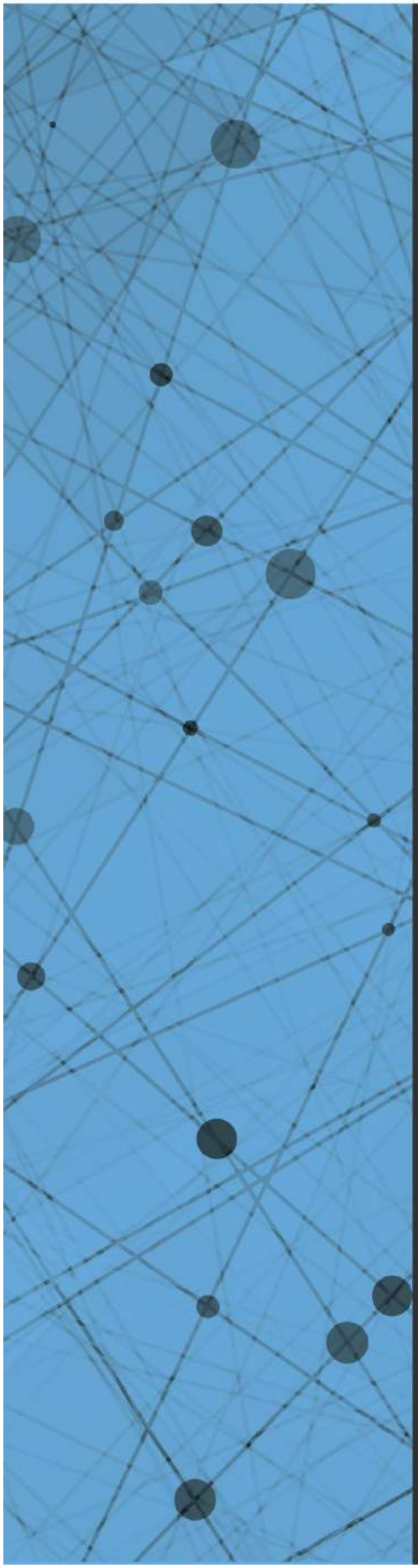
Motu



# Migration and Gender: Who Gains and in Which Ways?

Kate Preston, Arthur Grimes

**Motu Working Paper 17-08**

**Motu Economic and Public Policy Research**

April 2017

# Document information

**Author contact details**

Kate Preston

Motu Economic and Public Policy Research

kate.preston@motu.org.nz

Arthur Grimes

Motu Economic and Public Policy Research, and

Victoria University of Wellington

arthur.grimes@motu.org.nz

**Acknowledgements**

This research was funded through Marsden Fund grant MEP1201 from the Royal Society of New Zealand. We extend thanks to Judd Ormsby for his insights from previous work that assisted us in formulating this analysis.

**Disclaimer**

This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either DSS or the Melbourne Institute.

**Motu Economic and Public Policy Research**

PO Box 24390 info@motu.org.nz +64 4 9394250

Wellington www.motu.org.nz

New Zealand

 ISSN 1176-2667 (Print), ISSN 1177-9047 (Online).

**Abstract**

Empirical studies have consistently documented that while married men tend to lead more prosperous careers after moving than before, migration tends to be disruptive for the careers of married women. However, there has been little exploration of the interaction of non-economic outcomes of migration by gender and relationship-status. We explore whether migration is followed by a change in subjective wellbeing (SWB), and how this experience differs by individuals of different gender and relationship-status. These results are compared to wage differences following migration. We further analyse how outcomes differ according to the motivation for moving, including motivations for moving of both partners in a couple relationship. Our empirical estimates use longitudinal data on internal migrants in the Australian HILDA dataset. We show that females have a stronger tendency than males to reach higher levels of SWB after moving, while males have a stronger tendency than females to increase their earnings. These gender differences are mostly not significant for single individuals, but become quite pronounced for couples. Differences tend to narrow, but do not disappear, once we account for motivations for moving of individuals and, where relevant, of their partner. In particular, those who move for work-related reasons experience higher wage incomes after moving, regardless of gender or relationship-status.

**JEL codes**

D13, I31, J16, J22 R23

**Keywords**

Migration, gender, relationship-status, subjective wellbeing, wages

**Summary haiku**

When people migrate
women become happier
men become richer

# Table of Contents



# Tables and Figures

# 1 Introduction

We analyse subjective wellbeing (SWB) and wage outcomes following internal migration for both men and women. Our focus is on how outcomes following migration differ according to gender and household status. We disaggregate the analysis according to whether an individual is single or is in a couple, and we further disaggregate by whether the stated reason for moving was work-related or not. For individuals in a couple, we differentiate by which member(s) of the couple moves for a work-related reason. No other study of which we are aware analyses migration outcomes with the same attention to gender, wages, work and wellbeing.

Our starting point is the large body of literature which contends that migration of the family exacerbates economic inequality between male and female partners (c.f. Cooke (2008)). Several papers have documented that while married men tend to lead more prosperous careers after moving than before, married women become less likely to participate in the labour force and can be expected to take a reduction in earnings, at least in the short-run (e.g. Duncan and Perrucci 1976; Mincer 1977; Sandell 1977; Lichter 1980; Long 1974; Maxwell 1988; Jacobsen and Levin 2000; W. A. Clark and Withers 2002).

Even those women who exceed their husbands in terms of education, occupation or earnings do not tend to improve their labour-market position when they move with their partners (Boyle et al. 1999; Cooke 2003; Lichter 1983). Hence, it has been concluded that female spouses in migrating families are almost always 'tied movers', even if they have better career opportunities than their partners. Further research has shown that beliefs of the roles that should be assumed by husband and wife mediate the migration decision (Bielby and Bielby 1992; Cooke 2008a). Specifically, spouses with traditional gender-role beliefs value the earnings potential of both spouses less equally than spouses with more egalitarian beliefs.

Less attention has been paid to the migration outcomes of single men and women, and there is little consensus among the findings that do exist. Both Morrison and Lichter (1988) and Maxwell (1988) find negative effects of migration for the careers of single women. In contrast, Jacobsen and Levin (2000) find earnings growth after migration increases for single women, despite there being no significant change for single males.

However, a focus on the labour-market outcomes of migration overlooks other elements of location-specific wellbeing (Nowok et al. (2013)). Economists acknowledge that material consumption is only one aspect of the utility function, and that non-material factors are also relevant drivers of human behaviour. This concept has led to models of location choice in which the household's (indirect) utility function includes local amenities as well as economic factors (Chen and Rosenthal 2008; Glaeser and Gottlieb 2009; Roback 1982; Grimes, Ormsby, and Preston 2017).

Under this interpretation of utility, studies of the earnings consequences of migration are not fully informative, if our goal is to find out whether individuals become better off after moving. Analysing individual earnings is even less informative of the wellbeing experience of couples, since members can potentially redistribute earnings between themselves as well as share the consumption of some goods e.g. housing. A handful of studies have looked beyond the economic consequences of migration for men and women by asking whether those who migrate become more satisfied with their lives (Nowok et al. 2013; Frijters, Johnston, and Shields 2008; Kettlewell 2010; Melzer 2011; Grimes, Ormsby, and Preston 2017). Changes in life-satisfaction around migration arguably tell us more about whether a person considers themselves to be better or worse off than do measures of personal earnings.

The cited life-satisfaction studies have indicated that SWB payoffs to migration are at least no better for men than women. In fact, Kettlewell (2010) and Grimes, Ormsby, and Preston (2017) show that life-satisfaction increases significantly for females after moving, but not for males; Frijters, Johnston, and Shields (2008) show that life-satisfaction is improved after migration for both males and females, but the improvement is longer-lasting for females. These are remarkable results in light of the consensus from studies of labour market outcomes that (married) women are tied movers, whose own interests are treated as being subsidiary to the goals of their husbands.

Though each of the cited studies of life-satisfaction and migration report findings separately for males and females, almost none of them account for differences in the migration experiences of men and women who are single versus those who are in cohabiting relationships.[1] Cooke (2008b) remarks that there is a need for more investigation of the non-monetary outcomes of family migration.

The goal of the present study is to unravel the SWB outcomes of internal migration by both gender and relationship-status. We also examine corresponding earnings patterns as we are interested in the extent to which the consequences of migration for wellbeing and wage incomes follow a similar pattern. It is useful to compare our results to previous work, which has focused primarily on labour market outcomes. While many studies of family migration include only couples in their analyses, by also considering singles we are able to assess whether differences in the migration experiences between men and women hold only for those in couples or persist more broadly. Teasing out these differences helps to shed light on gender roles and norms which apply in society beyond the context of migration.

Our analysis uses data from 15 waves (from 2001 to 2015) of the Australian HILDA longitudinal survey which tracks a representative sample of Australian individuals over time

[1] The only study we find which has acknowledged relationship-status in examining SWB outcomes of migration by gender is Nowok et al. (2013), but this aspect is not the focus of their study. The authors mention that they find that females migrating with their partners do not experience significantly different SWB outcomes of internal migration to their partners. However, they do not present these results.

(see section 4). We define migration as a residential move of 25km or more within Australia. We restrict the analysis to individuals of ages 25-60 who migrate at some point in the observed period. Less than one third of this sample of migrants report moving for a work-related reason, emphasising that labour market factors are not the only determinant of migration behaviour.

Our analysis focuses on SWB and wage income (here on in referred to as wages) around migration for four groups: single males; single females; cohabiting males; and cohabiting females. Membership in these groups is defined by status *in the year of migration* because we are interested in the effect of relationship-status at the time of the migration decision. We employ an individual fixed-effects strategy to control for unobserved time-constant individual effects, and also control for observed time-varying individual characteristics and year fixed-effects. Because the effects of migration may develop over time, we track SWB and wages of migrants from four years before to four years after migration. We set the year just before migration as the baseline period so that all estimated changes are considered relative to that time. Patterns are isolated separately for the four groups of interest.

We find that, relative to the year before moving, both male and female singles experience significantly higher levels of wellbeing for several years after migration. Though the gains in SWB are generally higher for women than men, this difference is significantly different from zero in only one year. Interestingly, SWB does not increase significantly for cohabiting men in any year after moving, but it does so for almost all post-migration years for cohabiting women. In groups for which we observe an increase in SWB after migration, we also observe a decrease in SWB in the years preceding the move. Hence, migration appears to "provide a way out of unhappiness" (Nowok et al. 2013, 998).

Wage gains from migration are relatively large and significant for single men, but are small and not significantly different from zero for single women. There is a significant difference in these results for men and women in two post-migration years. Our findings of the wage experience of migrant couples are consistent with previous literature, in that wages increase for male partners (at least in the long run) and fall for females (at least in the short run). These estimates are significantly different by gender in all years succeeding migration. With respect to household income for couples, we find there is a positive but mostly non-significant gain in household wage income in the years following migration. These imprecise estimates likely mask a wide range of experiences for different families.

We observe that females have a relatively stronger tendency than males to reach higher levels of satisfaction with their lives after moving, and males have a relatively stronger tendency than females to increase their earnings. These gender differences are mostly not significant for single individuals, but become quite pronounced for couples. This result coincides with theories of gender-roles including norms regarding who should provide foremost for the family. Alternatively, men and women may, on average, have different preferences, and specialisation in

the family allows each member to put more energy into the areas of life that are important to them.

The HILDA survey asks migrants to report the main reasons for their move. Just 30% of our migrant sample moved for a work-related reason. To investigate the role of motives in driving the heterogeneity in results across groups, we differentiate by reasons for moving. Specifically, for singles, we differentiate by whether they made the move because of a work-related reason. For couples, we differentiate by whether only the individual, only their partner, neither person, or both members of the couple moved because of a work-related reason.

# 2 Theoretical Background

A simple maximisation process of utility is sufficient to explain the migration decision of single individuals i.e. individuals choose to live in the location in which they expect to receive the highest level of utility in future years. Hence, for both single men and women, we could expect migration to lead to an increase in lifetime utility.

The decision-making process for individuals who share their lives with others is more complicated. The first theoretical models of the family migration decision were based on neoclassical human capital theory. The underlying assumption of these models is that households seek to maximise total wellbeing and disregard the private level of wellbeing of each of the individuals (Long 1974; DaVanzo 1976; Sandell 1977; Mincer 1977). Treating income as a proxy for utility, these models predict that families will migrate if doing so is expected to result in higher household income, even if it means that one spouse is expected to have reduced earnings. The spouse with greater earnings potential from moving is more likely to experience the larger private income gains from moving. Hence, they are more likely to be a lead mover and less likely to be a tied mover.

In social-exchange theory it is assumed that the partner with relatively lower earnings potential has less decision-making power (Blood Jr et al. 1995). As with human capital models, this view implies that the spouse with lower earnings potential is less likely to benefit from migration. Both human capital and social-exchange theory are common-preference models i.e. they assume families operate under a single utility function. Both treat male and female spouses equally. Hence, the only explanation they offer for the gender imbalance in migration outcomes is that females tend to have lower earnings potential than males.

Studies showing that even those women who exceed their husbands in terms of education, occupation or earnings do not tend to improve their labour-market position when they move with their partners cast doubt on the assumption of gender-neutrality (Boyle et al. 1999; Cooke 2003; Lichter 1983). These findings spurred the theoretical argument that women have been socialised to put family goals ahead of their own individual preferences (Shihadeh 1991; Bielby and Bielby 1992; Cooke 2008a).

While economists in the past subscribed to the notion that couples operate under a single utility function, this idea is no longer well accepted (S. Lundberg and Pollak 1996), and empirical evidence has tended to reject this framework (c.f. S. J. Lundberg, Pollak, and Wales 1997). A more appropriate way to understand the couple's decision is to employ a bargaining model under which each individual is assumed to operate under a private utility function, but each utility outcome depends not only on their own decision, but also on that of their partner.

An example of a game theoretic model of the location decision for a two-person household is provided by S. Lundberg and Pollak (2003). Since each spouse maximises private utility then it follows that the couple will migrate if it makes both spouses better off. But the bargaining model also shows that one spouse could rationally choose to move even though they expect to be worse off than in the initial location. Such a result is possible if the person perceives that staying without their partner would be even worse than accompanying them to the new location (given that their partner prefers to move).

Since migration has often been analysed as a financially motivated decision, the location-specific element of utility in the above theoretical models has tended to be treated as reflecting the material consumption potential in the respective location. However, material consumption is only one aspect of the utility function, and non-material factors are also relevant drivers of human behaviour. This concept has led to models of location choice in which the household's (indirect) utility function has to be maximised with respect to local amenities as well as wages and living costs (e.g. Chen and Rosenthal 2008; Glaeser and Gottlieb 2009; Roback 1982; Grimes, Ormsby, and Preston 2017).

Under this interpretation, a migrant need not experience an increase in real income as a result of migration; rather, we would expect to observe a utility improvement following migration. The utility improvement may be influenced by both pecuniary and non-pecuniary elements. This observation applies both to single people and for couples, to at least one person in that couple. In particular, for individuals who migrate with their partners, neither changes in individual earnings nor total household income necessarily reflects utility outcomes. Instead, we hypothesise that at least one member of the couple will increase their utility. Using standard bargaining results, the extent to which the remaining person in the couple increases or decreases their utility will depend on that person's bargaining power (including their outside option if they were not to migrate with their partner) and the degree to which each partner's utility enters as an argument in the other individual's utility function.

# 3 Method

We use a sample of individuals who migrate at some time during the period covered by the panel data. Our objective is to isolate SWB and wage patterns for four groups: cohabiting and single male and females. Membership in these groups is defined by status *in the year of*

*migration* because we expect experiences to vary according to the context at the time of moving. We follow methodology used in Grimes, Ormsby, and Preston (2017).

An individual fixed-effects strategy is employed to control for unobserved time-constant individual effects. The fixed-effects approach enables us to measure within-person effects and controls for all time-constant individual factors which may affect the outcome. In addition, we control for a range of time-varying individual characteristics and year fixed effects. For households, we control for household characteristics, including individual-specific characteristics of both partners.

We track SWB and wages of migrants from four years before to four years after migration. Our sample is restricted to observations falling within this time period, and outcomes are tracked over time using a set of dummy variables indicating the number of years the observation is before or after the actual period of migration for the individual. Considering a number of years is important because the effects of migration are time-specific (Nowok et al. 2013). Pre-migration patterns may change our perspective of the post-migration outcomes. For example, if wages are on a rising path before migration, an increase in the year of migration is less likely to be attributed to the migration event itself. Rather, plotting out changes over time both before and after migration allows us to discern any sharp deviations in trend. We set the year just before migration as the baseline period so that all estimated changes are considered relative to that time.

We isolate the patterns for the four groups of interest by interacting the set of migration timing dummies with a set of dummy indicators for group membership. So that we can interpret coefficients as deviations from the baseline year, we also control separately for group membership.[2] It is ensured that the estimated wellbeing (or wage) trajectories are conditional on the fact that some people who are in couples at the time of moving will be single at other times, and some people who are singles at the time of moving will have partners at other times, by including time-varying relationship-status as one of the individual characteristics which we control for.

Formally, we estimate the equation:

$$W_{i,t} = \alpha + \sum_{l=-L}^{l=L} \beta_{M,t-l,R} G_{R,i,t} M_{i,t-l} + \boldsymbol{\beta}'_X \boldsymbol{X}_{i,t} + Y_t + I_i + \varepsilon_{i,t} \qquad (1)$$

where $W_{i,t}$ is the outcome measure (SWB or weekly wage income) for individual or household $i$ in year $t$, and $l$ represents the number of years before migration. The migration dummies are denoted by $M_{i,t-l}$, and equal 1 if individual $i$ migrated in year $t-l$, and 0 otherwise, where $l$ represents the period $t$ in which the individual migrated. The migration timing dummies are interacted with dummy variables $G_{R,i,t}$ which equal 1 if individual $i$ is a member of the applicable group $R$ and 0 otherwise. The coefficients on the term, $\beta_{M,t-l,R}$, are the parameters of interest.

[2] Note that it is not necessary to do this for gender because it is already accounted for by the individual fixed effects, since gender does not vary over time for any individual in our sample.

We set the coefficient on $G_{R,i,t}M_{i,t-1}$ for each group $R$ to zero so that all other coefficients on the migration dummies for that group can be interpreted as the expected deviation in the outcome variable relative to the year before moving, conditional on other factors.

The vector $\boldsymbol{X}_{i,t}$ contains a set of controls for individual (or household) characteristics and $\boldsymbol{\beta}'_X$ is a vector of the corresponding parameters to be estimated. Year fixed effects, $Y_t$ allow for particular effects on the whole economy in a given year and $I_i$ represent individual fixed effects. The random error term $\varepsilon_{i,t}$ is clustered at the individual level.

A particular issue in the model is how to deal with individuals who move multiple times. Restricting the sample to only one-time movers would be likely to introduce selection bias (Nowok et al. 2013). Following Grimes, Ormsby, and Preston (2017), we make the assumption that only one timing effect takes place at a time, and that post-migration effects (i.e. where $(t - l) \geq 0$) dominate pre-migration effects ($(t) - l < 0$). After those assumptions are taken into account, for any period which still exhibits more than one pre- or post-migration effect, the effect relating to the most recent move dominates. Accordingly, the assignment of individuals in each time period to the groups $R$ also relate to status in the *most recent* year of migration.

We also consider the effects for each relationship-gender disaggregated by whether one or more persons moves for a work-related reason. In the formal equation, this equates to redefining the groups $R$ to reflect not only gender and relationship-status in the most recent year of migration, but also the reason for moving at that time.

# 4 Data

Our analysis relies on the same Australian survey data and empirical strategy as Grimes, Ormsby, and Preston (2017). The data comes from 14 waves (from 2001 to 2014) of the HILDA survey which tracks a sample of Australian individuals over time. HILDA includes almost 20,000 individuals in each wave (19,914 in the first wave, replenished with 5,477 in wave 11) from around 7,500 households (7,682 in wave 1).

We drop defence personnel from our sample because their location choices are unlikely to be completely voluntary. We restrict the analysis to working-age individuals (25 to 60 years of age) to avoid most of those transitioning from study to work or from work to retirement. Also omitted are temporary sample members – those who did not belong to the original household and were not new children of the original members or parents of those new children.

The HILDA data provides information on the distance each individual has moved since the last wave of the survey. Migration is defined as a residential move of 25km or more within Australia.[3] Our sample consists of the survey respondents who migrated according to this

[3] We do not focus on very short distance migration because we are interested in decisions which involve a change in earnings potential and amenities.25km is the threshold used by Nowok et al. (2013) for long-distance migration.

definition at least once during the time we observe them in the panel. Of the movers, observations more than four waves before or after a move are dropped, leaving 20,610 observations. Our SWB measure is missing for 511 of these observations of movers and, to keep our samples for the SWB and the wage estimations comparable, we drop those 511 observations. A further 32 observations were dropped because they had missing information for the independent variables.

Next, we apply the assumptions described in Section 3 about which migration timing effects dominate each other. To be included in the estimation, one must be observed in the remaining data at least the year before and of migrating even after accounting for domination of some effects over others. Data from any other wave is only included if it follows consecutively, i.e. to include an observation three years before moving, we must also have included the observation two years before moving.[4] The final sample includes 14,330 observations covering 2,474 individuals. The number of migrations observed in this sample is 2,603 which is greater than the total number of individuals because some move more than once.

We also use two subsets of the main sample. The first is used when we include the reason for moving in the analysis. Relevant information is missing for 6.8% of our sample. For this sub-sample, we drop individuals who have partners if their partner is not also observed. This requires both partners to have taken the survey and to fit all criteria, including the 25-60 year age restriction.[5] These requirements reduce the sub-sample to 9,237 observations of 1,677 individuals.

The other sub-sample is developed when we consider the household wage of couples. In this case, the unit of observation is a couple and we again analyse only couples among which both partners are observed. Since few same-sex couples were identified in our dataset (46 observations of 10 couples over time), they were dropped so that controls relating to the individual could be made gender-specific. The requirements for this analysis reduce this sub-sample to 3,126 observations of 549 couples.

## 4.1 Relationship-Gender Groups

We define four groups in our sample, based on relationship-status *in the year of moving*: single males, single females, male spouses, and female spouses. Recall that each observation is linked to a single time of migration. If one moves multiple times, then the relationship-status which the person belongs to at a given period depends on their actual relationship-status in the year of migration. We are essentially assuming that if one is in a cohabiting relationship and moved in the past year, then the person moved to the new location either with their current

[4] The intuition behind this is that if there is missing information between two observations, we cannot be sure that there has been no change in location in the missed year.
[5] The reason for this requirement is to avoid age distortions, since the male partner tends to be older than the female partner for couples in our sample.

partner or to be with their current partner. This may not be completely accurate but will be a close proxy for relationship-status at the time of the migration decision (*Actual* relationship-status is consistent with relationship-status *at the time of moving* for 88.9% of observations). We control separately for yearly variation in actual relationship-status in estimations.

## 4.2 Dependent Variables

The main outcomes we are interested in are individual SWB and wages, at the individual level. We also consider wages at the household level for couples. Summary statistics of these variables are provided in Table 1, including a breakdown of individual-level variables by the four groups we are interested in.

The individual-level measure of SWB in the HILDA survey is a person's answer to the question on a 0 to 10 scale of:

> All things considered, how satisfied are you with your life?[6]

For all sub-samples, average SWB is centred between 7 and 8. The average appears slightly higher for individuals who have partners at the time of moving than those who are single, and is slightly higher for females than males.

Table 1: Dependent Variable Summary Statistics

| | SWB | | Wages | | |
|---|---|---|---|---|---|
| | **Mean** | **SD** | **Mean** | **SD** | **Obs.** |
| **Individuals** | | | | | |
| Full Sample | 7.67 | 1.50 | 840.98 | 879.61 | 14,330 |
| Single Males | 7.22 | 1.66 | 902.21 | 931.80 | 2,005 |
| Single Females | 7.32 | 1.73 | 590.88 | 636.63 | 2,597 |
| Male Spouses | 7.81 | 1.32 | 1,206.19 | 1,041.48 | 4,605 |
| Female Spouses | 7.90 | 1.38 | 615.51 | 663.67 | 5,123 |
| **Couples** | | | | | |
| Full Sample | - | - | 1,833.27 | 1,317.71 | 3,126 |

Notes: Relationship-status is defined at the time of migration.

The measure we use for individual wages is the gross weekly wage in Australian dollars at the time of the interview. For household wages, which we consider only for couples, we sum this value for the two spouses. All wage measures used in this study are adjusted for CPI inflation as

[6] This question is asked in HILDA after the survey has just finished asking about particular aspects of one's life. That is, the survey first asks about peoples' satisfaction with their health, family relationships, employment, etc. Since these particular aspects are near-term properties of a person's life (i.e. your employment this year, your health now etcetera) it is natural to suppose that people answer the aggregate life satisfaction question in a way that reflects the totality of their current circumstances, not so much their expected future circumstances.

reported by the Australian Bureau of Statistics (ABS) relative to a base year of 2012. Note that the wage measure reflects not only the rate of pay but also the hours worked by each individual.

There is a clear difference in average wages by our migrant groups. The most obvious feature is that wages are higher for men relative to women, regardless of relationship-status. To a lesser degree, average wages are also higher for spouses than single individuals. Factors other than gender, such as age differences, also affect SWB and wage differentials, and the descriptive figures in Table 1 do not control for such factors.

## 4.3 Independent Variables

We estimate the models using the fixed-effects specification described in Section 3. Table 2 provides the number of observations for the full sample and for the four focus groups in each year relative to the time of migration. The table shows that we have fewer observations further from the time of migration, so we may expect to see less significant results in years further from migration. Similarly, there are fewer observations of singles than couples, so we expect to see less significant results for singles than couples.

Table 2: Observation Numbers by Gender-Relationship Groups and Years since Migration

| Years since migration | All | Single Males | Single Females | Male Spouses | Female Spouses |
|---|---|---|---|---|---|
| -4 | 970 | 119 | 192 | 316 | 343 |
| -3 | 1,329 | 182 | 256 | 427 | 464 |
| -2 | 1,877 | 267 | 344 | 599 | 667 |
| -1 | 2,603 | 404 | 491 | 814 | 894 |
| 0 | 2,603 | 404 | 491 | 814 | 894 |
| 1 | 1,813 | 249 | 304 | 591 | 669 |
| 2 | 1,348 | 178 | 223 | 446 | 501 |
| 3 | 997 | 120 | 161 | 330 | 386 |
| 4 | 790 | 82 | 135 | 268 | 305 |

Notes: All groups are defined relative to the year of move

Table 3: Control Variable Summary Statistics

| | Freq. | % |
|---|---|---|
| **Relationship at moving** | | |
| Couple | 9,728 | 67.9 |
| **Age** | | |
| 25 to 34 | 5,726 | 40.0 |
| 35 to 49 | 5,872 | 41.0 |
| 50 to 60 | 2,732 | 19.1 |
| **Marital Status** | | |
| Married | 7,211 | 50.3 |
| De facto | 2,690 | 18.8 |
| Separated/divorced | 1,854 | 12.9 |
| Widowed | 79 | 0.6 |
| Never married/not de facto | 2,496 | 17.4 |
| **Family type** | | |
| Couple w child | 5,592 | 39.0 |
| Couple no child | 4,170 | 29.1 |
| Single w child | 1,134 | 7.9 |
| Single no child | 3,434 | 24.0 |
| **No. children*** | 0.91 | |
| **Highest Education** | | |
| Postgrad | 745 | 5.2 |
| Grad diploma/certificate | 987 | 6.9 |
| Bachelor/honours | 2,425 | 16.9 |
| Adv diploma/diploma | 1,573 | 11.0 |
| Cert III or IV | 3,424 | 23.9 |
| Year 12 | 1,894 | 13.2 |
| Year 11 and below | 3,282 | 22.9 |
| **Own Home** | | |
| Owns home | 7,477 | 52.2 |
| **Year** | | |
| 2001 | 856 | 6.0 |
| 2002 | 1,004 | 7.0 |
| 2003 | 1,089 | 7.6 |
| 2004 | 1,128 | 7.9 |
| 2005 | 1,167 | 8.1 |
| 2006 | 1,163 | 8.1 |
| 2007 | 1,063 | 7.4 |
| 2008 | 1,012 | 7.1 |
| 2009 | 1,015 | 7.1 |
| 2010 | 1,024 | 7.1 |
| 2011 | 1,136 | 7.9 |
| 2012 | 1,037 | 7.2 |
| 2013 | 912 | 6.4 |
| 2014 | 724 | 5.1 |

Notes: *No. Children is expressed as an average rather than a frequency because it is included as a continuous variable. The total number of observations is 14,330.

Table 3 presents the control variables that we employ in the main estimates, and their summary statistics. (We only present these summary statistics for our main estimation sample to save space.) When we estimate effects on household wages where the observation unit is a household rather than an individual, we control for both the male partner's and female partner's age and education. Other control variables are at the household level so remain the same.

To consider how reasons for moving mediate migration outcomes, we separate groups not only by relationship-gender status but also by the reason for which each of these groups moved. Our focus is on whether or not the individual moves for a work-related reason and, for couples, we also consider the partner's reason for moving.

These groups are derived from information in the HILDA survey asking migrants to report the main reasons for their move. First, we amalgamate several reasons for moving into a single category to develop a binary indicator for whether the individual moved for a work-related reason.[7] Relevant information was missing for 6.6% of migrants in our sample. For the remaining individuals, just 32.4% of migrants moved for a work-related reason. This compares to 30.4% of migrants in the full sample.

We then create a categorical variable which, for individuals in a couple, incorporates both partners' reasons for moving. This variable is summarised in Table 4. Because the process required matching spouses to their partner, we do not have this information for all spouses leading to very slight differences across males and females within couples.

Table 4: Work-Related and Non-Work-Related Moves

| | **Males** | **Females** | **Total** |
|---|---|---|---|
| Single, not work reason | 836 | 1,365 | 2,201 |
| Single, work reason | 620 | 465 | 1,085 |
| Couple, neither work reason | 1,709 | 1,716 | 3,425 |
| Couple, only individual work reason | 504 | 206 | 710 |
| Couple, only partner work reason | 199 | 504 | 703 |
| Couple, both work reason | 548 | 565 | 1,113 |
| Total | 4,416 | 4,821 | 9,237 |

Appendix Table 1 compares the reported reasons for moving at a more fine-grained level by the four groups of interest.[8] It shows that 40% of single males in our sample move for a work-related reason. In contrast, only 25% of single females move for this reason. Similarly, more male spouses move for a work-related reason than female spouses. The table also shows that more single males move for a work reason than male spouses, but there is no difference by

[7] The categories that we group to reflect work-related reasons are "to start a new job with a new employer"; "to be nearer place of work"; "work transfer"; "to look for work"; or other "work reasons".
[8] Only reasons which were reported by at least 5% of migrants are reported. Individuals could report multiple reasons.

relationship-status for females. Within the categories of non-work related reasons, only significant difference by gender is that more single women move to seek a new lifestyle than single men. There are more notable differences, for both genders, by relationship status. Moving to be closer to friends/family is significantly more common among females than males. It is also more common among single females than females with partners. People who move to follow a spouse or parent are much more likely to be female than male. Of couples, consistent with much prior literature on tied-movers, those who follow a spouse (or parent) are much more likely to be female than male.

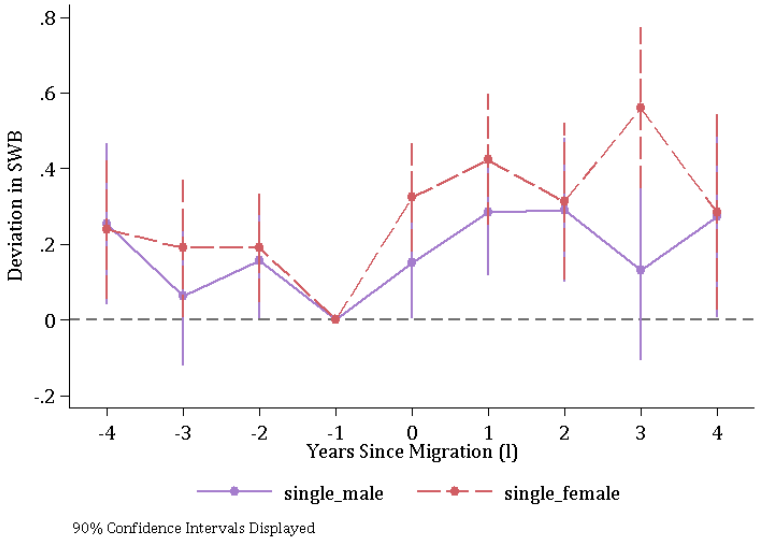
# 5 Results

We report results of predicted SWB and wage trajectories around the time of migration in graph form for ease of interpretation, following (A. E. Clark et al. 2008; Nowok et al. 2013). The graphs plot the pathways of the outcome variable for each group, after controlling for group fixed effects, individual characteristics and unobserved individual differences. In all cases, the coefficient on the dummy variable for one year before migration ($l$=-1) is the omitted reference category such that coefficients for all other years reflect the average deviation in SWB or wages relative to this time. The spikes on the graph represent 90% confidence intervals for each estimate. Note that it is important to pay attention to graph axes because they change according to estimation. Full tables of results are reported in Appendix Table 2 and **Error! Reference source not found.**.

## 5.1 Main results

Estimated wellbeing trajectories for male and female singles are presented in Figure 1. Relative to the year before moving, both male and female singles experience higher levels of wellbeing for several years after migration. This difference is statistically significant in all five observed post-migration periods for females, and in four of the five for males.

Figure 1: SWB around Migration for Singles

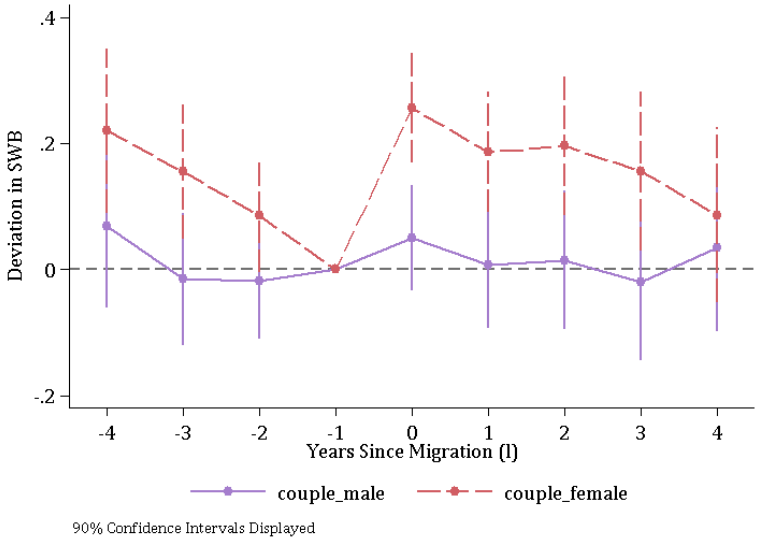



In most years after migration we expect males to be about 0.28 points more satisfied with their lives (on a scale of 0 to 10) than they were in the year before relocation. For females, the post-migration improvement peaks at 0.56 points. These effects are about one-sixth to one-third of a standard deviation for SWB and are relatively large when compared to the estimated effects of other individual characteristics on SWB in Appendix Table 2. Though the gains in SWB are generally higher for women than men, this difference is significantly different from zero in only one year (see Appendix Table 2).

Migration appears to be preceded by a significant fall in SWB for both male and female singles. A similar pattern was found in Nowok et al. (2013), who postulated that migration may facilitate recovery from a fall in wellbeing, especially after stressful experiences. Unlike the results in Nowok et al. (2013), we show in our sample that the level of life-satisfaction reached after migration for both males and females generally exceeds the pre-migration level. Interpreting SWB as a proxy for utility, this result lends support to utility-maximisation theory.

Figure 2 illustrates the wellbeing pathway around migration for males and females who move with partners. We find important differences across the gender spectrum within couples, which are significant from the year of moving until three years afterwards (see Appendix Table 2). Predicted SWB changes after moving are small and non-significant for male spouses, but are relatively large, significantly so for the first few years, for women. Similar to the case for singles, wellbeing improvements at the time of migration for female spouses follow falling wellbeing in the lead up to migration.

Figure 2: SWB around Migration for Couples



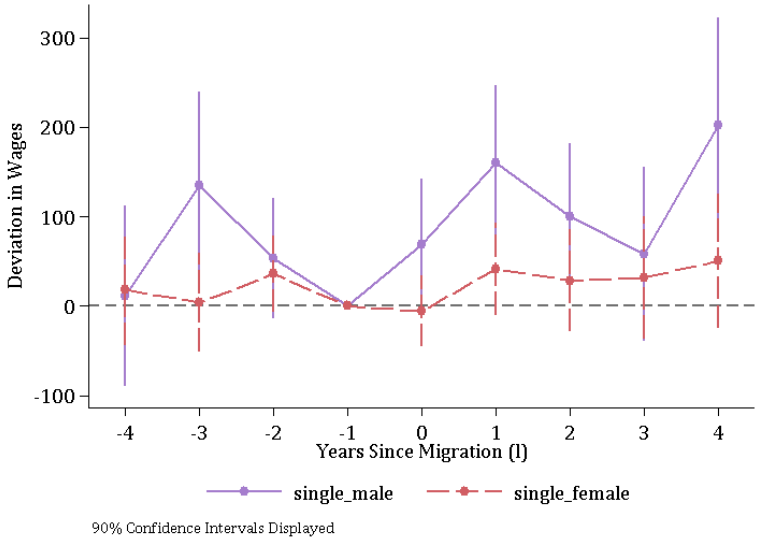

The confidence intervals around the estimates for males suggest that some may have positive experiences while others have negative experiences. The predicted gains for females in couples is not as large as for single females, with the differences being only as large as 0.26 points. The estimates for male and female spouses are significantly different from one another in four of the five years after migration (see

).

Both common-preference models and bargaining models of the location choice for couples predict that migration should be wellbeing-improving for at least one partner, but not necessarily for both. Our results for wellbeing are consistent with this prediction for utility, but suggest that any negative outcomes are concentrated among males.

We turn next to the wage results. Wage estimates for single men and women are shown in Figure 3. For single males, wage gains are positive relative to the base year in all years after moving, and statistically significant in three of the five years. The average gain is as large as $203 (approximately one-quarter of a standard deviation for wages) after four years for males. However, this does follow an apparent fall, on average, in wages in the years just before moving.

Figure 3: Wages around Migration for Singles




In contrast, we observe only a small increase in wages for females that takes time to develop. In no year is the estimated coefficient significantly different from zero for females, suggesting that the experience of single women can be both positive and negative. Differences in wage changes by gender are significant in two of the five years observed after migration (see **Error! Reference source not found.**).

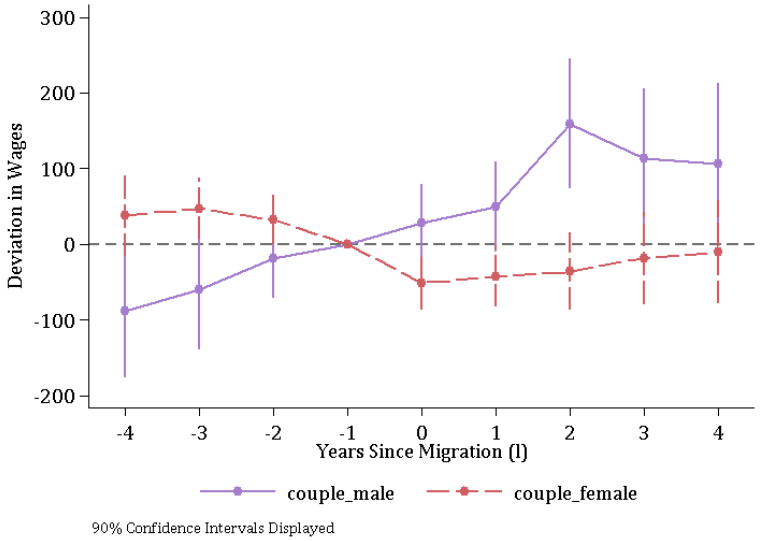
Wage results for couples, shown in Figure 4 are consistent with previous literature. Wages tend to increase for male partners and fall for females, and the results are significantly different by gender in all years after migration.

On average, in the initial and first years after migration, the increase in wages for male partners is small, on average, ($29-$50) and not significant. In later years, males can expect larger and (mostly) statistically significant higher wages relative to before moving ($106-$159). The estimates for females are significantly negative and large ($43-$51) in the initial and first

years after moving, but fade in later years. These patterns likely reflect the time it takes for some men and women to find the right labour market match when they relocate.

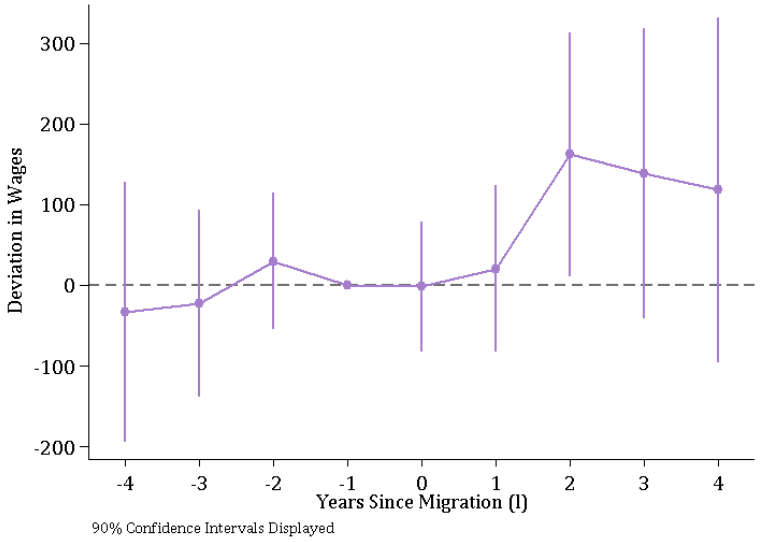
We note that males appear to be on a rising wage path before migration, and females on a falling path before migration, though there is little statistical significance to this finding. This could suggest that there is rising inequality of earnings for males and females in couples even before migration, but migration amplifies this trend.

Figure 4: Wages around Migration for Couples




We also estimate the path for total household wages for (heterosexual) couples. The main results of this estimation are reported in Figure 5 and a full set of results in Appendix Table 4. We find a small fall in wages in the year of moving, on average, followed by a positive gain in household wage income in the following years. The gain is (marginally) significantly different from zero only in the second year after migration, at which point it peaks at $162 per week. The imprecise estimates mask a wide range of experiences for different families.

Figure 5: Household Wages around Migration for Couples




Though we cannot make causal inferences when comparing the wage and wellbeing patterns, we note that they generally do not shift in the same direction after migration. Females have a strong tendency to reach higher levels of satisfaction with their lives after moving, while males have a strong tendency to increase their earnings. The gender difference is mostly non-significant in single individuals, but becomes quite pronounced for couples.

## 5.2 Moving for a work-related reason

Our data show that more males than females are motivated to move because of work-related reasons. To investigate the role of motives in driving the heterogeneity in results across groups, we further disaggregate our analysis. For single men and women, we differentiate by whether the person made the move because of a work-related reason. For couples, we differentiate by whether only the individual, only their partner, neither person, or both members of the couple moved because of a work-related reason. These results for SWB and wages are shown in **Error! Reference source not found.** and Appendix Table 6, respectively.

Singles have mostly positive migration outcomes in terms of SWB, regardless of gender or reason for moving. However, the gains are small and not significant for those singles who move for work-related reasons. The lack of significance may be partly due to the small size of this sample. For neither group of singles is there significant difference in the results by gender.

There are significant gains to wellbeing for female spouses in at least some years in all groups except for those who do not move for work-related reasons while their partners do. This group arguably represents tied movers. In this case, the effects are small or negative, and not significant. By contrast, there are virtually no significant wellbeing gains for males in any of the couple categories (although the signs are generally positive for male spouses if they move for a work-related reason, and not otherwise). Differences by gender are mostly not significant.

Not surprisingly, wages generally increase for people who move for work related reasons and not for those who don't, regardless of gender. Wage gains from moving for a work reason are generally larger for males than females, but this potentially reflects the fact that males earn more than females on average.

Overall, gender differences in wage patterns are reduced when we separate results by reason for moving noting, however, that males are more likely than females to move for work-related reasons. Nevertheless, even after incorporating reasons for moving, we still find some evidence that female spouses are more likely than male spouses to reap wellbeing gains from migration. In other words, whether or not one moves for a work-related reason seems to explain differences by gender in wage outcomes but not SWB outcomes.

The question remains as to why men and women move for different reasons. While there is a possibility that men and women simply tend to have different preferences over wages and career development relative to other aspects of life, there may also be contextual differences. In particular, men may receive greater wage and status payoffs than women to focusing on their careers, or social norms may pressure female spouses to forgo personal career goals to achieve what is best for the family (Shihadeh 1991; Bielby and Bielby 1992). Our SWB results suggest that this outcome is not harmful to life-satisfaction of women. Female spouses may tend to experience career disruptions when they and their partner migrate, but they appear to be compensated in other ways.

Differences in outcomes by gender may be amplified for couples because some females with partners may be able to rely (more than males) on their spouse's incomes for their material needs, which they could not do if they were single. The issue then becomes why coupled males receive no uplift in SWB after migration despite their increase in income. One possible reason is that the higher wage is accompanied by offsetting factors that impact on SWB, such as greater stress or decreased leisure time. Another possible explanation relates to the 'hedonic treadmill' (Brickman and Campbell 1971) in which recipients of higher income adjust their material expectations upwards, resulting in no change to SWB as the gap between actual and expected material conditions does not change. However, we see little evidence that migrating male spouses experience wellbeing improvements even when they do not move for a work-related reason, suggesting that these factors do not fully explain the lack of SWB uplift for coupled males.

A further explanation for the inequality in wellbeing gains to migration among male and female spouses could be that males are less responsive to changes in life-circumstances overall. However, we see that single males experience significant wellbeing improvements following migration. Furthermore, the SDs of SWB for men and women in our data are almost identical.[9]

[9] Before dropping migrants from the sample, the SD of SWB for males is 1.47 compared to 1.51 for females.

# 6 Conclusions

We have analysed labour-market and SWB outcomes following migration by gender and household status. By examining changes in both wellbeing and wages around migration for both single and cohabiting men and women - and disaggregating by reason for moving - we provide a much more detailed coverage of the consequences of migration than shown in previous literature. Our findings indicate that an increase (decrease) in wages does not necessarily correspond with an increase (decrease) in SWB. Small (and mostly insignificant) differences by gender in migration patterns for single individuals appear to be amplified for couples. Women gain more in wellbeing and less in wages than men, especially if they have a partner.

In particular, we find that for singles, though wages increase significantly only for men after moving, wellbeing increases for both men and women. These wellbeing gains are enjoyed for several years after moving. Moreover, despite the finding that migration has more favourable outcomes for the earnings of male spouses than female spouses, we observe the opposite pattern for wellbeing. SWB increases significantly for female spouses and remains higher for a number of years. For males, the predicted change in wellbeing is small and not statistically significant.

Wage patterns become much more similar by gender when we disaggregate by whether one moves for a work-related reason or not. Both men and women who move for work reasons earn significantly more thereafter. However, when disaggregating results by reason for moving, we still observe differences by gender for SWB for couples (though, with smaller samples, we lose statistical significance).

While our results show that females gain more in wellbeing terms from migration than do men, further investigation is warranted to understand the mechanism behind these results. Previous research has shown that gender-role beliefs and life-course events such as childbirth affect the migration decision and have a negative effect on labour-market outcomes for females (Bielby and Bielby 1992; Cooke 2001; De Jong and Graefe 2008; Cooke 2008a). Future studies could consider how these and other factors interact with motivations for moving to result in the positive wellbeing outcomes that we observe for female migrants.

# References


Bielby, William T., and Denise D. Bielby. 1992. "I Will Follow Him: Family Ties, Gender-Role Beliefs, and Reluctance to Relocate for a Better Job." *American Journal of Sociology* 97 (5): 1241–1267.

Blood Jr, Robert O., Donald M. Wolfe, C. Oppong, M. Seroussi, L. A. Lillard, and L. J. Waite. 1995. "Husbands and Wives: The Dynamics of Married Living." *AMERICAN JOURNAL OF SOCIOLOGY* 100 (5): 165–78.

Boyle, Paul, Tom Cooke, Keith Halfacree, and Darren Smith. 1999. "Gender Inequality in Employment Status Following Family Migration in GB and the US: The Effect of Relative Occupational Status." *International Journal of Sociology and Social Policy* 19 (9/10/11): 109–143.

Brickman, Philip, and Donald T. Campbell. 1971. "Hedonic Relativism and Planning the Good Society." *Adaptation-Level Theory*, 287–305.

Chen, Yong, and Stuart S. Rosenthal. 2008. "Local Amenities and Life-Cycle Migration: Do People Move for Jobs or Fun?" *Journal of Urban Economics* 64 (3): 519–537.

Clark, Andrew E., Ed Diener, Yannis Georgellis, and Richard E. Lucas. 2008. "Lags and Leads in Life Satisfaction: A Test of the Baseline Hypothesis*." *The Economic Journal* 118 (529): F222–F243.

Clark, William AV, and Suzanne Davies Withers. 2002. "Disentangling the Interaction of Migration, Mobility, and Labor-Force Participation." *Environment and Planning A* 34 (5): 923–945.

Cooke, Thomas J. 2001. "'Trailing Wife'or 'trailing Mother'? The Effect of Parental Status on the Relationship between Family Migration and the Labor-Market Participation of Married Women." *Environment and Planning A* 33 (3): 419–430.

———. 2003. "Family Migration and the Relative Earnings of Husbands and Wives." *Annals of the Association of American Geographers* 93 (2): 338–349.

———. 2008a. "Gender Role Beliefs and Family Migration." *Population Space and Place* 14 (3): 163.

———. 2008b. "Migration in a Family Way." *Population, Space and Place* 14 (4): 255–265.

DaVanzo, Julie. 1976. "Why Families Move: A Model of the Geographic Mobility of Married Couples." http://eric.ed.gov/?id=ED135697.

De Jong, Gordon F., and Deborah Roempke Graefe. 2008. "Family Life Course Transitions and the Economic Consequences of Internal Migration." *Population, Space and Place* 14 (4): 267–282.

Duncan, R. Paul, and Carolyn Cummings Perrucci. 1976. "Dual Occupation Families and Migration." *American Sociological Review*, 252–261.

Frijters, Paul, David W Johnston, and Michael A Shields. 2008. "Happiness Dynamics with Quarterly Life Event Data." *IZA Discussion Paper* 3604.

Glaeser, Edward L., and Joshua D Gottlieb. 2009. "The Wealth of Cities: Agglomeration Economies and Spatial Equilibrium in the United States." *Journal of Economic Literature* 47 (4): 983–1028.

Grimes, Arthur, Judd Ormsby, and Kate Preston. 2017. "Wages, Wellbeing and Location: Slaving Away in Sydney or Cruising on the Gold Coast." Motu Working Paper 17-07. Wellington: Motu Economic & Public Policy Research.

Jacobsen, Joyce P., and Laurence M. Levin. 2000. "The Effects of Internal Migration on the Relative Economic Status of Women and Men." *The Journal of Socio-Economics* 29 (3): 291–304.

Kettlewell, Nathan. 2010. "The Impact of Rural to Urban Migration on Wellbeing in Australia." *Australasian Journal of Regional Studies* 16 (3): 187.

Lichter, Daniel T. 1980. "Household Migration and the Labor Market Position of Married Women." *Social Science Research* 9 (1): 83–97.

———. 1983. "Socioeconomic Returns to Migration among Married Women." *Social Forces* 62 (2): 487–503.

Long, Larry H. 1974. "Women's Labor Force Participation and the Residential Mobility of Families." *Social Forces* 52 (3): 342–348.

Lundberg, Shelly J., Robert A. Pollak, and Terence J. Wales. 1997. "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit." *Journal of Human Resources*, 463–480.

Lundberg, Shelly, and Robert A. Pollak. 1996. "Bargaining and Distribution in Marriage." *Journal of Economic Perspectives* 10 (4 (Fall)): 139–58.

———. 2003. "Efficiency in Marriage." *Review of Economics of the Household* 1 (3): 153–167.

Maxwell, Nan L. 1988. "Economic Returns to Migration: Marital Status and Gender Differences." *Social Science Quarterly* 69 (1): 108.

Melzer, Silvia Maja. 2011. "Does Migration Make You Happy? The Influence of Migration on Subjective Well-Being." *Journal of Social Research & Policy* 2 (2): 73.

Mincer, Jacob. 1977. *Family Migration Decisions*. National Bureau of Economic Research Cambridge, Mass., USA. http://www.nber.org.helicon.vuw.ac.nz/papers/w0199.

Morrison, Donna Ruane, and Daniel T. Lichter. 1988. "Family Migration and Female Employment: The Problem of Underemployment among Migrant Married Women." *Journal of Marriage and the Family*, 161–172.

Nowok, Beata, Maarten Van Ham, Allan M Findlay, and Vernon Gayle. 2013. "Does Migration Make You Happy? A Longitudinal Study of Internal Migration and Subjective Well-Being." *Environment and Planning A* 45 (4): 986–1002.

Roback, Jennifer. 1982. "Wages, Rents, and the Quality of Life." *Journal of Political Economy* 90 (6): 1257–78.

Sandell, Steven H. 1977. "Women and the Economics of Family Migration." *The Review of Economics and Statistics*, 406–414.

Shihadeh, Edward S. 1991. "The Prevalence of Husband-Centered Migration: Employment Consequences for Married Mothers." *Journal of Marriage and the Family*, 432–444.

# Appendix

Appendix Table 1: Main Reasons for Moving (%)

| Reason | Single Males | Single Females | Male Spouses | Female Spouses | Single Males = Single Females | Male Spouses = Female Spouses | Single Males = Male Spouses | Single Females = Female Spouses |
|---|---|---|---|---|---|---|---|---|
| Work-related reason | 40.4 | 25.3 | 34.6 | 24.8 | *** | *** | ** | |
| New job | 15.4 | 10.5 | 15.4 | 7.8 | ** | *** | | |
| Nearer work | 14.1 | 9.2 | 10.6 | 8.7 | ** | | * | |
| Work transfer | 7.7 | 4.4 | 8.5 | 6.9 | ** | | | * |
| Get larger/better place | 2.9 | 3.9 | 7.7 | 9.3 | | | *** | *** |
| Get own place | 7.2 | 6.6 | 6.4 | 7.5 | | | | |
| Live in better neighbourhood | 4.0 | 4.4 | 6.8 | 7.1 | | | * | ** |
| Seeking change of lifestyle | 15.2 | 20.7 | 25.8 | 23.9 | ** | | *** | |
| Get married/move in with partner | 1.6 | 0.7 | 8.0 | 7.8 | | | *** | *** |
| Marital/relationship breakdown | 14.9 | 20.3 | 1.6 | 0.7 | ** | | *** | *** |
| Be closer to friends/family | 15.7 | 21.4 | 13.3 | 17.0 | ** | ** | | ** |
| To follow a spouse or parent | 1.3 | 0.9 | 4.8 | 17.0 | | *** | *** | *** |
| No. obs. | 376 | 458 | 767 | 831 | | | | |

Notes: Only reasons which were reported by at least 5% of migrants are reported. Stars denote: * p<0.10, ** p<0.05, *** p<0.01. Each of new job, nearer work, and work transfer is included in the work-related reason category.

Appendix Table 2: SWB around the Migration Decision.

| | Single | | | Couple | | |
|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** |
| before4 | 0.2527* | 0.2398** | | 0.0687 | 0.2200*** | |
| | (0.1292) | (0.1120) | | (0.0787) | (0.0791) | |
| before3 | 0.0638 | 0.1903* | | -0.0157 | 0.1552** | ** |
| | (0.1123) | (0.1127) | | (0.0642) | (0.0649) | |
| before2 | 0.1575* | 0.1906** | | -0.0181 | 0.085 | |
| | (0.0933) | (0.0873) | | (0.0560) | (0.0545) | |
| migrant | 0.1508* | 0.3230*** | | 0.0504 | 0.2563*** | *** |
| | (0.0898) | (0.0876) | | (0.0508) | (0.0531) | |
| after1 | 0.2851*** | 0.4230*** | | 0.0067 | 0.1855*** | ** |
| | (0.1014) | (0.1056) | | (0.0612) | (0.0580) | |
| after2 | 0.2896** | 0.3124** | | 0.0146 | 0.1956*** | ** |
| | (0.1158) | (0.1264) | | (0.0669) | (0.0669) | |
| after3 | 0.1309 | 0.5596*** | ** | -0.0199 | 0.1560** | * |
| | (0.1441) | (0.1291) | | (0.0759) | (0.0768) | |
| after4 | 0.2741* | 0.2837* | | 0.0345 | 0.0864 | |
| | (0.1626) | (0.1571) | | (0.0805) | (0.0842) | |
| Couple | 0.2749 | | | | | |
| | (0.1971) | | | | | |
| 35 to 49 | -0.0455 | | | | | |
| | (0.0513) | | | | | |
| 50 to 60 | -0.0745 | | | | | |
| | (0.0992) | | | | | |
| De facto | 0.1530*** | | | | | |
| | (0.0576) | | | | | |
| Separated/divorced | -0.1843 | | | | | |
| | (0.1549) | | | | | |
| Widowed | -0.8029** | | | | | |
| | (0.4078) | | | | | |
| Never married/not de facto | 0.2532 | | | | | |
| | (0.1598) | | | | | |
| Couple no child | -0.0773 | | | | | |
| | (0.0612) | | | | | |
| Single w child | -0.1771 | | | | | |
| | (0.1721) | | | | | |
| Single no child | -0.4883*** | | | | | |
| | (0.1565) | | | | | |
| No. children | -0.0843** | | | | | |
| | (0.0343) | | | | | |

| | Single | | | Couple | | |
|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** |
| Grad diploma/certificate | 0.1397 | | | | | |
| | (0.1501) | | | | | |
| Bachelor/honours | -0.0924 | | | | | |
| | (0.1391) | | | | | |
| Adv diploma, diploma | -0.0716 | | | | | |
| | (0.2272) | | | | | |
| Cert III or IV | -0.1891 | | | | | |
| | (0.2298) | | | | | |
| Year 12 | -0.1175 | | | | | |
| | (0.2222) | | | | | |
| Year 11 and below | -0.275 | | | | | |
| | (0.3000) | | | | | |
| Owns Home | 0.0529 | | | | | |
| | (0.0339) | | | | | |
| Constant | 7.7175*** | | | | | |
| | (0.2520) | | | | | |
| No. observations | 14,330 | | | | | |
| No. individuals | 2,474 | | | | | |
| Within $R^2$ | 0.0255 | | | | | |
| Overall $R^2$ | 0.0447 | | | | | |
| Between $R^2$ | 0.0615 | | | | | |

Notes: Robust standard errors used. Model uses an individual fixed effects specification and includes year fixed effects. Stars denote: * p<0.10, ** p<0.05, *** p<0.01

Appendix Table 3: Wages around the Migration Decision.

| | Single | | | Couple | | |
|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** |
| before4 | 11.4239 | 18.3221 | | -87.6741 | 38.223 | ** |
| | (61.0796) | (38.1809) | | (53.8611) | (33.2424) | |
| before3 | 135.2304** | 4.0567 | * | -60.0513 | 47.1003* | ** |
| | (63.2860) | (33.2469) | | (48.1115) | (24.7240) | |
| before2 | 53.6652 | 36.022 | | -18.6071 | 32.2219 | |
| | (40.9235) | (25.9890) | | (31.8308) | (20.0495) | |
| migrant | 69.1753 | -5.8298 | | 28.6498 | -51.1434** | ** |
| | (44.3723) | (24.2703) | | (30.4811) | (21.3286) | |
| after1 | 160.7901*** | 41.761 | ** | 49.5462 | -42.6805* | ** |
| | (51.9579) | (31.4679) | | (36.3255) | (24.6516) | |
| after2 | 100.0436** | 28.6459 | | 159.2608*** | -36.1485 | *** |
| | (49.9048) | (35.0171) | | (52.4468) | (31.2467) | |
| after3 | 58.0055 | 31.9575 | | 113.9949** | -18.2741 | ** |
| | (59.2251) | (41.6838) | | (56.0789) | (37.0401) | |
| after4 | 202.7289*** | 50.4495 | ** | 105.8027 | -10.8633 | * |
| | (73.1063) | (45.7570) | | (64.8924) | (41.4363) | |
| Couple | -28.2345 | | | | | |
| | (104.3735) | | | | | |
| 35 to 49 | 11.2654 | | | | | |
| | (28.6935) | | | | | |
| 50 to 60 | -66.835 | | | | | |
| | (51.7036) | | | | | |
| De facto | -7.649 | | | | | |
| | (29.6559) | | | | | |
| Separated/divorced | -48.8316 | | | | | |
| | (56.4335) | | | | | |
| Widowed | 21.2268 | | | | | |
| | (149.6288) | | | | | |
| Never married/not de facto | -110.1892* | | | | | |
| | (57.7849) | | | | | |
| Couple no child | 84.3426** | | | | | |
| | (34.3422) | | | | | |
| Single w child | 53.5073 | | | | | |
| | (58.7403) | | | | | |
| Single no child | 132.8630** | | | | | |
| | (55.6305) | | | | | |
| No. children | -43.0596*** | | | | | |
| | (16.5516) | | | | | |

| | Single | | | Couple | | |
|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** |
| Grad diploma/certificate | -258.6548** | | | | | |
| | (106.8663) | | | | | |
| Bachelor/honours | -237.7693*** | | | | | |
| | (91.9292) | | | | | |
| Adv diploma, diploma | -582.7088*** | | | | | |
| | (122.6480) | | | | | |
| Cert III or IV | -635.2765*** | | | | | |
| | (119.7332) | | | | | |
| Year 12 | -638.6898*** | | | | | |
| | (118.5107) | | | | | |
| Year 11 and below | -722.7818*** | | | | | |
| | (130.6992) | | | | | |
| Owns Home | -29.598 | | | | | |
| | (19.0660) | | | | | |
| Constant | 1354.7665*** | | | | | |
| | (119.7376) | | | | | |
| No. observations | 14,330 | | | | | |
| No. individuals | 2,474 | | | | | |
| Within $R^2$ | 0.0268 | | | | | |
| Overall $R^2$ | 0.1002 | | | | | |
| Between $R^2$ | 0.1301 | | | | | |

Notes: Robust standard errors used. Model uses an individual fixed effects specification and includes year fixed effects. Stars denote: * p<0.10, ** p<0.05, *** p<0.01

Appendix Table 4: Household Wages around Migration for Couples.

| | **Total Wages** |
|---|---|
| before4 | -33.4798 |
| | (97.9668) |
| before3 | -23.2109 |
| | (70.3920) |
| before2 | 29.4718 |
| | (51.3544) |
| migrant | -2.0709 |
| | (48.6023) |
| after1 | 20.3093 |
| | (62.8223) |
| after2 | 161.8495* |
| | (91.9263) |
| after3 | 138.5025 |
| | (109.1617) |
| after4 | 118.1846 |
| | (129.7248) |
| Female 35 to 49 | 18.6627 |
| | (72.8642) |
| Female 50 to 60 | -679.1034*** |
| | (214.8957) |
| Male 35 to 49 | -115.2685 |
| | (86.4796) |
| Male 50 to 60 | -179.0843 |
| | (156.9874) |
| Female Grad diploma/certificate | -218.8758 |
| | (306.3924) |
| Female Bachelor/honours | -703.2552* |
| | (412.0939) |
| Female Adv diploma, diploma | -553.1037 |
| | (448.2627) |
| Female Cert III or IV | -995.9136** |
| | (499.3308) |
| Female Year 12 | -1221.8843*** |
| | (445.8538) |
| Female Year 11 and below | -768.8202* |
| | (466.2267) |
| Male Grad diploma/certificate | 128.213 |
| | (308.3871) |
| Male Bachelor/honours | 191.756 |
| | (195.5046) |
| Male Adv diploma, diploma | -162.2781 |
| | (330.4966) |
| Male Cert III or IV | -40.0181 |
| | (342.6352) |
| Male Year 12 | 13.9055 |

| | |
|---|---|
| | (375.4733) |
| Male Year 11 and below | -780.7743* |
| | (401.2761) |
| De facto | 126.5746 |
| | (110.3192) |
| Couple no child | 107.4535 |
| | (98.2120) |
| No. children | -112.7263** |
| | (44.7459) |
| Owns Home | -104.4790* |
| | (58.6872) |
| Constant | 2698.8880*** |
| | (467.7802) |
| No. observations | 3,126 |
| No. individuals | 549 |
| Within $R^2$ | 0.0587 |
| Overall $R^2$ | 0.0717 |
| Between $R^2$ | 0.0924 |

Notes: Robust standard errors used. Model uses an individual fixed effects specification and includes controls for individual characteristics, group dummies and year fixed effects. Stars denote: * p<0.10, ** p<0.05, *** p<0.01

Appendix Table 5: SWB around the Migration Decision by Reason for Moving.

| | **Single not work reason** | | | **Single work reason** | | | **Neither work reason** | | | **Only individual work reason** | | | **Only partner work reason** | | | **Both work reason** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** |
| before4 | 0.4449** | 0.2794* | | 0.1141 | -0.29 | | 0.086 | 0.199 | | 0.2545 | 0.9194*** | ** | 0.0476 | 0.2262 | | 0.2457 | 0.1426 | |
| | (0.1965) | (0.1649) | | (0.2254) | (0.2471) | | (0.1220) | (0.1231) | | (0.1692) | (0.2730) | | (0.2688) | (0.2373) | | (0.2037) | (0.1839) | |
| before3 | -0.006 | 0.3115* | | 0.0449 | -0.1479 | | 0.0309 | 0.1177 | | 0.1422 | 0.7132** | * | -0.1371 | 0.201 | | 0.0327 | -0.1855 | |
| | (0.1797) | (0.1681) | | (0.1871) | (0.2879) | | (0.0904) | (0.1065) | | (0.1367) | (0.2881) | | (0.3005) | (0.1654) | | (0.1813) | (0.1473) | |
| before2 | 0.2405 | 0.2233* | | 0.2849** | -0.0344 | | -0.0103 | 0.0027 | | 0.2203 | 0.463 | | 0.2658 | 0.1731 | | 0.0862 | 0.0033 | |
| | (0.1501) | (0.1217) | | (0.1395) | (0.1722) | | (0.0837) | (0.0816) | | (0.1947) | (0.2817) | | (0.2168) | (0.1255) | | (0.1201) | (0.1366) | |
| migrant | 0.2453* | 0.3898*** | | 0.1524 | 0.157 | | 0.011 | 0.2457** | ** | 0.1803 | 0.5719** | | -0.0806 | 0.0551 | | 0.1613 | 0.4120** | |
| | (0.1423) | (0.1149) | | (0.1304) | (0.1641) | | (0.0817) | (0.0864) | | (0.1374) | (0.2415) | | (0.2298) | (0.1511) | | (0.1389) | (0.1349) | |
| after1 | 0.3724** | 0.3993** | | 0.2101 | 0.1522 | | 0.0364 | 0.1187 | | 0.0774 | 0.4145* | | -0.0052 | 0.0392 | | 0.1049 | 0.189 | |
| | (0.1675) | (0.1571) | | (0.1653) | (0.1755) | | (0.0909) | (0.0874) | | (0.1688) | (0.2489) | | (0.2560) | (0.1496) | | (0.1711) | (0.1910) | |
| after2 | 0.5284*** | 0.3410** | | 0.2940* | 0.0779 | | -0.0541 | 0.0775 | | 0.0817 | 0.353 | | -0.2958 | 0.2427 | | 0.0001 | 0.3693* | |
| | (0.1921) | (0.1548) | | (0.1635) | (0.2738) | | (0.1042) | (0.1110) | | (0.1827) | (0.2958) | | (0.3442) | (0.1681) | | (0.1690) | (0.1977) | |
| after3 | 0.2139 | 0.7285*** | | 0.2093 | 0.3276 | | -0.1249 | 0.2055* | ** | 0.3085* | -0.1499 | | -0.1935 | -0.0876 | | 0.0585 | 0.3512* | |
| | (0.2623) | (0.1961) | | (0.2111) | (0.2644) | | (0.1252) | (0.1217) | | (0.1709) | (0.3965) | | (0.3961) | (0.1645) | | (0.1502) | (0.1894) | |
| after4 | 0.5311* | 0.2656 | | 0.334 | 0.4452 | | 0.0817 | -0.0276 | | 0.127 | 0.3958 | | 0.1635 | 0.0665 | | 0.2136 | 0.1904 | |
| | (0.3189) | (0.2385) | | (0.2427) | (0.3064) | | (0.1230) | (0.1268) | | (0.1769) | (0.3143) | | (0.3151) | (0.1843) | | (0.2217) | (0.2198) | |
| No. observations | 9,237 | | | | | | | | | | | | | | | | | |
| No. individuals | 1,677 | | | | | | | | | | | | | | | | | |
| Within $R^2$ | 0.0273 | | | | | | | | | | | | | | | | | |
| Overall $R^2$ | 0.0422 | | | | | | | | | | | | | | | | | |
| Between $R^2$ | 0.0513 | | | | | | | | | | | | | | | | | |

Notes: Robust standard errors used. The model uses an individual fixed effects specification and includes controls for individual characteristics, group dummies and year fixed effects. Stars denote: * p<0.10, ** p<0.05, *** p<0.01

Appendix Table 6: Wages around the Migration Decision by Reason for Moving.

| | **Single not work reason** | | | **Single work reason** | | | **Neither work reason** | | | **Only individual work reason** | | | **Only partner work reason** | | | **Both work reason** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** | **Male** | **Female** | **Dif.** |
| before4 | 0.4449** | 0.2794* | | 0.1141 | -0.29 | | 0.086 | 0.199 | | 0.2545 | 0.9194*** | ** | 0.0476 | 0.2262 | | 0.2457 | 0.1426 | |
| | (0.1965) | (0.1649) | | (0.2254) | (0.2471) | | (0.1220) | (0.1231) | | (0.1692) | (0.2730) | | (0.2688) | (0.2373) | | (0.2037) | (0.1839) | |
| before3 | -0.006 | 0.3115* | | 0.0449 | -0.1479 | | 0.0309 | 0.1177 | | 0.1422 | 0.7132** | * | -0.1371 | 0.201 | | 0.0327 | -0.1855 | |
| | (0.1797) | (0.1681) | | (0.1871) | (0.2879) | | (0.0904) | (0.1065) | | (0.1367) | (0.2881) | | (0.3005) | (0.1654) | | (0.1813) | (0.1473) | |
| before2 | 0.2405 | 0.2233* | | 0.2849** | -0.0344 | | -0.0103 | 0.0027 | | 0.2203 | 0.463 | | 0.2658 | 0.1731 | | 0.0862 | 0.0033 | |
| | (0.1501) | (0.1217) | | (0.1395) | (0.1722) | | (0.0837) | (0.0816) | | (0.1947) | (0.2817) | | (0.2168) | (0.1255) | | (0.1201) | (0.1366) | |
| migrant | 0.2453* | 0.3898*** | | 0.1524 | 0.157 | | 0.011 | 0.2457** | ** | 0.1803 | 0.5719** | | -0.0806 | 0.0551 | | 0.1613 | 0.4120** | |
| | (0.1423) | (0.1149) | | (0.1304) | (0.1641) | | (0.0817) | (0.0864) | | (0.1374) | (0.2415) | | (0.2298) | (0.1511) | | (0.1389) | (0.1349) | |
| after1 | 0.3724** | 0.3993** | | 0.2101 | 0.1522 | | 0.0364 | 0.1187 | | 0.0774 | 0.4145* | | -0.0052 | 0.0392 | | 0.1049 | 0.189 | |
| | (0.1675) | (0.1571) | | (0.1653) | (0.1755) | | (0.0909) | (0.0874) | | (0.1688) | (0.2489) | | (0.2560) | (0.1496) | | (0.1711) | (0.1910) | |
| after2 | 0.5284*** | 0.3410** | | 0.2940* | 0.0779 | | -0.0541 | 0.0775 | | 0.0817 | 0.353 | | -0.2958 | 0.2427 | | 0.0001 | 0.3693* | |
| | (0.1921) | (0.1548) | | (0.1635) | (0.2738) | | (0.1042) | (0.1110) | | (0.1827) | (0.2958) | | (0.3442) | (0.1681) | | (0.1690) | (0.1977) | |
| after3 | 0.2139 | 0.7285*** | | 0.2093 | 0.3276 | | -0.1249 | 0.2055* | ** | 0.3085* | -0.1499 | | -0.1935 | -0.0876 | | 0.0585 | 0.3512* | |
| | (0.2623) | (0.1961) | | (0.2111) | (0.2644) | | (0.1252) | (0.1217) | | (0.1709) | (0.3965) | | (0.3961) | (0.1645) | | (0.1502) | (0.1894) | |
| after4 | 0.5311* | 0.2656 | | 0.334 | 0.4452 | | 0.0817 | -0.0276 | | 0.127 | 0.3958 | | 0.1635 | 0.0665 | | 0.2136 | 0.1904 | |
| | (0.3189) | (0.2385) | | (0.2427) | (0.3064) | | (0.1230) | (0.1268) | | (0.1769) | (0.3143) | | (0.3151) | (0.1843) | | (0.2217) | (0.2198) | |
| No. observations | 9,237 | | | | | | | | | | | | | | | | | |
| No. individuals | 1,677 | | | | | | | | | | | | | | | | | |
| Within $R^2$ | 0.0273 | | | | | | | | | | | | | | | | | |
| Overall $R^2$ | 0.0422 | | | | | | | | | | | | | | | | | |
| Between $R^2$ | 0.0513 | | | | | | | | | | | | | | | | | |

Notes: Robust standard errors used. The model uses an individual fixed effects specification and includes controls for individual characteristics, group dummies and year fixed effects. Stars denote: * p<0.10, ** p<0.05, *** p<0.01

# Recent Motu Working Papers

All papers in the Motu Working Paper Series are available on our website www.motu.nz, or by contacting us on info@motu.org.nz or +64 4 939 4250.

17-07 Grimes, Arthur, Judd Ormsby and Kate Preston. 2017. "Wages, Wellbeing and Location: Slaving Away in Sydney or Cruising on the Gold Coast."

17-06 Leining, Catherine, Judd Ormsby and Suzi Kerr. 2017. "Evolution of the New Zealand Emissions Trading Scheme: Linking."

17-05 Leining, Catherine, Corey Allan and Suzi Kerr. 2017. "Evolution of the NZ ETS: Sectoral Coverage and Points of Obligation."

17-04 Maré, David C., Trinh Le, Richard Fabling and Nathan Chappell. 2017. "Productivity and the Allocation of Skills."

17-03 Grimes, Arthur and Wilbur Townsend. 2017. "The Effect of Fibre Broadband on Student Learning."

17-02 Alimi, Omoniyi, David C Maré and Jacques Poot. 2017. "More pensioners, less income inequality?"

17-01 Carver, Thomas and Suzi Kerr. 2017. "Facilitating Carbon Offsets from Native Forests."

16-22 Fabling, Richard and Arthur Grimes. 2016. "Picking up speed: Does ultra-fast broadband increase firm productivity?"

16-21 Maré, David C. 2016. "Urban productivity estimation with heterogeneous prices and labour."

16-20 Allan, Corey and Suzi Kerr. 2016. "Who's Going Green? Decomposing the Change in Household Consumption Emissions 2006 - 2012."

16-19 Hyslop, Dean and Wilbur Townsend. 2016. "Employment misclassification in survey and administrative reports."

16-18 Hyslop, Dean and Wilbur Townsend. 2016. "Earnings Dynamics and Measurement Error in Matched Survey and Administrative Data."

16-17 Hollis, Michele, Cecile de Klein, Dave Frame, Mike Harvey, Martin Manning, Andy Reisinger, Suzi Kerr, and Anna Robinson. 2016. "Cows, Sheep and Science: A Scientific Perspective on Biological Emissions from Agriculture"

16-16 Kerr, Suzi. 2016. "Agricultural Emissions Mitigation in New Zealand: Answers to Questions from the Parliamentary Commissioner for the Environment."

16-15 Timar, Levente. 2016. "Yield to Change: Modelling the Land-use Response to Climate Driven Changes in Pasture Production."

16-14 Chappell, Nathan and Adam B Jaffe. 2016. "Intangible Investment and Firm Performance."

16-13 Kerr, Suzi and Judd Ormsby. 2016. "The New Zealand Emissions Trading Scheme de-link from Kyoto: impacts on banking and prices."

16-12 Carver, Tom and Arthur Grimes. 2016. "Income or consumption: which better predicts subjective wellbeing?"

16-11 Apatov, Eyal and Arthur Grimes. 2016. "Higher education institutions and regional growth: The case of New Zealand.

16-10 Chappell, Nathan and Isabelle Sin. 2016. "The Effect of Trial Periods in Employment on Firm Hiring Behaviour" (also known as Treasury Working Paper 16/03)

16-09 Timar, Levente. 2016. "Does money grow on trees? Mitigation under climate policy in a heterogeneous sheep-beef sector"

16-08 Jaffe, Adam, Trinh Le and Nathan Chappell. 2016. "Productivity distribution and drivers of productivity growth in the construction industry."

16-07 Fabling, Richard, Arthur Grimes and Levente Timar. 2016. "Labour market dynamics following a regional disaster."


Motu