the existing population for jobs. However, they bring with them or attract additional financial resources that are often spent in the local area. Given that labour markets are much quicker to adjust than housing markets the net effect is more difficult to predict *a priori*. Ultimately, therefore, empirical analyses are required to test the competing theoretical effects and this final section of results considers the association between rates of migration and changes in rates of employment in the area.

The analysis presented in table 2 is intentionally descriptive. In essence, the aim is to identify the association between the employment rate in an area and inward and outward migration whilst holding other important variables constant. The dependent variable is the change in the per cent of the population who were employed between 2001 and 2006 (modelled using Ordinary Least Squares) and Indigenous and non-Indigenous Australians are modelled independently across three separate models each.

The first model has as its independent variables historic and human capital variables only, including the per cent of the population employed in 2001, the change in the per cent of the population who have completed Year 12 and the change in the per cent of the population who have not completed a qualification. The final variable in Model 1 is the change in the per cent of either the non-Indigenous population who

are employed between 2001 and 2006 (for the Indigenous estimates) or the change in the per cent of the Indigenous population who are employed (for the non-Indigenous estimates). These variables are designed to capture general labour demand in the area.[5]

The second model includes all those variables from Model 1 as well as two variables for the rate of outward and inward migration for the respective populations between 2001 and 2006. Model 3 also includes outward migration (as well as the historic and human capital variables). However, inward migration is disaggregated by the location type of the source area. That is, the number of people who moved into the area from a city area (as a per cent of the usual resident population in 2001), the number of people who moved into the area from a large regional area and so on.

Table 2 - Factors Associated with the Change in the Per Cent of the Population Employed between 2001 and 2006

	Indigenous			*Non-Indigenous*		
	Model 1	*Model 2*	*Model 3*	*Model 1*	*Model 2*	*Model 3*
Per cent of population employed in 2001	-0.614	-0.600	-0.623	-0.185	-0.333	-0.418
Change in per cent of population who have completed high school	0.053	0.059	0.060	0.254	0.235	0.223
Change in per cent of population without a qualification	-0.770	-0.736	-0.617	-0.088	-0.080	-0.069
Change in per cent of non-Indigenous population employed	0.261	0.269	0.293			
Change in per cent of Indigenous population employed				n.s.	0.022	n.s.
Rate of outward migration		-0.185	n.s.		0.181	0.175
Rate of inward migration		0.163			-0.085	
Rate of inward migration from city areas			n.s.			-0.167
Rate of inward migration from large regional towns			0.243			n.s.
Rate of inward migration from small regional towns and localities			n.s.			-0.177
Rate of inward migration from regional rural areas			n.s.			n.s.
Rate of inward migration from Non-Indigenous remote towns			n.s.			n.s.
Rate of inward migration from Indigenous remote towns			0.215			n.s.
Rate of inward migration from town camps			n.s.			n.s.
Rate of inward migration from remote dispersed settlements			-0.344			n.s.
Constant	27.276	27.568	27.232	11.611	17.238	23.759
Adjusted R-Squared	0.2195	0.2237	0.2554	0.2814	0.3275	0.3574
Number of areas*	510	510	510	522	522	522

Source: Customised calculations using data from the 2001 and 2006 Censuses. *Note*: *Those areas which had changes in outcomes for the dependent or any of the independent variables of less than -100 per cent or greater than 200 per cent were excluded from the analysis.

[5] There is a large degree of potential endogeneity with this last variable and it is important to note that other results are not sensitive to its inclusion.

The results presented in table 2 for Model 1 conform to *a priori* expectations regarding the historic and human capital variables. Areas with a high employment to population per cent in 2001 were more likely to experience a decline during the inter-censal period that followed. This represents for the most part a rather mechanical process of reversion to the mean whereby unexpectantly high employment areas revert to their equilibrium levels of labour market activity (all else being equal).

Following standard human capital theory, increases in the per cent of the population who had completed Year 12 or decreases in the per cent without a qualification were associated with improvements in employment to population percentages. Finally, changes in the non-Indigenous per cent of the population who were employed were positively associated with changes in the Indigenous population percentage. The reverse, however, was not true. Clearly, the non-Indigenous employment to population percentages were a better indication of the area specific economic conditions.

The association between migration and changes in employment percentages is in a different direction for the Indigenous compared to the non-Indigenous population. In the former, population increases from migration are associated with improved employment outcomes represented by the negative coefficient for outward migration and the positive coefficient for inward migration. However, the opposite is true for the non-Indigenous population with population decreases from migration associated with improved employment outcomes. While this paper does not explicitly model labour demand and supply, the relative sizes of the Indigenous and non-Indigenous populations may explain the different associations. In particular, as the non-Indigenous population usually makes up a greater share of the total area population, inward/outward flows of the non-Indigenous population is likely to increase/decrease the supply of labour. With labour demand adjusting more slowly, this will lead to a worsening/improvement in measured employment. The Indigenous population is rarely large enough to have such effects.

There are two potential explanations for why inward Indigenous migration has a positive association with Indigenous employment. Firstly, it may be that through Indigenous specific employment programs like CDEP program (which remember was still quite prevalent at the time of the 2006 Census), jobs followed those who changed area of usual residence. It is not possible to test this empirically using the data available, however it is unlikely to be the sole explanation given the fact that similar results to those presented in table 2 were found when the estimation was restricted to major cities and large regional towns where these employment programs made up only a small component of the labour market.

The alternative explanation is that the employment outcomes of those who moved areas were either already superior to those who stayed in the same area of usual residence or were substantially improved by the act of moving. This contrasts somewhat with the individual level results presented earlier. However, the results are reconciled somewhat in Model 3 when the source area is taken into account. Specifically, for the Indigenous population, inward migration from large regional towns or Indigenous remote towns was associated with improvements in employment percentages. However, inward migration from remote dispersed settlements was associated with a significant and substantial decline in employment per cent.

What this implies is that a reduction in the CDEP scheme or any other policy change that results in large scale outward migration from remote dispersed settlements could potentially lead to a significant deterioration in employment outcomes in the areas where people move to. This point is further reinforced by the fact that the coefficient on the rate of inward migration from remote dispersed settlements is -0.683 when remote dispersed settlements themselves are removed from the estimation (results available upon request).

5. Summary and Conclusions

One of the primary motivations for this paper was to consider the likely effect of a gradual but complete removal of the CDEP program (and a diminishing of labour market support) on Indigenous migration. It was shown that, before reforms to the program took place, CDEP participants were primarily concentrated in remote regions of Australia and amongst those in their early 20s. It was then suggested that a removal of the CDEP Program would lead to an intensification of previously observed urbanisation trends both in terms of the geography of Indigenous migration as well as the demography.

Having predicted large transfers of Indigenous Australians from remote to non-remote Australia, the paper then considered the likely impact on the labour market outcomes of those who move, as well as those who live in the area where migrants are likely to end up. While it is impossible to be definitive for the reasons outlined below, a somewhat cautionary tale emerges. Using both aggregate and individual data, it was shown that between 2001 and 2006, Indigenous Australians who move to urban areas do not appear to do as well in the labour market as those who stay behind and inward migration from remote dispersed settlements is associated with a significant and substantial decline in the percentage of the population employed in the destination area.

It is impossible to predict current or future trends from historic data. The selection issues associated with studying the effect of migration with anything but experimental data detailed in Greenwood (1997) are of particular concern for predicting the impact of the demise of the CDEP program. Those who moved from remote to non-remote Australia between 2001 and 2006 did so at a time when the CDEP program was still in place and are likely to have very different motivations for moving than those who respond to a different policy environment. In addition, the last inter-censal period was one of rapid economic growth and strong labour demand, a situation that is unlikely to be replicated over the current period. However, both effects are likely to understate the effect of the removal of the CDEP scheme on the employment prospects of those in remote Australia.

While it is important to keep in mind the selection issues and the limitations of current data on Indigenous employment and migration, the reality is that there is no alternative data that will provide a more accurate picture. It would therefore be prudent to expect that at least some Indigenous Australians will move from remote to non-remote Australia as a result of changes to the CDEP scheme and that a significant proportion of those who do move will struggle in the urban labour markets once they have moved (at least for a time).

Alternative labour market programs in remote Australia that lead to a

more managed process of urbanisation should be considered. Ultimately, although governments may have a fiscal motivation to encourage Indigenous Australians to move from non-urban to urban Australia where services are cheaper to provide, those who do move may struggle to compete in the private sector labour markets that they find there. Governments therefore have a responsibility to make the transition to urban labour markets as smooth as possible.

Appendix A.1

Coefficients and Standard Errors for the Factors Associated with the Probability of being Employed – Indigenous Australians, 2006

	Model 1		*Model 2*	
Explanatory Variables	*Coefficients*	*Standard Errors*	*Coefficients*	*Standard Errors*
Female	-0.116	0.096	-0.123	0.096
Aged 15 to 19	-0.321	0.089	-0.328	0.089
Aged 20 to 24	0.010	0.081	0.009	0.081
Aged 25 to 29	-0.005	0.086	-0.005	0.086
Aged 35 to 39	0.024	0.090	0.018	0.090
Aged 40 to 44	0.072	0.091	0.060	0.091
Aged 45 to 49	-0.010	0.096	-0.024	0.096
Aged 50 to 54	-0.096	0.101	-0.115	0.101
Aged 55 and over	-0.732	0.088	-0.755	0.088
Aged 15 to 19 – Female	0.240	0.123	0.247	0.123
Aged 20 to 24 – Female	-0.108	0.114	-0.100	0.114
Aged 25 to 29 – Female	0.031	0.118	0.042	0.119
Aged 35 to 39 – Female	0.292	0.120	0.297	0.120
Aged 40 to 44 – Female	0.325	0.122	0.332	0.122
Aged 45 to 49 – Female	0.495	0.130	0.504	0.130
Aged 50 to 54 – Female	0.501	0.135	0.504	0.135
Aged 55 and over – Female	0.507	0.119	0.512	0.119
Victoria	-0.052	0.060	-0.049	0.060
Queensland	0.124	0.038	0.126	0.038
South Australia	-0.005	0.066	-0.008	0.066
Western Australia	0.008	0.048	0.009	0.048
Tasmania	0.081	0.079	0.077	0.079
Northern Territory	-0.062	0.060	-0.070	0.060
Australian Capital Territory	0.102	0.130	0.099	0.130
Moved to a major city from the rest of Australia	-0.205	0.077	-0.165	0.078
Moved from a major city to the rest of Australia	-0.207	0.084	-0.166	0.086
Stayed in the rest of Australia	-0.012	0.034	-0.012	0.034
Changed usual residence in the last five years			-0.081	0.032
Secondary school student	-0.785	0.079	-0.785	0.079
Tertiary student	-0.613	0.069	-0.612	0.069
Part time student	0.891	0.094	0.890	0.094
Completed Year 9 or less	-0.710	0.044	-0.714	0.044
Completed Year 10 or 11	-0.278	0.039	-0.280	0.039
Does not have any qualifications	-0.694	0.078	-0.704	0.078
Has a Diploma or Certificate only	-0.185	0.081	-0.188	0.081

Appendix A.1 (continued)

Coefficients and Standard Errors for the Factors Associated with the Probability of being Employed – Indigenous Australians, 2006 (continued)

	Model 1		*Model 2*	
Explanatory Variables	*Coefficients*	*Standard Errors*	*Coefficients*	*Standard Errors*
Speaks another language and English well	-0.099	0.050	-0.116	0.050
Speaks another language and English not well or not at all	-0.410	0.131	-0.428	0.131
Never married	-0.394	0.039	-0.391	0.039
Divorced, separated or widowed	-0.214	0.049	-0.204	0.050
Has had at least one child (for females)	-0.723	0.059	-0.721	0.059
Has a 'core activity' need for assistance	-1.263	0.083	-1.267	0.083
Provides unpaid child care (all)	-0.052	0.040	-0.048	0.040
Provides unpaid child care for children other than own	0.057	0.052	0.055	0.052
Provides unpaid assistance for someone with a disability	-0.222	0.043	-0.226	0.043
Constant	1.695	0.105	1.745	0.106

References

Altman, J.C. (2001), 'Sustainable Development Options on Indigenous Land: The Hybrid Economy in the Twenty-first Century', *CAEPR Discussion Paper No. 226*, CAEPR, ANU, Canberra, available at http://www.anu.edu.au/caepr/discussion.php

Australian Bureau of Statistics (ABS) (2009), *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians*, 1991 to 2021 ABS Cat. No. 3238.0.

Biddle, N. (2008), 'The Scale and Composition of Indigenous Housing Need, 2001-06', *CAEPR Working Paper No. 47*, CAEPR, ANU, Canberra, available at http://caepr.anu.edu.au/publications/working.php

Biddle, N. (2009), 'The Geography and Demography of Indigenous Migration: Insights for Policy and Planning', *CAEPR Working Paper No. 58,* CAEPR, ANU, Canberra, available at http://caepr.anu.edu.au/publications/working.php

Biddle, N. (2010), 'A Human Capital Approach to the Educational Marginalisation of Indigenous Australians', *CAEPR Working Paper No. 67*, CAEPR, ANU.

Biddle, N. and Hunter, B.H. (2006), 'An Analysis of the Internal Migration of Indigenous and Non-Indigenous Australians', *Australian Journal of Labour Economics*, 9(4), 321-341.

Biddle, N., Taylor, J. and Yap, M. (2008), 'Indigenous Participation in Regional Labour Markets, 2001-06', *CAEPR Discussion Paper No. 288*, CAEPR, ANU, Canberra, available at http://www.anu.edu.au/caepr/Publications/DP/2008DP288.php.

Biddle, N., Taylor, J., and Yap, M., (2009), 'Are the Gaps Closing? – Regional Trends and Forecasts of Indigenous Employment', *Australian Journal of Labour Economics*, 12(3), 263-280.

Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) (2009), *Closing the Gap on Indigenous Disadvantage: The Challenge for Australia*, FaHCSIA, Canberra.

Greenwood, M.J. (1997), 'Internal Migration in Developed Countries' in Rosenzweig and Stark (eds.) *Handbook of Population and Family Economics*, Elsevier Science, Amsterdam.

Harris, J.R. and Todaro, M.P. (1970), 'Migration, Unemployment and Development: A two-sector Analysis', *American Economic Review*, 60(1), 126-42.

Khwaja, Y. (2000), *Should I Stay or Should I Go? Migration under Uncertainty: A New Approach*, University of London Working Paper, University of London, London.

Macklin, J. (2008), *Strengthening Indigenous employment opportunities,* Media Release - http://www.jennymacklin.fahcsia.gov.au/internet/jennymacklin.nsf/content/indig_employ_19dec08.htm.

Steering Committee for the Review of Government Service Provision (SCRGSP) (2009), *Overcoming Indigenous Disadvantage: Key Indicators 2009*, Productivity Commission, Canberra, ACT.

Taylor, J. and Biddle, N. (2008), 'Locations of Indigenous Population Change: What Can We Say?', *CAEPR Working Paper No. 43*, CAEPR, ANU, Canberra, available at http://caepr.anu.edu.au/publications/working.php

White, M.J., and Lindstrom, D.P. (2005), 'Internal Migration' in Poston, D.L. and Micklin, M. (eds.) *Handbook of Population*, Kluwer Academic, New York.