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Great Expectations - migration and labour market outcomes in Australia

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1. Introduction

It is commonly argued that higher levels of mobility among job seekers leads to greater labour market efficiency; improving job matching, reducing friction, and resulting in lower overall levels of unemployment. If unemployment gives rise to migration, and migration increases the prospect of employment (Pekkala and Tervo, 2002); labour migration might be regarded as highly micro-efficient process. In the Australian context such an argument is particularly appealing in light of flagging growth in Australia's rural and remote regions (Mitchell and Bill, 2006).

The Australian federal government has recently announced a pilot program to provide additional incentives for the unemployed to move (up to \$5,000 for people living in areas with high unemployment) The scheme is reportedly a response to the 'lumpy' concentrations of unemployment across Australia, persistent in the face of emerging skill shortages in booming regions of Western Australia and Queensland, and is explicitly aimed at loosening "the attachment to place if that place doesn't have a job" (Peatling, 2006). Such schemes have received recent support from the OECD (2005: 17) who argue "although promoting geographic mobility is not an end in itself, removing obstacles to internal migration may be an important policy issue especially in countries where regional disparities are pronounced...the difficulty is to strike the right balance between the requirements imposed on unemployed workers to accept a job in another location and measures aimed at making such a move feasible. Financial support to allow the unemployed to find and take up a job in another region exists in a few countries, but could perhaps be used more extensively."

Movers however incur significant short term costs when changing locations, including non-financial costs, such as the loss of information and support networks. While these costs are hopefully offset by future gains, relatively little Australian research has been undertaken into the extent to which moving benefits labour market participants. Until recently studies linking migration and unemployment have largely been undertaken at a macro-level with migration emerging as a strong adjustment mechanism equalizing unemployment rates (see Blanchard and Katz, 1992; Decressin and Fatas, 1995, and in the Australian context Debelle and Vickery, 1998). In Australia, studies undertaken on data below the state level have revealed mixed results (see Lawson and Dwyer, 2002; McGuire, 2001 and Trendle, 2004). This work indicates that in-migration has favoured high growth employment regions, often with high unemployment rates, due to rapid labour force growth. Out-migration on the other hand has occurred in low employment growth regions, with low unemployment rates (due to sluggish labour force growth). Thus in some regions interregional migration patterns would appear to be acting to reinforce unemployment disparities. International studies employing micro-data to examine whether migration improves prospects of re-employment have had mixed results, either finding no effect or a negative effect (see Podgursky and Swaim, 1990, Bailey, 1991, Shumway, 1991; Herzog and Schlottmann, 1984; Tervo, 2000), although some US studies have found positive effects (see Goss *et al.*, 1994; Boehm, Herzog and Schlottmann, 1998). Introducing controls for self selection casts further doubts on the classical premise that labour market participants benefit uniformly from migration (see Pekkala and Tervo, 2002). This finding is compatible with movers being affected by incomplete information; movers may have difficulty obtaining adequate information pre-move about job opportunities in the destination region. Additionally newly arrived migrants have limited access to the support and information networks embedded in the local area. An obvious explanation for the negative impact of migration on re-employment lies in where people are moving. Housing factors perhaps dominate employment factors in the choice of the destination region for the unemployed, leading to re-location in less than buoyant labour markets

(Bradbury and Chalmers, 2003). Amenity-tradeoffs may see a region's attractive physical and cultural features compensate for reduced job opportunities. A transitory negative effect from migration (Mincer, 1978) perhaps also arises from human capital being regionally specific, more useful in the region where it is acquired than in other regions (Pekkala and Tervo, 2002). In contrast Ludholm and Malmberg (2006) argue that movers in five Nordic countries studied were in general very satisfied with the overall outcome of migration, even when controlling for other factors, in terms of living environment, social life and employment. The authors argue this outcome may be partly attributable to two-income households, the Nordic welfare state and the possibilities of extended communities.

In the case of the employed, Yankow (2003), examines pecuniary returns from migration measured in terms of changes in wages, comparing outcomes for migrants and those who change jobs but do not move. He finds that workers receive a 'measurable pecuniary return to geographic mobility' above the return to job changing generally, although the timing of rewards differ substantially by skill. Lower skilled workers receive immediate benefits while the highly educated wait two years to receive the majority of their benefits. Over the last decade, employment opportunities in Australia have been spatially concentrated, with the result that those regions exhibiting strong employment growth have also experienced strong labour force growth (Mitchell and Bill, 2006). In this context migrants may experience pecuniary returns below those expected, particularly if rapid labour force growth occurring in the most buoyant labour markets has intensified competition.² If job rather than price competition results (Thurow, 1972) movers may be forced to take jobs below their level of skill and formal qualification, a process also known as 'bumping down' (Gordon, 2003; Buck and Gordon, 2000).

Such findings are likely to be worthy of serious consideration if policy makers are seeking to induce migratory behaviour amongst the welfare dependent. This paper explores post-move outcomes for the employed and the unemployed. Echoing Pekkala and Tervo (2002) we ask are movers more likely to escape unemployment than residents who stay? That is, is there some causal relationship between migration and re-employment that means that migration can be regarded as a micro-efficient. Similarly do employed movers maintain their employment status in the destination region? The Survey of Household Income and Labour Dynamics in Australia (HILDA), now in its fourth wave, facilitates exploration of migration and employment dynamics at the micro-level, holding other factors constant. The first section of this paper reviews international and Australian research into migration, employment and re-employment. Section 3 describes the data and Section 4 provides preliminary analysis of the characteristics of movers, reasons for moving and rates of transition to employment for unemployed movers and non-movers. In Section 5 we estimate separate migration equations by employment status. We also estimate an employment equation for the unemployed population, controlling for self-selection via instrumental variables, and a similar model is estimated for the employed. Section 6 concludes.

2. Interregional Migration and Labour Market Outcomes

The decision to migrate has been variously modelled (Hämäläinen, 2002). Classical migration theory argues that for the unemployed migration is a response to regional labour market disequilibrium, and as such is motivated by regional wage differentials or other attributes - higher wages attracting workers from depressed regions (Shields and Shields, 1989). Human capital theory views migration as an investment in human capital, and the decision to migrate is undertaken on the basis of weighing up the immediate costs and expected future benefits (see Becker, 1962; Sjaastad, 1962;

Harris and Todaro, 1970). Costs in this context can encompass non-financial factors such as the psychological costs of moving, the loss of location specific human capital and information networks. Migration, with particular reference to the unemployed, has also been analysed within 'job search theory', and the decision to migrate is viewed as part of a search process of the unemployed person related to stream of offers and an individual's reservation wage in which a rational jobseeker searches in an effort to maximise income, searching until the job offer observed is greater or equal to the reservation wage, which is decreasing function of time (see Meier, 1985; Armstrong and Taylor, 1993; Herzog, Schlottmann and Boehm, 1993).

Many studies have confirmed that the unemployed are mobile, and in fact more mobile than other labour force groups (see Böheim and Taylor, 2002 and Pissarides and Wadsworth, 1989 in the UK; DaVanzo, 1978; Boehm, Herzog and Schlottmann, 1998 and Herzog *et al.*, 1993 in the U.S.), even when controlling for other factors. The finding is consistent with classical theory in which geographic mobility is an attempt to escape joblessness. It is also consistent with the human capital model of migration: following a decline in present income (and/or local job opportunity) associated with unemployment, the opportunity costs of moving decrease, increasing the net present value of potential moves and so the expected utility and likelihood of a move. Likewise under the job-search model when an individual deems local search unlikely to yield a job offer at a desirable wage, migration is undertaken, thereby extending the radius of search (Goss *et al.*, 1994:128). Australian studies comparing mobility rates amongst government payment recipients find that the unemployed are more likely to change location. Dockery (2000:419) finds that younger, single unemployed persons living in rental accommodation in metropolitan areas are most mobile. He also finds that mobility declines with time on the benefit, an effect which is significant and large (p. 413).

However is moving beneficial? As Marshall *et al.* (2004) indicate, while for some movers migration represents the opportunity to pursue new possibilities, for others it may be motivated by necessity. Whether a move is voluntary or involuntary may be critical in terms of its long-term success. Bell (1996: 27) argues "it is those who have the least choice over their movements who suffer the greatest disadvantage". Migration involves economic and psychological costs which are substantial, such as the fees associated with the sale of a home, and the costs of re-establishment in a new neighbourhood, but also the loss of friends and family. Frequent moves can undermine the effectiveness of community based programs and employment training (Marshall *et al.*, 2004: 11). Movers on low incomes and welfare payments may face "the increased probability of falling into cycle of poverty and increasing homelessness, due to higher living costs, particularly if they have trouble finding work in the first few months." (Marshall *et al.*, 2004: 12). There is some research to link homelessness with frequency of moves and frequent movers may face challenges accessing information about community services and employment opportunities. As a result of severing local networks youth who move can suffer social isolation and lower self-esteem (Wulff and Bell, 1997; Bell, 1996).

A number of studies have explored the likelihood of re-employment following migration of the unemployed (these are reviewed in Herzog, Schlottmann and Boehm, 1993 and Pekkala and Tervo, 2002). In the U.S. context work by Herzog and Schlottman (1984), Van Dijk *et al.* (1989) and Podgursky and Swaim (1990) has found migration has a negligible influence on the probability of re-employment. Bailey (1991) employs event histories drawn from three years of longitudinal data and applying survival analysis he finds that youth experiencing joblessness for the first time have longer durations of unemployment than non-movers. Similarly Shumway (1991) finds migrants are 48 per cent less likely to obtain re-employment than their

non-migrant counterparts, and that this increases with multiple moves. Goss *et al.*, (1994) argue that search duration and the probability of migration are simultaneously determined; consequently the authors develop a two-stage model with controls for selectivity bias and find that the likelihood of re-employment for migrants is greater than that of non-migrants, although the likelihood of re-employment for both groups decreases with search duration. One criticism of this early work (Herzog, Schlottmann and Boehm, 1993) is that few studies have controlled for selectivity factors, or personal and regional variations in the costs and benefits of search. Herzog *et al.*, (1993) construct continuous time model estimates using data drawn from 1984 and 1985 Survey of Income and Program Participation. They find that migration does not have a significant impact on the association between migration and re-employment for active job-seekers, although it does appear to have a positive impact for discouraged worker, this leads the authors to question “the efficacy of migration as a job-search strategy” (Herzog *et al.*, 1993: 337). Boehm *et al.*, (1998) examine the impact of migration on transitions out of unemployment and from non-participation to active job search using a multi-state model of the hazard rate. Their results suggest migration is related directly and indirectly to transitions to employment (where the indirect effect arises because migration moves workers to more favourable labour markets).

More recently Tervo (2000) finds no significant effect of migration on re-employment, although he does show migration plays an indirect role by moving workers to more favourable labour markets with lower unemployment rates. Using the Finish Longitudinal Population Census file Pekkala and Tervo (2002) find while the propensity to obtain work is slightly higher amongst unemployed migrants, the positive effect of moving diminishes once other personal characteristics are accounted for. Moreover when controls for self-selection are introduced, an insignificant or negative effect on employment status emerges. The authors conclude that “the relative better quality of the migrants rather than the act of moving itself causes an improvement in re-employability. Hence migration alone may not be a very effective mechanism for alleviating individual unemployment” (Pekkala and Tervo, 2002: 621).

Analysis of the Australian 2001 Household Sample File (HSF), a 1 per cent sample from the 2001 Census, indicates that movers have double the unemployment rate of non-movers. This can be explained by the higher propensity to move of the unemployed. Consistent with previous studies which have found migration’s impact on re-employment to be negative, after controlling for known predictors of unemployment, having moved in the last 12 months increases the probability of unemployment significantly in high and low growth labour markets alike (Mitchell and Bill, 2006). However when making inferences about the relationship between migration and re-employment Census data is less than ideal due to its inability to capture key variables related to unemployment (such as employment experience and duration) and accurately determine the sequence of events. A number of Australian studies have employed longitudinal micro-data, useful in untangling causation, although such research has tended to focus on the question of where the unemployed have moved, rather than whether moving *per se* is beneficial (although the two questions are difficult to separate).³ Bradbury and Chalmers (2003) use the LDS to estimate a relationship between personal characteristics, regional characteristics and the outcomes of people who have moved while receiving unemployment benefit between January 1996 and June 2000. The dependent variable is constructed as the number of fortnights a person received payments in the 12 months pre-move minus the number of fortnights they received payments in the 12 months post-move. They find that the act of moving has a significant impact – moving into an area with a one percentage point higher travel region unemployment rate increases income support receipt by one-third of a fortnight. Marshall *et al.*, (2004) conduct a qualitative postal

survey of a sample of movers drawn from the LDS who moved from metropolitan to non-metropolitan Australia. While not controlling for other factors, the authors find that only 20 per cent of the unemployed indicated they were much better off after moving and for many full-time employment did not eventuate. The unemployed were the most likely of all payment recipients to move back to the country, or to be unsure of whether movement would take place in the following 12 months. Unfortunately Australian studies to date have not directly addressed the strong correlation of education, non-observable ability and employability, making migrants a self-selecting group; a problem we hope to correct in the following analysis.

Of course an additional factor influencing re-employment is where workers move. Kauhanen and Tervo (2002) indicate that the more educated are more likely to move to a growing region, where the likelihood of advancing their employment prospects is greater. Australian research, largely drawing on Census data, has documented substantial movements of low-income families away from Australian cities (Bell, 1995, Flood, 1992, Bell and Maher, 1995, Wulff and Bell, 1997). Housing affordability has been linked to such movements among people moving from Sydney to Adelaide (Marshall *et al.*, 2004). Bradbury and Chalmers (2003) however caution that interpretation of Census based results is difficult, because it is unclear whether the person's period of unemployment may have occurred immediately after or coincided with the decision to move. Using the one per cent FaCS Longitudinal Data Set (LDS) which facilitates the tracking of unemployed persons pre- and post-move, Dockery (2000) and Morrow (2000) find significant movement from non-metropolitan regions to metropolitan regions of welfare recipients. Conflict exists as to whether housing or labour market conditions were the chief motivator of these movements. Dockery (2000: 419) notes "although the unemployed are generally more mobile than persons on other forms of income support, their locational decisions do not seem responsive to regional employment opportunity". However his results are only weakly significant and the effect is small relative to overall determinants of a move. Marshall *et al* (2004) find that housing affordability is a key motivator for the out-migration of low-income people from Sydney and Adelaide. In contrast, Bradbury and Chalmers (2003), employing a similar dataset, find labour market conditions are important for the unemployed. There is a trend of net movement out of higher unemployment regions into lower unemployment regions, and into larger labour markets with higher housing costs. The net movement to larger labour markets happens in the first year of payment receipt (p.28). People living in high cost regions are more likely to move than those in low cost regions, and people living in low unemployment regions are more likely to move than those in high unemployment regions (Bradbury and Chalmers, 2003: 27). This pattern isn't replicated amongst non-unemployed welfare recipients, where movement appears to be towards high unemployment regions and away from larger labour markets.

3. Data

The Household Income and Labour Dynamics Australia (HILDA) study now in its fourth wave is well-suited to detailed analysis of employment outcomes, and the examination of the impact of behavioural changes, such as migration, on individual outcomes. Aggregate studies of migration cannot adequately control for region and personal characteristics, and tend to suffer from the practice of "inferring (unknown) employment status prior to, or at the time of, migration from data on employment status available at the end of the migration interval." (Herzog, Schlottmann and Boehm, 1993: 327). In longitudinal data such as the Household Income and Labour Dynamics of Australia (HILDA) the sequence of events can be clearly determined

allowing researchers to more confidently isolate the impact of migration on employment outcomes.

The HILDA Survey is a general social and economic survey, focusing on family and household formation, income and work. The HILDA Survey began tracking 19,914 persons in 2001, and is a representative sample of the Australian population. It has a longitudinal design, with most questions repeated each year for four years, the most recent wave concluding in 2004. For the purposes of this study we construct a cross-sectional pooled dataset of the working age population from the four waves comprising 30,761 observations (or persons who responded to the full survey). Full-time students, persons aged under the age of 15 years and persons aged over 65 years are excluded. Of these observations 5407 moves occurred. For the estimation undertaken in Section 3 we exclude observations in Wave 4 as the subsequent wave of data is not yet available.

House price data, for each state's metropolitan and non-metropolitan region, is drawn from Commonwealth Bank and Housing Institute of Australia's (HIAs) Housing Report, which provides a quarterly review of housing affordability. This report details median dwelling prices for state and other capital cities computed as an average of those houses financed by the Commonwealth bank. However, in calculating median prices, other factors are not held constant, and price variations may reflect changes in the composition of housing finance, as well as changes owing to factors such as size, location and quality of housing.

4. Descriptive Analysis

4.1 General Characteristics of Movers

In HILDA 20 per cent of respondents reported that they moved in the year prior to 2001, while 16 per cent moved between 2001 and 2002 (rates in subsequent waves becoming progressively lower). The average for the entire period is 17 per cent. This is above the UK figure of 10 per cent for the working age population, reported by Böheim and Taylor, 1999. Australian rates are however likely to be below the US, whose mobility rates have been estimated to be 2-3 times higher those of the UK (Hughes and McCormick, 1985).

Table 1 Numbers and proportions of movers, 2001-2004.

	Mover	Non-Mover
2001	1569 (20.0 per cent)	6275 (80.0 per cent)
2002	1264 (16.2 per cent)	6522 (83.8 per cent)
2003	1385 (17.7 per cent)	6435 (82.3 per cent)
2004	1198 (15.3 per cent)	6619 (84.7 per cent)
Total	5416 (17.3 per cent)	25851 (82.7 per cent)

Source: HILDA, 2001-2004 (unweighted).

Table 2 provides the percentage of non-movers and movers by various characteristics using data from the pooled waves. Looking at the labour market characteristics of movers and non-movers, Table 2 confirms that the unemployed are significantly more likely to move than the employed or those not in the labour force, having double the mobility rate of other labour force groups. Previous studies have highlighted that the propensity to migrate varies across occupational and demographic groups. The most highly educated are most likely to move (Greenwood, 1997), as are those with higher skills and wages, perhaps because they are better able to meet the costs of moving or

because the expected returns from migration are higher. Table 2 lends some support to this hypothesis, although there does not appear to be sizeable variation in outcomes: the highest rates of mobility are amongst those with a bachelor's or post-graduate degree and those who have only finished Year 12. Those who did not complete Year 11 have lower than expected levels of mobility, approximately 15.3 per cent.

The OECD (2005: 95) report that one implication of the lower levels of mobility associated with lower educational attainment is that weaker labour market participants are more dependent on local employment opportunities. Hughes and McCormick (1985, 1987) established in the UK that rent setting and housing allocation mechanisms impede the mobility of manual workers and result in unemployment in areas of low demand, and high wages in areas of high demand. Examining Table 2, we see no clear pattern emerges in terms of occupation and mobility: associate professionals, tradespeople and professionals have the highest rates of mobility – typically conceived as being at the opposite ends of the occupational spectrum, followed by elementary and intermediate clerical workers.

Table 2 Percentage movers by key socio-economic variables, 2001-2004.

Variable	% Moved	Variable	% Moved
Employed	19.9	Manufacturing	18.8
Unemployed	37.3	Electricity and Construction	21.9
Not in the Labour Force	15.6	Services	23.3
Manager	13.7	Transport	18.3
Professional	18.2	Government and Education	16.7
Associate Professional	22.9	Other	31.5
Tradesperson	23.7	Age 16-19 years	53.5
Clerical	19.9	Age 20-29 years	51.1
Production and Intermediate	18.7	Age 30-39 years	24.5
Elementary Clerical	23.5	Age 40-49 years	12.5
Labourer	21.7	Age 50-65 years	8.8
Female	19.3	Own/Currently Paying Off Mortgage	9.7
Sole parent	29.5	Rent (or pay board)	60.1
Disability	17.1	State Housing	15.5
Agriculture and Mining	14.7	Low English Proficiency	9.7
Postgraduate/Bachelor Degree	19.8	Indigenous	28.5
Diploma	19.0	NESB	15.3
Certificate	19.5	Child	15.0
Year 12	26.4	Family and dependents	16.3
Below Year 11	16.5	Employed Spouse	14.9
		Married	12.3

Source: HILDA, 2001-2003 (unweighted).

Table 2 also reveals a well-documented inverse relationship between age and mobility (OECD, 2005). Young people are much more likely to move than older persons. Those aged 20-29 years are most mobile, followed by those aged 16-19 years, only 8.7 per cent of those aged 50 to 65 years moved in any of the waves. One explanation

is that if mobility is an investment associated with a short-run income loss, then moving is an investment whose returns accrue in the following years (Gardner, Pierre and Oswald, 2001: 1). The young therefore have many more years to reap the benefits of the decision to move, and smaller family and psychic costs to bear in the short-term. Also clear from Table 2 is that moving is strongly related to housing tenure. Those owning their own homes are much less likely to move than those who rent, pay board, those who are purchasing their home or living in their residence rent free. Renters are the most likely of the tenure types below to move, 39.5 per cent having moved in any of the four waves. This is consistent with the presence of transaction costs implying larger costs for home-owners contemplating moving, than exist for renters. State housing tenants in general are more likely to be unemployed, and are less likely to move for job reasons. If they move, they move shorter distances (Coleman and Salt, 1992; Gardener, Pierre and Oswald, 2001), which may reflect constraints on the availability of affordable housing, HILDA reveals persons in state housing do have lower levels of mobility, around 15 per cent moved in any of the waves examined. Looking at other characteristics, Indigenous Australians (25.0) have higher than average rates of mobility, while persons who do not speak English well or at all, have significantly lower rates of mobility (10 per cent). Those who are married and those with children are less likely than average to move, as are those with an employed spouse; sole parents are more likely to move (25.7) than average.

4.2 Reasons for Moving

Table 3 reveals that housing reasons are a key motivator of migration, over 40 per cent of respondents who moved, moved for this reason (some movers list multiple reasons for moves thus some movers appear more than once in Table 3). These included moving to get a smaller or larger place, getting a place of one's own, because the property was no longer available or because of an eviction.

Table 3 Reason for moving by distance moved, 2002-2004.

Reason for Moving	within post code	1-5 km	5-9 km	10-19 km	20-49 km	50-99 km	100- 499 km	500+ km	Total
Work Reasons	55	24	31	58	63	51	125	140	548
%	10.0	4.4	5.7	10.6	11.5	9.3	22.8	25.5	11.4
Personal Reasons	247	97	80	105	91	67	125	134	947
%	26.1	10.2	8.4	11.1	9.6	7.1	13.2	14.1	19.7
Neighbourhood Factors	174	86	75	89	86	49	91	86	737
%	23.6	11.7	10.2	12.1	11.7	6.6	12.3	11.7	15.3
Housing Reasons	915	340	239	283	174	47	60	29	2088
%	43.8	16.3	11.4	13.6	8.3	2.3	2.9	1.4	43.4
Other Reasons	130	56	42	37	43	13	18	26	366
%	35.5	15.3	11.5	10.1	11.7	3.6	4.9	7.1	7.6
Spouse/Family	21	8	7	8	6	10	24	36	121
%	17.4	6.6	5.8	6.6	5.0	8.3	19.8	29.8	2.5
Total	1542	611	474	580	463	237	443	451	4807
%	32.1	12.7	9.9	12.1	9.6	4.9	9.2	9.4	

Source: HILDA, 2002-2004 (unweighted). Note: in the HILDA survey respondents can nominate multiple reasons for moving, Table total is greater than the total number of movers.

Meanwhile 11 per cent of those who moved, moved for work related reasons, and 20 per cent moved for personal reasons (these include moving to be closer to place of study, health reasons, to join partner or because of a relationship breakdown). Thus housing does appear to be the dominant motivator of moves.

Distances can only be calculated for Wave 2, 3 and 4, by means of greater circle distance between postcodes reported in HILDA. Table 5 (in which movers are only counted once) confirms that the majority of moves are small distance; intra-regional moves together making up the majority of the picture of inter-regional migration (Gordon, 2003). One-third of movers moved inside their own postcode, and thus in the context of this paper cannot be said to have produced a change in their local labour market conditions either by design or by accident. Over half of movers moved 9 km or less. Looking at reasons for moving by distance moved, Table 3 confirms that short distance moves are predominately for housing and personal reasons, as distance increases, work related reasons become the most important. Spouse related factors (to follow a spouse or whole family moved) are also important for long-distance moves. Neighbourhood factors tend to be important in medium to long-distance moves. This confirms UK work, for instance, Owen and Green (1992) who found intra-urban moves are driven by housing factors, while interregional moves are more likely to be job-related (see also Bradbury and Chalmers, 2003).

Table 4 Broad labour force status by reason for moving, 2001-2004.

	Work Reasons	Personal Reasons	Neighbourhood Factors	Housing Reasons	Other Reasons	Spouse/ Family
Employed	490	659	522	1588	264	65
%	13.7	18.4	14.5	44.3	7.4	1.8
Unemployed	23	60	34	92	16	12
%	9.7	25.3	14.3	38.8	6.8	5.1
Not in the labour force	34	227	180	407	85	43
%	3.5	23.3	18.4	41.7	8.7	4.4

Source: HILDA, 2001-2004 (unweighted). Note: in the HILDA survey respondents can nominate multiple reasons for moving, Table total is greater than the total number of movers.

Table 5 Distance moved by labour force status, 2002-2004.

	[or moved within postcode]	1-5 km	5-9 km	10-19 km	20-49 km	50- 99 km	100- 499 km	500+ km
Employed	1,005	394	305	349	241	111	213	249
%	35.1	13.7	10.6	12.2	8.4	3.9	7.4	8.7
Unemployed	50	21	14	25	17	13	30	23
%	25.9	10.9	7.3	13.0	8.8	6.7	15.5	11.9
Not in the labour force	269	78	56	77	84	56	76	85
%	34.4	10.0	7.2	9.9	10.8	7.2	9.7	10.9
Total	1,324	493	375	451	342	180	319	357

Source: HILDA, 2002-2004 (unweighted).

Tables 4 and 5 explore reasons for moving and distance moved by broad labour force status. The unemployed move longer distances than the employed or those not in the labour force. The employed are more likely to make short-distance moves, 9km or less, than other labour force groups. This is confirmed by previous analysis of Bradbury and Chalmers (2003: 13), who found that unemployment payment recipients were more likely to move between SLAs and to move distances of 200km or more (see also DaVanzo, 1978). The unemployed are slightly less likely to move for work related reasons and more likely to move for personal reasons, than the employed for whom work reasons motivate 14 per cent of moves.

4.3 Mobility and Location

The mobility of low-income households is thought to be constrained by housing price differentials, resulting in a lower likelihood to move for low-income groups. Table 6 examines the question of mobility by suburb using the Index of Relative Socio-Economic Disadvantage (IRSED). This is a composite index developed from 1996 Census which focuses on economic and other resources available to a community; it is calculated for Statistical Local Areas (with an average population of 13,938 in 2001) and is divided into deciles. A low index value reflects relative disadvantage and occurs in areas with a high proportion of low-income families, persons in low skilled occupations and persons without training. A high value reflects lack of disadvantage in an area. The most disadvantaged decile has the greatest probability of moving and the least disadvantaged has the lowest (overall there does not seem to be any clear relationship socio-economic decile of the origin region and probability of moving). Thus constraints on mobility, if they exist for residents in the most disadvantaged areas, do not appear to be having a strong impact. Table 7, which shows percentage movers by socio-economic score of origin against the score for the destination region, illustrates that between 30 and 40 per cent of movers in each decile move into the same SEIFA group. This perhaps reflects housing price differentials and the tendency of residents to sort along lines of race and income, as predicted by preference models (Schelling, 1971). Those in the very bottom socio-economic decile and those in the very top socio-economic decile are most likely to re-locate to a similarly ranked area.

Table 6 Proportion of movers by Index of Relative Socio-Economic Disadvantage (IRSED) decile.

IRSED Score	% Mover (per cent)
1 (lowest IRSED decile)	361 (19.2 per cent)
2	375 (17.6 per cent)
3	405 (17.4 per cent)
4	402 (14.3 per cent)
5	391 (17.0 per cent)
6	381 (16.7 per cent)
7	357 (15.3 per cent)
8	343 (16.0 per cent)
9	432 (16.7 per cent)
10 (highest IRSED decile)	301 (13.2 per cent)

Source: HILDA, Waves 2001-2003.

Table 7 Proportion of movers by origin IRSED decile and destination IRSED decile (%)

Destination Origin	1 (lowest decile)	2	3	4	5	6	7	8	9	10 (highest decile)
1 (lowest decile)	40.1	9.8	10.5	5.5	8.6	7.4	6.4	6.7	2.6	2.4
2	7.5	33.0	7.0	12.9	8.1	7.9	9.0	4.7	7.0	2.9
3	10.2	9.4	38.5	10.6	6.5	10.2	4.7	4.3	3.5	2.0
4	2.9	9.8	7.4	38.3	11.9	7.4	7.4	5.9	5.1	3.9
5	6.7	10.5	6.5	7.1	35.3	6.7	7.5	6.5	6.0	7.3
6	7.7	5.8	8.5	7.5	7.9	34.1	10.0	5.3	10.5	2.8
7	5.7	3.5	7.5	5.5	7.0	14.9	29.6	9.5	7.0	10.0
8	3.2	5.0	8.7	7.5	10.5	9.0	9.0	28.7	12.5	6.0
9	3.4	2.8	4.6	7.1	5.0	7.3	7.9	8.3	37.9	15.7
10 (highest decile)	1.6	2.1	3.1	3.1	3.1	6.5	12.0	6.8	22.7	38.9

Source: HILDA, Waves 2001-2003.

4.4 Transitions

Comparing movers and non-movers in Table 9, unemployed movers between Wave 1 and Wave 2 are more likely to have found employment, and less likely to have dropped out of the labour force than non-movers, and the difference is sizeable. For those who are not in the labour force and who moved, more are now in the labour force and more of these people are employed (more than double the percentage of those who did not move). This preliminary result would seem to confirm the finding of Boehm *et al.*, 1998, that migration is a significant factor in encouraging heads of household who are not in the labour force to renew job search. Interestingly employed persons who move are less likely to be employed and more likely to be unemployed, although fewer dropped out of the labour force. Thus the simple descriptive analysis supports the proposition that the unemployed benefit from moving, although the act of moving for an employed person appears to be slightly less beneficial in terms of retaining employment.

4.5 Repeat Moves

Empirical analysis suggests that repeat-movers are less likely to benefit from migration in terms of gaining employment. Herzog and Schlottmann (1984) examine re-employment rates for blue-collar workers and find no significant impact from migration with the exception that non-return repeat migration to a state other than one's birth state more than triples the likelihood blue-collar unemployment in 1970. Even though the HILDA data is a relatively short four year panel, 45 per cent of movers undergo a second move (calculated using a balanced panel). Most movers who repeat move, do so twice (29.3 per cent of movers), although a reasonably high proportion of movers move 3 times (12.8 per cent) and a very small proportion move 4 times (2.7 per cent). Table 8 shows movers by waves in which they move, most repeat moves occurring within one year of the initial move, and in any number of years most of these between Wave 1 and Wave 2. Looking at repeat movers by labour force status, 42.2 per cent of employed movers undergo repeat moves, compared to 53.9 per cent of unemployed movers and 38.8 per cent of movers not in the labour force. Thus repeat moves are more common for the unemployed than other labour force groups.

Table 8 Repeat movers by wave moved, 2001-2004.

Waves	%
Waves 1,2	16.2
Waves 1,3	11.4
Waves 1,4	9.5
Waves 2,3	10.1
Waves 2,4	6.6
Waves 3,4	11.9
Waves 1,2,4	6.4
Waves 1,2,3	9.0
Waves 1,3,4	6.4
Waves 2,3,4	6.7
Waves 1,2,3,4	6.0

Table 9 Transitions in labour force status, movers and non-movers

Destination \ Origin	Non-Movers				Movers			
	Employed	Unemployed	Not in the Labour Force	Total	Employed	Unemployed	Not in the Labour Force	Total
Employed	13,236	146	725	14,107	2,526	87	199	2,812
%	93.8	1.0	5.1		89.8	3.1	7.1	100.0
Unemployed	239	164	157	560	113	53	43	209
%	42.7	29.3	28.0		54.1	25.4	20.6	100.0
Not in the labour force	608	132	3,922	4,662	132	46	549	727
%	13.0	2.8	84.1		18.2	6.3	75.5	100.0
Total	14,083	442	4,804	19,329	2,771	186	791	3,748

Source: HILDA, Waves 2001-2003.

5. Results

5.1 Introduction

The analysis in this section draws on the pooled cross-sectional dataset, described in Section 3. We examine mobility within the last year as a function of the previous year's characteristics. 26 per cent of unemployed who move in our dataset moved within their own postcode and thus cannot be said to be altering their labour market by design or accident and are excluded from the analysis.

Following Pekkala and Tervo (2002) we work on the assumption that an unemployed person is willing to move to another area if his/her perceived chances of finding a job there are higher than at his/her original location. While Böheim and Taylor (1999) estimate using the British Longitudinal Panel Survey (BHPS) that a desire to move motivated by employment reasons has the largest positive impact on the probability of moving between regions - preliminary analysis of the HILDA data reveals that the bulk of Australian moves occur for non-work reasons. The unemployed are slightly more likely to move for work reasons (13.7 per cent compared to 11.4 percent in the total population). Unfortunately the sample size is not large enough to permit separate estimates of those moving for work and other reasons.

For the unemployed as Pekkala and Tervo explain (2002:624) there are three alternatives following a job loss: (1) remain unemployed in the original region; (2) move to a region and search for a job (speculative migration) or move to a region where you already have a job (contracted migration), or (3) drop out of the labour force. According to Greenwood (1997) the choice in such a situation will depend on several personal and family characteristics – older and less educated workers will be more likely to drop out of the labour force; family conditions, such as the presence of children and an employed partner (a move for job reasons only taking place if one partner's net gain is greater than the other partner's net loss (Mincer, 1978)), will also discourage workers from moving. A higher propensity to move might also be expected for renters, those born in an English speaking country, residents of metropolitan areas and those with higher family income to finance a move.⁴

5.2 Migration responses for the whole population

Firstly, we estimate a probit of the probability of migration for the entire working age population, using the pooled cross-section from 2001-2003. We include a range of socio-demographic variables recorded for the wave prior to the move, along with variables capturing whether the individual was unemployed. Table 10 reports the probit estimates. These indicate that, independent of other characteristics, unemployment is positively related to the decision to migrate. Age is significant and negatively related to the probability of migration and this confirms established life-cycle effects. Education level influences the likelihood of migration - persons who did not complete high-school are significantly less likely to migrate. Family structure is important- persons who are married, those with an employed spouse and those with many children are less likely to migrate. Owner-occupiers have a lower probability of migration, as do state housing tenants. Persons who have moved before are more likely to migrate again, and residing in a metropolitan region increases the probability of migration. Sole parents are also less likely to migrate. Relatively advantaged regions (regions with low levels of disadvantage) encourage migration in the general working age population. Median house price of Major Statistical Region (MSR) is also significant, although the effect is very weak.

Table 10 Probability of Migration, Probit Estimates, 2001-2003.

Moved	Coefficient	Standard Error
Constant	-0.254	0.081*
Aged 50-65	-0.648	0.074*
Aged 40-49	-0.545	0.074*
Aged 30-39	-0.312	0.073*
Aged 20-29	-0.159	0.072**
Below year 11 education	-0.112	0.030*
Diploma	0.005	0.042
Post-Graduate/Bachelor	0.033	0.032
Female	0.019	0.025
Non English speaking background	-0.046	0.038
Family Income	0.000	0.000
No of Children	-0.067	0.013*
Metropolitan location	0.164	0.029*
Married	-0.094	0.030*
Median House Price of MSR	0.000	0.000*
Owner-occupier	-0.751	0.027*
Sole Parent	-0.121	0.056**
Indigenous	0.026	0.087
Private Wealth	0.000	0.000
Employed Spouse	-0.057	0.028**
Manual worker	-0.045	0.038
Moved Before	0.063	0.024*
Unemployed	0.199	0.057*
State Housing	-0.598	0.066*
IRSED destination region	0.012	0.005*
No. of observations	23,077	
LR chi ²	2,030.21 (0.000)	
Pseudo R ²	0.1239	
Log Likelihood	-7,179.16	

Notes: * indicates 1 per cent statistical significance, ** indicates 5 per cent statistical significance.

5.3 Migration, employment and selectivity bias

In dealing with a labour market application where a selection issue arises, we are presupposing that we have a rationed labour market, that is, that there are not enough jobs to meet the desires of the current labour force. This is definitely the case for Australia in the period covered by the data (2001-2004).

We aim to estimate the impact of migration on employment status (and hence unemployment risk) controlling for various demographic, occupational and regional factors. The least squares (OLS) regression would estimate the migration impact using:

$$(1) \quad y_i = \beta' \mathbf{x}_i + \varepsilon_i$$

where i is the i^{th} person in the sample, y_i is a binary variable defining whether employed (=1) or not employed (=0, that is, either unemployed or not in the labour force), one of the columns in \mathbf{x}_i is the migration outcome (either 1 if moved or 0 if not), and ε_i is a normally distributed random error component.

There is every reason to suspect that the motivations (characteristics) that have driven the migration decision are also likely to be correlated with those observed and unobserved attributes that predispose a person to successfully gain employment (especially in a rationed labour market). Selection bias occurs when individuals are not randomly selected into groups, and unobservable characteristics determine the selection. It is argued migrants are likely to be a selective group with inherently more favourable characteristics, such as motivation (Nakosteen and Zimmer, 1980; Herzog *et al.*, 1993). Individuals with higher skills and motivation will be more likely to move and more likely to subsequently find employment, Bradbury and Chalmers (2003). If the factors which cause persons to move are unobservable, and cannot be controlled for, then the impact of changing location on employment outcomes will be affected. To control for this we need to control for the tendency of better educated, skilled or motivated residents to move and move into better areas (in our analysis this is captured by the destination region's IRSED decile).

The OLS estimates of (1) would yield biased and inconsistent estimates of the coefficient on the migration variable due to the endogenous selectivity. In this case, the error term is correlated with \mathbf{x} (the migration variable). Equation (1) thus implies the existence of a selection equation:

$$(2) \quad u_i = \gamma' \mathbf{z}_i + v_i$$

where u_i is the unobserved net benefits to person i arising from moving, \mathbf{z}_i is the factors which motivate movement and v is a well-behaved random error component.

There are several ways in which we can generate unbiased and consistent estimates of the system of equations (1) and (2) (see Pekkala and Tervo, 2002: 625). In this paper, we use instrumental variables (IV) estimation to account for the endogeneity of migration in (1). That is, we seek to use instruments for migration in (1) to correct for the selectivity bias. In IV estimation the instruments used must have two properties: (a) they must be correlated with the endogenous variable(s) they replace, which is indicated by the fit of the first stage reduced-form regression(s); and (b) they must be uncorrelated with the error term. Empirical application requires us to verify these properties with formal tests. A useful test where there is one endogenous variable of interest is to check the validity of the instruments with the F -test of the joint significance of the instruments in the first-stage regression (see Bound *et al.*, 1995). The F -statistic on the first-stage regression, which tests the hypothesis that the instruments have no explanatory significance in that regression, was 16.64. Staiger and Stock (1997: 557) argue that the F -test statistic should be above 10 especially given that the size of bias increases within the number of instruments. This is because

“standard asymptotic approximations to the distributions of the main instrumental variables statistics break down when the mean of this F statistic is small”.

In addition to using the F -test of the joint significance we need to test for orthogonality between the instruments and the errors in the second-stage regression. In the case where our first-stage regression (Equation 2) is overidentified (more instruments than endogenous variables), the test for orthogonality is relatively straightforward. We calculate the test statistic nR^2 by regressing the second-stage residuals on all the instruments (both the included exogenous variables and those instruments which did not appear in the equation) without a constant. The nR^2 of this auxiliary regression is $\chi^2 (L-K)$ under the null hypothesis that all instruments are orthogonal to the error, where L is the number of instruments and K is the number of endogenous variables. The null is that the instruments are valid so we reject the null if test statistic is above its critical value (meaning a probability value below 0.05).

Our research design therefore involves two steps conducted for two samples (the first sample covers unemployed in the first or second wave and the second covers those who were employed in the first or second wave). The steps are:

1. Probit estimation to find valid instruments for the decision to migrate (dependent variable is unity if the person has migrated between Waves, and 0 otherwise);
2. Second-stage instrumental variables probit estimation of the subsequent employment status of individuals who were (a) unemployed in either the first or second wave; or (b) employed in either the first or second wave, with migration as one of the explanatory variables. In this case, we instrument the migration variable.

We seek to test the hypothesis that migration improves one’s employment prospects in a rationed labour market. We thus examine this hypothesis from the perspective of those who were unemployed initially and then consider whether migration changes the employment prospects for those who were initially employed.

5.3 Unemployment workers migration and labour market outcomes

We initially consider the impact of migration on workers who were unemployed prior to moving house. This sample contained 769 persons in total all who were unemployed in either Wave 1 (2001), Wave 2 (2002) or Wave 3 (2003). Their employment status in the next corresponding Wave and movement is described in Table 10 and indicates that 54.2 per cent of persons remained not employed in the next wave while 45.8 per cent found work. Of those who remain not employed, 83 per cent did not move in the year. Of those who went from unemployment to employment over the relevant year, 75.6 per cent did not move. Around 20.4 per cent of these unemployed workers in total migrated in the relevant year while 79.6 stayed put (where migration is defined as having moved outside one’s own postcode).

Table 10 Cross-tabulation of unemployed (2001, 2002, 2003) and status

Employment status next Wave	Migration		Total
	Did not move	Migrated	
Not Employed	346	71	417
Employed	266	86	352
Total	612	157	769

Source: HILDA, Waves 1 to 3.

Selection model for those unemployed

Three instruments were chosen and related to housing status and metropolitan locality. The valid instruments were home ownership (with an expected strong negative influence on the decision to migrate); occupation of state housing (also negative and consistent with the findings of Gordon (2003) that housing affordability tends to spatially segregates the unemployed such that a spatial clustering of unemployed individuals reflects the clustering of state housing provision); and metropolitan locality (a positive influence reflecting the fact that the costs of movement are lower within the concentrated metropolitan region). Table 11 reports the final probit results of this exercise.

Table 11 Instrument selection for migration by unemployed persons (probit estimation)

Instrument	Coefficient	Standard Error
Ownership	-0.883	0.114
State housing occupant	-0.811	0.214
Lives in metropolitan area	0.129	0.110
Test for exclusion	F(3,765) = 29.9	
Overidentification test	$\chi^2(1) = 2.00$ (p -value = 0.367)	
McFadden R-squared	0.089	

A larger list of instruments for migration by the unemployed were initially chosen on *a priori* grounds – that is, they were likely to be motivators for migration but not directly related to one’s prospects of re-employment. It is clearly a difficult task separating these causal chains. The potential instruments were then culled using overidentification tests described above until only valid instruments remained. The high *F*-test result also supports the choice of instruments. Several of the potential instruments tried were unsupported on the basis of overidentification tests and in some cases (such as Residential housing prices; Age variables; Non-English speaking background; Socio-economic status of the destination region) were significant in the second-stage employment status equation.

Employment status model for those initially unemployed

The dependent variable took the value of 1 for those who were unemployed in a one wave (2001 or 2002) and subsequently reported as being employed in the next wave (2002 or 2003), and zero if the person had remained unemployed or exited the labour force in the next period. Table 12 reports the regression results comparing the estimates obtained without correcting for selection bias to the selection-corrected estimates. The results are controlled for contracted movers (those who moved house because they had already obtained a new job).

Table 12 Employment status for unemployed in previous Wave

	Probit (no selection)	IV Probit (selection)
Constant	-1.041 (0.158)*	-0.963 (0.187)*
Moved to new location	0.091 (0.122)	-0.251 (0.419)
Aged 50-65 years	-0.243 (0.124)**	-0.275 (0.126)**
Graduate	0.475 (0.158)*	0.477 (0.158)*
Employed Spouse	0.252 (0.111)**	0.226 (0.115)**
Non-English speaking background	-0.426 (0.135)*	-0.429 (0.135)*
Socio-economic status destination	0.039 (0.017)**	0.040 (0.018)**
Unemployment less than 2 years	0.817 (0.146)*	0.818 (0.146)*
Contracted move	1.597 (0.489)*	1.663 (0.482)*
No of observations	769	769
McFadden R-squared	0.105	0.105
Wald test for exogeneity		p -value = 0.434
Test of overidentifying restrictions		$\chi^2(1) = 2.00$ p -value = 0.367

Notes: estimates are followed by standard errors in parentheses. * indicates 1 per cent statistical significance, ** indicates 5 per cent statistical significance.

The results confirm the indications from our earlier descriptive analysis. Migration does not, in itself, improve the prospects for re-employment of the unemployed, other things equal. Once we control for selection bias, it appears that migration does not significantly alter the employment chances of the unemployed. The selection bias is also evident in the comparison between the non-corrected and corrected (IV) probit models.

We were not able to derive direct employment demand measures from this dataset. We will extend the analysis once a spatially coded dataset is released to us in the near future. To represent the 'well-being' of the location the persons were moving into we used the Socio-Economic Index for Areas (SEIFA) index for the destination region, represented by the variable Socio-economic status destination. Using Pearson's correlation coefficient there is a moderate correlation between unemployment rate and

IRSED decile of the origin region (-0.435), access to the unconfidentialised version of HILDA would overcome this problem by providing spatial identifiers. The results confirm that strong economic conditions in the destination region increase the chances of an unemployed person gaining subsequent employment, irrespective of whether they move or not.

The results also confirm that the unemployed are more likely to gain employment if they have a university degree and have an employed spouse, other things equal. Older unemployed workers (aged 50-65) and those from a non-English speaking background are less likely to gain employment.

Duration effects were also pronounced. 83.2 per cent of the sample had been unemployed for less than two years while 10.9 per cent had been unemployed for more than 2 years but less than 5 years and 5.8 per cent had been unemployed for more than 5 years. The duration variable (Unemployment less than 2 years) suggests that those who have been unemployed the longest are less likely to gain employment on the base case unemployed person, other things equal. We should be careful in the way this conclusion is used. Clearly it would have been desirable to have a continuous measure of weeks unemployed. Unfortunately, the duration variable available in HILDA is problematic because of many missing observations (respondents indicating they did not know how long they had been unemployed, some 22 per cent of the sample of 769) and so we were forced to use the blunter, less than 2 years or more than 2 years variable. The broader bands used are likely to be more accurate but at the cost of lower quality informational content.

State (regional) dummies were included but were not significant. In our next study, which will use a newly released dataset, geo-coded at a finer spatial level, we will expect to detect locational impacts. There were no significant panel effects across the years (2001, 2002 and 2003).

5.5 Employed workers migration and labour market outcomes

We now consider the impact of migration on workers who were already employed prior to moving house. This sample contained 16919 persons in total all who were employed in either Wave 1 (2001), Wave 2 (2002) and Wave 3 (2003). Their employment status and movement is described in Table 13 and indicates that 93.2 per cent of persons remained employed in the next wave while 6.8 per cent were unemployed. Of those who remained employed, 89 per cent did not move in the year. Of those who went from employment to not being employed over the relevant year, 80 per cent did not move. Around 11.6 per cent of these workers in total migrated in the relevant year and 88 per cent overall stayed put.

Table 13 Cross-tabulation of employed (2001, 2002, 2003) and status

Employment status next Wave	Migration		Total
	Did not move	Migrated	
Not employed	929	228	1157
Employed	14023	1739	15762
Total	14952	1967	16919

Source: HILDA, Waves 1 to 3.

The comparison between the unemployed and employed workers suggests that the unemployed workers are almost twice as mobile (in percentage terms).

Selection model for those already employed

The instruments chosen were married and owner. As was the case for the previous sample, a larger list of instruments for migration were initially chosen on *a priori* grounds – that is, they were likely to be motivators for migration but not directly related to one’s prospects of re-employment. For example, marital status may impact on the decision to participate in the labour force, but our sample of employed persons means that decision has already been made. The potential instruments (including occupation of state housing; pay differentials between previous and current job; regional housing price disparities) were then culled using overidentification tests described above until only valid instruments remained. The high *F*-test result also supports the choice of instruments. Several of the potential instruments tried were unsupported on the basis of overidentification tests and in some cases (such as Age variables; English proficiency; Non-English speaking background; Socio-economic status of destination region compared to origin region) were significant in the second-stage employment status equation.

Table 14 reports the final probit results of this exercise. Accordingly, a person who is married is much less likely to move, other things equal. Home ownership seems to place an even greater constraint on migration than marital status, which is

Table 14 Instrument selection for migration by employed persons (probit estimation)

Instrument	Coefficient	Standard Error
Married	-0.190	0.030
Ownership	-0.702	0.030
Test for exclusion	F(2,16916) = 705.4	
Overidentification test	$\chi^2(1) = 2.34$ (<i>p</i> -value = 0.12)	
McFadden R-squared	0.095	

Employment status model for those already employed

The dependent variable took the value of 1 for those who were employed in a one wave (2001 or 2002) and subsequently reported as being employed in the next wave (2002 or 2003), and zero if the person became unemployed or exited the labour force in the next period. Table 15 reports the regression results comparing the estimates obtained without correcting for selection bias to the selection-corrected estimates. The results are controlled for contracted movers (those who moved because they had already obtained a new job).

Unlike the unemployed situation, migration now significantly alters the probability of being employed in the following period for a person who migrates from an employed status. Such a person suffers a lower likelihood of being employed, other things equal. This supports other work that focuses on the bumping down hypothesis whereby employed movers are at a disadvantage in growing labour markets (see Mitchell and

Bill, 2006). The selection bias is also evident in the comparison between the non-corrected and corrected (IV) probit models.

Once again, the variable Socio-economic status destination, which is highly correlated with employment growth, is statistically significant. Strong economic conditions in the destination region increase the chances of an employed person gaining subsequent employment, irrespective of whether they move or not.

The extremes of the age profile (youth and senior workers) also impact negatively on employed persons prospects of keeping employment. Both 16-19 year olds and 50-65 years olds are at a disadvantage, other things equal. Other personal characteristics such as poor education (Below Year 11 Education); gender (Females), poor English language skills (Poor English Proficiency) and being disabled (Disabled) reduce the likelihood that an employed person will remain employed in the following year. There is evidence that family history (Father – record of unemployment) impacts negatively on one’s chances of retaining employment. Occupational categories were all insignificant apart from labourers. Labourers have diminished chances of retaining employment, other things equal.

Table 15 Employment status probits, with and without selection correction

	Probit (no selection)	IV Probit (selection)
Constant	1.984 (0.045)*	2.014 (0.049)*
Moved to new location	-0.448 (0.044)*	-0.891 (0.196)*
Aged 16-19 years	-0.348 (0.095)*	-0.303 (0.096)*
Aged 50-65 years	-0.261 (0.035)*	-0.284 (0.037)*
Females	-0.197 (0.034)*	-0.195 (0.034)*
Below Year 11 Education	-0.133 (0.035)*	-0.142 (0.035)*
Poor English Proficiency	-0.558 (0.177)*	-0.571 (0.177)*
Labourer	-0.247 (0.061)*	-0.241 (0.061)*
Socio-economic status destination	0.012 (0.006)**	0.014 (0.006)**
Part-time employee	-0.510 (0.034)**	-0.511 (0.034)**
Disability	-0.434 (0.046)*	-0.425 (0.046)*
Father – record of unemployment	-0.107 (0.051)**	-0.101 (0.050)**
Contracted move	0.241 (0.153)	0.591(0.215)*
No of obs	16919	16919
Wald test for exogeneity		p -value = 0.024
Test of overidentifying restrictions		$\chi^2(1) = 2.34$ p -value = 0.126

Notes: estimates are followed by standard errors in parentheses. * indicates 1 per cent statistical significance, ** indicates 5 per cent statistical significance.

Of interest is the strong negative coefficient on Part-time employee. This reflects the flux and uncertainty in the labour market which is borne by part-time workers who are less likely to remain in employment in the following wave, other things equal.

State dummies were included but were not significant. In our next study, which will use a newly released dataset, geo-coded at a finer spatial level, we will expect to detect locational impacts. There were no significant panel effects across the years (2001, 2002 and 2003).

6. Conclusion and future work

Our results confirm the findings of previous studies that the unemployed are a highly mobile group (engaging in higher rates of repeat migration), true after controlling for other factors. Preliminary analysis suggests that unemployed movers are able to escape unemployment more successfully than those who do not move. However after controlling for personal characteristics and the socio-economic decile of the destination region, moving itself is not especially beneficial for the unemployed, true also after controlling for selectivity bias. The observed and inherent but unobservable employability or better 'quality' of the migrant group rather than the act of moving is responsible for the higher rates of transition to employment amongst movers, and migration's impact on unemployment is negligible. This finding casts doubt on the validity of government policies providing incentives to the unemployed to move, if geographic mobility does not improve job matching such policies may in fact, as Pekkala and Tervo (2002) argue, simply shuffle the unemployed from high unemployment to low unemployment regions.

An employed worker suffers a lower likelihood of being employed other things equal following migration, such a result is interesting and perhaps suggests speculative migrants may have trouble entering the labour market of the destination region. Certainly as Boehm *et al.*, (1998:10) argue "a fundamental issue for all migrants is the extent to which they select destination labour markets with more favourable job opportunities". Although destination characteristics are captured in the socio-economic decile of the destination region, this variable is a crude proxy for local labour market conditions. Access to an unconfidentialised version of HILDA may enable the inclusion of much more detailed information on the origin region and destination region, including commuting area (see Watts, 2004) unemployment rates. Recent work has suggested the presence of heterogeneity in selection effects based on where persons migrate (Détang-Dessendre, Drapier and Jayet, 2004), and as more waves of HILDA are added it may be possible to extend the time-profile of migrant outcomes to look at long-term returns from migration. While we have focused, perhaps somewhat narrowly, on the economic factors related to migration, Lundholm and Malmberg (2006) highlight the importance of non-economic conditions on long-distance interregional mobility. The authors find that social conditions, such as a person's social life, have the largest influence on the overall outcome from moving. Such variables are captured in the HILDA survey and may be interesting to explore in future work.

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² Bill *et al.*, (2006) find that in the state of NSW over the late 1990s job competition from commuters and migrants have eroded employment gains from local employment growth for resident unemployed.

³ Morrow (2002) uses the Department of Family and Community Services (FaCS) Longitudinal Data Set (LDS) examines the impact of housing costs and labour market factors on the mobility of income support clients. In contrast to earlier Census-based studies () he finds strong net movement into cities, away from the industrial towns and coastal regions of northern New South Wales and south-east Queensland. He also finds that the unemployed migrate from regions with high unemployment rates (defined on an SD basis) into regions with low unemployment rates, even though housing rents may increase. Morrow (2000: 27) concludes "this pattern suggests that jobseekers are willing to incur the

extra costs of housing in capital cities in exchange for greater access to employment opportunities and important services available in capital city regions". Dockery (2000) finds that locational decisions do not seem to stem from labour market opportunities. He finds instead that the unemployed are less likely to move out of areas with higher unemployment rates, but more likely to move out of regions with high rents. This finding is criticized by Bradbury and Chalmers (2003) on the basis that it arises from a too narrow definition of labour market regions not accounting for the strong spatial labour market integration of sub-markets within cities (see Bill, Mitchell and Watts, 2006).

⁴ A range of structural or region specific variables are commonly included in models of migration, for instance, differential employment growth, unemployment rates and amenity adjusted earnings, housing price differentials which are relevant in generating disincentives/incentives to move (OECD, 2005: 96). At this stage we do not have data with sufficiently detailed spatial identifiers to undertake this kind of analysis, although the socio-economic decile of the origin and destination region is used as a proxy for the region's local labour market and general economic climate.