Family migration and labour market outcomes of partnered women

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Abstract: This paper uses data from the first nine waves of the HILDA Survey[1] to study the effects of family relocation within Australia on married women's labour market outcomes. It uses matched couple data for men and women who were partnered before and after relocation, and compares labour force participation and earnings in couples who recently moved long-distance to those of the couples who have not moved or moved only a short distance. The descriptive analysis shows that married men and women in the mover and non-mover families have similar employment rates and earnings before relocation, however in the year following relocation the employment and earnings of women in the migrant families are significantly lower than those of non-migrant wives, while the earnings and employment rates of the husbands do not differ substantially. At the same time, wives in the relocating families report no significant changes in satisfaction with employment opportunities post-relocation, whereas the husbands' satisfaction with their employment opportunities significantly increases for those who have recently moved compared to non-movers.

The two-stage regression models are then estimated to analyse the determinants of long-distance migration in couples, as well as the effects of migration on labour market outcomes, accounting for self-selection. The husband's education and employment are found to be stronger predictors of long-distance migration than the characteristics of the wife; however, families where the wife is more highly educated are found to be more likely to move. Finally, the estimation results of employment and earnings models are consistent with the findings of descriptive analysis, confirming that migrant wives have much lower employment rates and earnings compared to non-migrant married women, unlike the married men for whom the adverse effects of migration are minimal in comparison.

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[1] 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 Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) 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 author and should not be attributed to either FaHCSIA or the Melbourne Institute.

INTRODUCTION

Despite recent increases in the education, labour force participation and earnings of women, they still earn considerably less than men do. Among full-time workers, the gender pay gap in the 1990s was about 24 per cent in the US and 25 per cent in the UK (Blau and Khan 2000). NATSEM (Cassels *et al* 2009) estimates for Australia, based on the average wages, reveal that the gender pay gap has remained relatively stable since 1990, fluctuating between 15 and 17 per cent (in other words, women earning 83 to 85 per cent of men's wages).

The gender pay gap is attributed to many causes, including differing labour market endowments of men and women and particularly the different rewards for these endowments between genders (Borland 1999, Cassells et al. 2008; Daly et al. 2006; Eastough and Miller 2004; Kee 2006; Preston 2000; Wooden 1999), occupational and industry segregation and undervaluation of women's work, disproportional distribution of responsibilities for caring and domestic work between men and women, and gender discrimination. Differences in productivity-related characteristics, such as education and labour market history, were found to account for less than one-fifth of the average gender pay gap in Australia (Miller 2005, Cassels *et al* 2009); although this differs across the income distribution (Miller 2005, Kee 2006, Barón and Cobb-Clark 2008), with gender wage gap larger among those with the highest incomes in the private sector.

Gender segregation across occupations and industries can contribute to the gender pay gap if women are employed in "traditional" occupations (such as schoolteachers, nurses and care workers) that are less well paid. NATSEM report (Cassels *et al* 2009) estimates that about 25 per cent of the gender pay gap in Australia can be attributed to occupational segregation. However, other studies (Barón and Cobb-Clark 2008, Lee and Miller 2004) find that, although the labour market in Australia is highly gender-segregated, the distribution of the sexes across occupations does not disadvantage women.

The necessity for women to combine work and caring responsibilities causes them to accept casual or part-time jobs with reduced opportunities for training, promotion and bonus payments. Women are not only most likely to be the primary carers of young children, they are routinely delegated to act as primary carers for dependent adult relatives. Women also continue to bear the major brunt of the unpaid domestic work,

even in couples where the wife's earnings or hours of work are comparable to those of the husband (Bittman et al 2003).

Family migration as a cause of the gender pay gap has been relatively under-researched in Australia, although there is ample evidence in the United States, the United Kingdom and other European countries that migration among married couples is most likely to be influenced by considerations related to the husband's career. Married women, on the other hand, tend to be the followers in the family migration process (in other words, 'tied' migrants or 'trailing' wives), suffering from lost employment opportunities, longer interruptions in labour force participation and career and loss of individual income and superannuation. In the cross-national study of the US and UK married couples, Cooke *et al* (2009) find that the effect of family migration on married women's earnings is about one-half of that of childbirth and that migration, like childbirth, reduces married women's earnings for several years after the move.

Family migration may be detrimental to trailing wives' employment and career due to poorer information about employment opportunities at the new location, responsibilities of re-establishing the household after the move, or imperfect skills transfer between employers. One way in which a better skills transfer can be guaranteed for a tied migrant is being in an occupation that does not require extensive firm-specific knowledge, such as teaching, nursing, social work and real estate. The negative effects of family migration on married women's outcomes are thus not a stand-alone issue but are interrelated with occupational segregation, women's caring responsibilities and societal expectations of a woman's role in the family in general.

This paper attempts to investigate the effects of long-distance family relocation on employment and earnings of married men and women in Australia and the process of migration decision-making in couple families. The remainder of the paper is organised as follows. Section 1 provides an overview of theoretical models of family migration and empirical studies on the topic. Section 2 provides a brief overview of the data source, the Household, Labour and Income Dynamics in Australia (HILDA) Survey, and explains the two-stage methodology employed in this study. Section 3 then presents estimation results for the determinants of family migration and the effects of migration on partnered men and women's outcomes, and Section 4 concludes and outlines directions for further research.

I. LITERATURE REVIEW

The most frequently-cited theory of family migration belongs to Mincer (1978), although other models based on the human capital theory (Sandell 1977, DaVanzo 1976) offer similar conclusions. According to Mincer, a couple family will migrate (or relocate) if the expected benefits and costs to both partners from moving outweigh those from staying. The benefits are most often measured by monetary income, and thus the family utility is maximised when the sum of (expected) incomes of both partners is maximised. It is possible that one partner's individual gain from migration outweighs the other partner's individual loss: in this case, the family income will be maximised by migration, and the partner who does not personally benefit from moving will be expected to forgo their own benefit for the sake of the family. This results in the "lead migrant" (the partner who benefits from migration on the individual level) and the "tied migrant" (the partner who does not benefit). It may also be the case that the family utility is maximised by staying, despite the presence of one partner who will personally gain from migration; in this situation the partner who forsakes their individual migration gain is termed a "tied stayer".

Since both partners' individual incomes have equal weights in determining family income and utility, each partner, regardless of gender, is theoretically equally likely to be the lead or the tied migrant. Likewise, each partner, regardless of gender, puts the family well-being ahead of personal gain and is equally willing to forgo individual benefits if they are in conflict with the family-level decisions (Bielby and Bielby 1992). However, Mincer (1978) acknowledged that gender segregation in the labour force, lower average earnings and a more discontinued labour force participation of women all make it more likely that wives will be "tied movers" in the family relocation process, and husbands, if tied at all, would be "tied stayers".

Gender symmetry in migration decisions is also predicted by the relative resource theory (Blood and Wolfe, 1960), although it stems from a very different set of assumptions about the family decision-making process. According to this theory, the partner who contributes the greatest resources to the marriage will control family-level migration decisions to pursue individual-level gains without much regard for the individual well-being of the other family members and the net family utility. As with Mincer's microeconomic model, the relative resource theory is gender-symmetric, and

wives who have greater earnings potential and human capital than their husbands are predicted to have the lead role in migration process.

However, despite the predictions of gender symmetry, empirical studies of family migration show that women are more likely to be tied movers and to experience decreases in labour force participation and earnings following family migration. There are two general approaches to studying the gender asymmetry in family migration – one is to look at migration as an outcome, the likelihood of which depends on a host of family and individual characteristics, and the other is to look at the effects of migration itself on labour force participation and earnings. A number of studies (Taylor 2007, Smits 2001, Lee and Roseman 1999, Nivalainen 2005) model migration as a two-stage process, where the propensity to migrate is estimated first as a self-selection mechanism and the labour market outcomes of migration are estimated afterwards, taking the first-stage selection into account.

Looking at propensity of the couple families to move long distance, numerous studies found that such moves were mostly made to accommodate the demands of the husband's career (Smits 2001, Taylor 2007, Smits *et al* 2003, Shihadeh 1991). Smits (2001) also found that, consistent with the human capital theory of family migration, Dutch two-earner couples were less likely to move long distance compared to the sole breadwinner families. Nivalainen (2004) reported similar findings for Finland, observing that couples where the wife was employed were less likely to move, while Taylor (2007), in the study of British couples, found that the husband's employment status was not a significant determinant of job-related migration, whereas the wife's status was: if the woman in the couple was in a full-time position, the couple was more likely to move for reasons related to her job, and if she was working part time, the likelihood of the family moving for the husband's job fell.

Human capital characteristics, especially the comparative advantage that one partner may have over the other, are also important determinants of migration. Nivalainen (2004) concludes that migration is determined by the husband's education but not the wife's, while the findings by Taylor (2007) indicate that the UK families where the wife is more educated than the husband are more likely to move for reasons related to the wife's job. In a study of US couples by Shauman (2010), comparative intra-family human capital advantage is not found to have a symmetric effect on the

probability of migration: families where husbands have superior human capital are more likely to migrate, while wives with superior human capital tend to use it as a deterrent to family relocating.

Regarding the outcomes of migration for married men and women, a large body of literature confirms that migration reduces women's earnings and labour force participation (Shihadeh 1991, Jacobsen and Levin 2000, Boyle *et al* 2001, 2009, Nivalainen 2005, Taylor 2007, Cooke *et al* 2009) . The post-migration earnings of married men, on the other hand, remain unaffected or do not increase enough to offset the wife's losses, contrary to predictions of the microeconomic theory (Jacobsen and Levin 1997). Cooke (2003) finds that while family migration causes an increase in the husband's income, it brings no change in the income of the wife even if a wife's earning potential is greater than her husband's. The characteristics of occupations chosen by men and women, although different, do not help explain the difference in migration effects between married men and women (Shauman and Noonan 2007).

This study adopts the two-stage methodology of analysing the family migration process, where the propensity of migration is modelled at the first stage, and the outcomes of migration are analysed in the second step, taking into account self-selection of migrants. The methodology and the dataset are described in detail in the following section.

II. DATA AND METHODOLOGY

Data

This paper uses data from the first nine waves of the Households, Income and Labour Dynamics in Australia (HILDA) Survey, covering the period from 2001 to 2009. HILDA is a nationally representative household survey, with the initial sample containing 7,682 households and 13,969 adult respondents. Interviews are attempted with all adult members of selected households each successive year, and children in these households become respondents in their own right when they turn 15.

All permanent sample members are followed if they leave their original household. If a sample member forms a new family or household, all adults in the new household are also interviewed, and continue to be interviewed each year as long as they live in the

same household as the original sample member. The survey thus provides detailed and up-to-date information on pre- and post-migration characteristics of respondents and their families for migration within Australia[2].

Around 13 per cent of couple families in the HILDA sample move each year, which is less than the proportion of movers among other types of households (23 per cent each year). This is consistent with predictions of the human capital theory, since in order for the couple family to migrate, both partners should benefit from migration (or one partner should benefit enough to offset the losses of the other), while for a one-person family to move, migration needs only to be of benefit to one person.

For the purposes of this analysis, the sample is restricted to men and women in couple families with or without children (same-sex partnerships are excluded) who are continuously married to or in a *de facto* relationship with their partner and are living in the same household. Observation-years prior to marriage and after the end of the marriage are not included in the analysis. If a couple breaks up resulting in formation of new couple(s), each new couple is treated as a separate set of observations. Couples with missing person-years or missing variables are also deleted from the analysis.

The analysis is further restricted to couples where both partners are aged between 22 and 59 years to concentrate on career migration as much as possible. People under 22 and over 59 years of age are excluded since their relocation decisions are likely to be affected by education or retirements plans. This resulted in 4,168 unique couples, with 22,563 couple-years (5.4 observations on average for each couple).

The long-distance migration indicator is a binary variable which takes a value of one if the couple has moved 50 km or more between consecutive waves. The addresses of the responding households in each wave are geocoded, and the distance moved is calculated based on these geocoded addresses. Since the focus of this paper is on the gender differences in effects of family migration on labour market outcomes, family migration is defined to occur only when both members of the couple move. Thus, cases such as one partner moving away and back in with the spouse between the interviews are not considered a family move. Finally, the migration indicator excludes couples

[2] The focus of this study is on migration within Australia only, since the HIILDA Survey data does not contain information on pre-migration labour market characteristics of people migrating into Australia, or post-migration outcomes of emigrants.

which were formed by migration, that is, couples who moved in order to start living together.

Alternative indicators of migration include moving between areas (from rural to urban and *vice versa*, from one city or town to another etc.), crossing the locality boundary, or the reason for relocation (Taylor 2007). Although the HILDA Survey dataset does contain information on the main reason for relocation, the identification of migrating couples based on the distance moved remains the preferred method in this study. Even when the family moves for reasons not directly related to career prospects of spouses, for instance seeking a change of lifestyle, it is still likely that the move will have different effects on participation in the labour force and personal earnings of husbands and wives. One possible reason for this is that wives would be more likely to bear responsibility for re-establishing the household at the new location, such as finding new schools and care arrangements for the children. Moreover, regardless of the declared reason for the move, work and career opportunities are likely to be important considerations for couples of the working age, and it would be useful to investigate to what extent the husband's work opportunities at the chosen new location weigh into the decision to move, compared to the wife's.

Having said that, the information on the main reason for relocation is an important piece of evidence that should not be ignored. Figure 1 depicts the most common reasons for the move reported by respondents aged between 22 and 59, separated by sex and marital status. In Panel A, the figure summarises reasons reported by all movers, while Panel B lists the most common reasons reported by those who moved long-distance (i.e., 50 kms or more between consecutive waves). As demonstrated in Panel A of the figure, the most frequently reported reasons for relocation in general are "to get a larger/better place" and "to get a place of my own" (reported by19.4 and 17.4 per cent of respondents who have moved, respectively), while moving to start a job with a new employer or following the family are quite low in the ranking (4.4 and 3.1 per cent of all movers). However, among the long-distance movers (Panel B), relocating to start a new job is considerably more prevalent, at 16.8 per cent, plus 10 per cent of long-distance movers doing so due to work transfer. In both panels, but especially for the long-distance migration, the gender differences are quite pronounced, with both partnered and unpartnered women much less likely to move in order to start a new job or due to a

work transfer than men. At the same time, married women are much more likely to move long distance following their husband or the whole family, while moving for this reason is about equally unlikely for unpartnered men and women, and even more unlikely than it is for the partnered men. Therefore, it can be concluded that the long-distance migration is correlated with migration for employment reasons, either for the person themselves, or for their partner.

Table 1 provides descriptive statistics for family and individual characteristics by the long-distance mover status. The numbers in the table refer to the time period immediately preceding migration. As the table shows, couples that move are generally younger, are more likely to live in a *de facto* relationship, and have younger children (couples with more school-age children, and particularly couples with more children aged between 10 and 14, are less likely to move). Couples that move long distance are slightly better educated, with higher proportions of both husbands and wives in the mover couples having a Bachelor degree. On the other hand, there do not seem to be big differences in the employment patterns of husbands and wives between mover and non-mover couples: in both types of couples, wives are much less likely than husbands to be employed, and about half of the employed women are in part-time jobs, compared to only 7.6 to 10 per cent of the employed men.

Since the purpose of this paper is to study the effects of migration on labour market outcomes, a look at the post-migration characteristics is warranted. Table 2 reports summary statistics for the long-distance migrant couples at the time period immediately following migration, comparing those with the outcomes of non-movers. From the table, it is evident that while the employment rates of married men do differ depending on the mover status, these differences are not as dramatic as those for married women. Wives in the families that moved have considerably lower rates of employment, both full-time and part-time (about 14 percentage points difference in employment rate, compared to about 4 percentage points for the husbands). A similar picture is observed for average earnings. Since the husbands' earnings for movers are slightly greater than those for the non-movers, the differences in the combined family earnings are not statistically different from zero, however, the intra-family gender earnings gap for movers immediately following migration is greater than that for the non-movers, and the wife's share in total family earnings is lower.

Table 3 provides information on the *change* in weekly earnings between pre- and post-migration periods, compared to the average year-to-year change in earnings for non-movers. As can be seen from the table, wives in the mover couples suffer an average drop of $45 in weekly earnings compared to the $10 increase in the weekly earnings of women in non-mover families, while for the migrant husbands the change in earnings is positive at around $44 per week, although it is not statistically different from the $15 per week increase experienced by non-movers. Table 3 also summarised the change in satisfaction with employment opportunities[3], calculated as the difference between the pre- and post-migration levels for movers and the average year-to-year change for non-movers. These data provide some justification to the hypothesis that couples move primarily to benefit the husband's career: while the women's employment opportunities after migration do not change significantly, the men appear to be much more satisfied with employment opportunities after the move.

As employment and earnings are likely to be influenced by many factors, the next step is to estimate a multivariate model to isolate the effects of migration and compare them with the impacts of other life events and individual and family characteristics. The next section will discuss the details of the estimation methodology, and Section 3 will present the results of regression analyses.

Estimation

This paper aims to investigate the effect of long-distance family migration on spouses' employment and personal earnings. Since theory assumes that the family migration decisions are based on family utility, a model of total family earnings (the sum of husband's and wife's earnings) is also estimated. Finally, to analyse the impact of migration on gender pay gap, I also estimate the model for the wife's share in the total family earnings.

The model for employment is specified as follows:

$$y_{it}^{*} = x_{it}' \beta_i + \gamma_i M_{it} + u_{it} \qquad (1)$$

[3] The information on satisfaction with employment opportunities is collected every wave. The HILDA respondents are asked to evaluate how satisfied they are with their current employment opportunities using an 11-point scale (where 0 means "Totally dissatisfied" and 10 means "Totally satisfied"). About 10 per cent of respondents in our sample do not answer this question since they do not feel it is applicable in their circumstances.

where y_{it}^{*} denotes the unobservable propensity of individual to be employed at time *t*, *x* is the vector of explanatory variables and *M* indicates whether the couple moved long distance. The individual will be observed in employment when her propensity to be employed is positive ($y_{it}^{*} > 0$). The probit model is used for the estimation.

Similarly, the models for continuous variables (individual and family earnings, as well as the wife's share in couple's earnings) are specified in the following way:

$$y_{it} = x_{it}' \beta_i + \gamma_i M_{it} + u_{it} \quad (2)$$

where y_{it} is the (observed) dependent variable at time *t*, and other notations are as per equation (1).

In both models, the previous employment (full-time or part-time) is accounted for, so that employment status at previous interview is allowed to directly affect current employment and earnings.

Since we are dealing with panel data, there are several available estimation methodologies. Pooling and estimating the models as if for cross-sectional data will result in biased and inconsistent estimates if there is unobserved individual heterogeneity, i.e., if individuals differ in certain aspects (such as motivation, ability or preferences) which cannot be directly measured and accounted for in the model. Panel data estimation methods control for these unobservable individual effects by assuming that they are constant over time and decomposing the error term into two components:

$$u_{it} = \alpha_i + \varepsilon_{it} \quad (3)$$

where α_i is the individual-specific unobservable effect, and ε_{it} is the random error term.

The two most common panel data estimators are fixed effects and random effects models. These differ in terms of assumptions they make about the properties of α_i. In particular, the fixed-effects estimator allows the individual unobservable effects to be correlated with the observable characteristics *x*. The effect of unobservable characteristics is then removed by subtracting from each variable its individual mean and estimating the model on these "demeaned" data.

However, there are several drawbacks to the fixed-effects estimation method. The first is that differencing not only removes unobservable heterogeneity, it also eliminates the effects of all independent covariates that are time-invariant. Moreover, there is likely

to be little variability in the variable of interest: not many couples move long distance, and those who do rarely move more than once within our observation period. Therefore, this paper uses random-effects model to estimate the impacts of migration.

The random-effects estimator is based on the assumption that the individual unobservable characteristics (α_i)are independent of the observable characteristics (x). This is a very strong assumption, since it can be easily argued that people who are more career-oriented are more likely to be employed and are also more willing to move, even long distances, if better career opportunities present themselves elsewhere. If that is the case, the estimate of the coefficient on migration indicator will pick up some of the effect of the unobserved characteristic, and the random-effects estimator will be inconsistent. One way to relax the assumption of independence is to estimate the model including among independent variables the means of all time-varying covariates (Mundlak 1978; Chamberlain 1984), a method adopted in this paper. This is equivalent to decomposing α_i into:

$$\alpha_i = \eta + \bar{x}_i' \cdot \phi + \varphi \cdot \overline{M}_i + \nu_i \qquad (4)$$

Another potential source of bias in the model is self-selection and the endogeneity of migration decision. Migrants are likely to be a non-random subset of the population, and the decision to migrate is formed on the basis of a set of observable and unobservable characteristics to maximise the (family) utility. To mitigate this problem, this study employs a two-stage selection correction model following the methodology in Taylor (2007) and Lee and Roseman (1999). The first stage is the estimation of probability of long-distance family migration and calculation of the inverse Mills ratios. These ratios are then introduced as additional regressors into the second-stage employment / earnings models. The successful estimation of the two-stage model depends on identifying a suitable set of *instruments* – variables that are correlated with dependent variable in the selection model (in our case, decision to migrate) but not correlated with dependent variable(s) in the second-stage employment/earnings models. As such instruments, I use variables describing the level of each partner's satisfaction with the neighbourhood and home in which they live. These two variables are measured on an 11-point scale (where 0 means "Totally dissatisfied" and 10 means "Totally satisfied"), so it is expected that they would have a negative effect on the

probability of migration (the higher the satisfaction level, the less likely the couple is to move).

III. RESULTS

Table 4 reports the estimation results for the probability of a couple family moving long distance. The estimated coefficients are reported together with standard errors and indicators of statistical significance. Since the probit coefficients refer to the latent (unobserved) propensity of a family to move, they cannot be interpreted directly, so the table also reports marginal effects, which can be interpreted as an increase or a reduction in the probability of long-distance migration (measured on a scale from 0 to 1), associated with the relevant characteristic. For instance, a small increase in the age of the wife is associated with a reduction in migration propensity of 0.2 percentage points, while the *de facto* couples are 0.24 percentage points more likely to move compared to couples in a registered marriage (although this difference is not significantly different from zero).

Another result reported in Table 4 is the test statistic for the joint significance of identifying variables (satisfaction with house and neighbourhood for both spouses). The identifying variables are individually and jointly significant in determining the probability of migration. The negative sign on all the variables is expected, since it confirms that higher levels of satisfaction with home and neighbourhood are associated with lower probability of migration.

Among other significant determinants of migration is the presence of older children (aged between 10 and 14) in the household. This variable has the expected negative relationship with the likelihood of migration, indicating that families with more children in the 10-14 age group are less likely to move. This finding is consistent with Mincer's (1978) reasoning, confirmed in other empirical studies, that couple families are more likely to move while they do not have any children, or while the children are very young; once the children reach the school age, it becomes much more difficult for the family to migrate, and the propensity to move long distance declines even further for families that have older school-age children.

Other significant predictors of migration include the age of the couple (younger couples are more likely to move), as well as the husband's employment status and education level: the families where the husbands are employed full time are less likely to move (by 0.77 percentage points), and families where a husband has a bachelor degree are more likely to move. By contrast, wife's education, employment and current earnings do not affect the probability of the couple moving.

Although there does not seem to be any relationship between the actual level of the wife's human capital and the couple's propensity to move, there is evidence that comparative advantage matters in migration process: couples where wives are more highly educated than husbands are significantly more likely to move, compared to couples where the wife's education is the same or lower than that of her husband. These results suggest that, on the one hand, human capital characteristics of the married women neither deter nor encourage migration decisions; however, if the wife has a comparative advantage over her husband in terms of earnings potential, the family is more likely to move with the wife being (presumably) the lead migrant.

From the above model of migration propensity, the inverse Mills ratios are calculated to account for self-selection into movers or non-movers group. These are then used as additional regressors in the second-stage estimations of employment and earnings.

The estimation results for the employment models are provided in Table 5. The table reports average marginal effects, that is, the marginal effect of each independent variable is calculated separately for each observation and then sample average is taken to obtain the overall marginal effect. Both the selection-corrected estimated and those not corrected for self-selection are presented for comparison purposes.

The first two columns of Table 5 contain results for the married women, while the last two columns report the results for their husbands. Overall, there are fewer significant regressors in the model for married men, since men on average are much more likely to be employed than women and hence there is less variability in the dependent variable in the men's sample.

The results show that employment rates of partnered women on average increase with age. Women in a registered marriage are 5 percentage points less likely to be employed compared to those in a *de facto* relationship. The presence of children in the

household is also an important predictor of employment, especially for women. In particular, women who had a new child in a year preceding the interview are 11 percentage points less likely to be employed than women with otherwise similar characteristics who did not recently have a child. Previous employment is also significant in the model for women: women who were employed full time in the previous year are 1.6 percentage points more likely to be employed in the current year, while women who were employed part time are 2.2 percentage points more likely to be currently employed, compared to those who did not have a job last year. People with higher educational attainment are also more likely to have a job, although for the men the only significant coefficients are those on Bachelor and postgraduate degrees (implying that married men with these degrees are 7.5 to 10 percentage points more likely to work than those with less education). For women, all post-Year 12 education variables are positive and significant, and, as with other variables, the coefficients on education have a much greater magnitude than for men.

We turn now to the relationship between recent migration and probability of employment. It is worth noting here that the estimated model does not attempt to quantify the determinants of employment among those who have moved. Instead, the model provides a comparison between the outcomes of people who have recently moved long distance and those of people with similar characteristics who have not moved or moved a short distance only. As the findings in the table reveal, women in families that recently moved long distance are about 8 percentage points less likely to be employed than otherwise similar non-migrants, even if we control for potential self-selection. Given that 73 per cent of women in non-mover families are employed, recent migration is associated with reduced average probability of employment of about one tenth. Husbands in the recently migrated families are also less likely to be currently employed compared to similar non-migrants, although the differences are smaller than those for the wives, at less than 2 percentage points in the year immediately following the move, and less significant (especially in the selection-corrected model).

The estimated model also allows us to study the medium-term effects of migration by analysing a lagged migration indicator (family moved between *t-2* and *t-1*). There is some evidence of medium-term effects of migration, with women in families that moved one to two years ago about 2 percentage points less likely to be employed than non-

movers. There is no significant difference in employment rates one to two years after migration for the married men. However, even short-term unemployment may have long-term 'scarring' consequences impacting on future earnings (Arulampalam 2000); moreover, we need to bear in mind that for women who fail to find employment in the year immediately following the move, the probability of finding work in the second year will also be affected by the lack of employment in the previous year.

Finally, results reported in Table 5 provide some evidence of self-selection, with the inverse Mills ratio being significant in both specifications. Although the inclusion of this regressor does not seem to affect other results a great deal, the coefficients in the model for men seem to be less stable between the two specifications, suggesting that self-selection into movers or non-movers group is more of a problem for husbands than for the wives.

Table 6 presents the estimation results for the models of women's weekly earnings, family weekly earnings and the wife's share in the family earnings (a continuous variable ranging between 0 and 1 which provides a measure of the intra-family wage gap). All earnings variables are adjusted for inflation and expressed in December 2009 prices. According to the predictions of the human capital theory, even if the individual earnings of one family member (the wife) fall after migration, the family earnings should still increase. In the models for family earnings and the wife's share in total earnings, the explanatory variables include family characteristics as well as individual characteristics of both the husband and the wife, while in the model for the wife's earnings, only family and wife's individual characteristics are controlled for. As in Table 5, Table 6 reports estimates both corrected and not corrected for self-selection for comparison purposes.

The findings presented in Table 6 are quite consistent with those reported earlier for the employment model. Older married women, and older couples have greater earnings, although the growth of earnings is slowing down with age. Past employment histories are also significant, with women who were employed full time in the previous year earning on average $153 per week more than those who were not employed. Education is an important determinant of earnings, in particular wives and husbands with Bachelor or postgraduate degrees tend to earn significantly more than those with lower educational attainment.

In terms of migration impacts, estimated results confirm that weekly earnings of married women who have recently moved long distance are significantly lower (by about $87) than for women in non-mover families. The share of the wife's earnings in the family earnings is also lower by 3.9 percentage points for recent migrants compared to similar non-migrants. Somewhat unexpectedly, the coefficient on the long-distance migration indicator in the family earnings model is also negative[4], which suggests that, at least in the short-run, the movers are not better off compared to non-movers.

Unlike the employment models, the earnings models do not reveal any lasting effects of migration – the lagged migration indicator is not significant in any of the specifications. One interesting finding, however, is the decrease in the family earnings the longer the time since the family's last move. Since the wife's earnings model does not show this regressor to be significant, it can be concluded that this effect is associated with the husband's individual earnings, and suggests that the earnings of men who stay in the same place for a long time are lower compared to the earnings of men who have recently relocated, which may indicate that the man's career might progress better if he is more mobile. The magnitude of this effect is quite small, however.

In terms of the relative importance of family migration in comparison with other individual characteristics and life events, the impact of long-distance migration on married women's earnings is about one quarter (23 per cent) of the effect of the birth of a child: married women in the families that have recently moved earn $87.12 a week less compared to non-movers with similar characteristics, while the weekly earnings of new mothers, compared to earnings of the women who did not recently have a child, are lower by $371.61, the sum of $208.22 (new child) and $169.39 (the number of children between the ages of 0 and 4 increasing by one).

Some evidence of selection is also manifested in Table 6, although the estimated coefficients on long-distance migration indicator remain negative and significant even after the potential self-selection is taken into account. As was the case with the employment model, the estimates related to women's earnings (and the wife's share in family earnings) are not greatly affected by the inclusion of the additional regressor, while the estimates of the model that accounts for the husband's earnings more

[4] A model for married men's earnings following migration was also estimated (the results are available from the author upon request), but the men's earnings were not shown to be significantly affected by migration.

explicitly (the total family earnings model) appear to be less stable. However, the key results remain consistent in all of the estimations: long-distance family migration is associated with reduced employment opportunities and earnings for the married women, whereas the effects on the married men's employment and earnings are much less pronounced, resulting in significant losses in family earnings to recent migrants, at least in the short term.

IV. CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH

This study provides a general look at determinants and consequences of long distance family relocation in Australia in the context of the gender pay gap. While differences in human capital characteristics and returns to endowments, as well industrial and occupational segregation, have long been recognised as the causes of the gender pay gap, the contribution of family migration to the reduced employment and earnings of married women has not been researched extensively in Australia. At the same time, findings from the vast literature on tied migration in the US, the UK and other European countries consistently show that married women tend play a subsidiary role in family migration, which is most often aimed to fulfil the career demands of the husband; married women are also shown to experience losses in earnings and employment opportunities post-migration, while the husbands' earnings do not seem to be negatively affected.

This paper uses a two-stage estimation methodology to first look at the factors affecting the likelihood of the long-distance family migration by random-effects probit. The inverse Mills ratios calculated from the first-stage estimations are then used to mitigate the problems of self-selection and endogeneity in the second-stage random-effects estimation of the probability of employment, as well as the current weekly earnings of the partnered women, the combined earnings of the couples, and the share of the wife's earnings in the total family earnings.

The results of the first-stage estimation reveal that long-distance family migration is mostly determined by the family-level variables, as well as by the characteristics of the husbands. Families where husbands are employed full time are much less likely to migrate compared to the couples where the husband is employed part time or not employed, and families where the husband has a bachelor degree are more likely to move. On the other hand, wife's education and employment do not seem to be significant

predictors of moving, except in the case where the wife is more educated than her husband, which makes the couple more likely to migrate.

Consistent with findings of other studies, migration is shown to be associated with significant reduction in the employment of married women, extending beyond the first post-migration year. For married men, this relationship is much less-pronounced, and the negative impact of migration does not persist beyond one year. A similar picture emerges in the estimation of the earnings equations: while the earnings of the husbands do not change significantly post-migration, there is evidence of a negative association between migration and married women's earnings. This leads to lower post-migration earnings of the family, which contradicts predictions of the human capital theory of family migration. However, there is also evidence that longer time spent between moves is associated with lower family earnings, due to a fall in husband's earnings.

Having described the differential effects of family migration between sexes, this paper does not attempt to explain the underlying causes of this gap. The literature provides two competing explanations for migration-related gender pay gap: the first is structural, and the second is based on gender ideology (Shauman 2010). According to the structural explanation, the differences in the post-migration pay-offs to men and women can be accounted for by the differences in the occupational characteristics, such as the ease of skills transfer and ubiquity. The second explanation, based on gender role beliefs, postulates that due to men being routinely defined as the head of the household and the breadwinner of the family, the husband's career and labour market outcomes would always take precedence, irrespective of the comparative human capital potential of the wife. Future research may gauge the applicability of each of these explanations in the Australian context.

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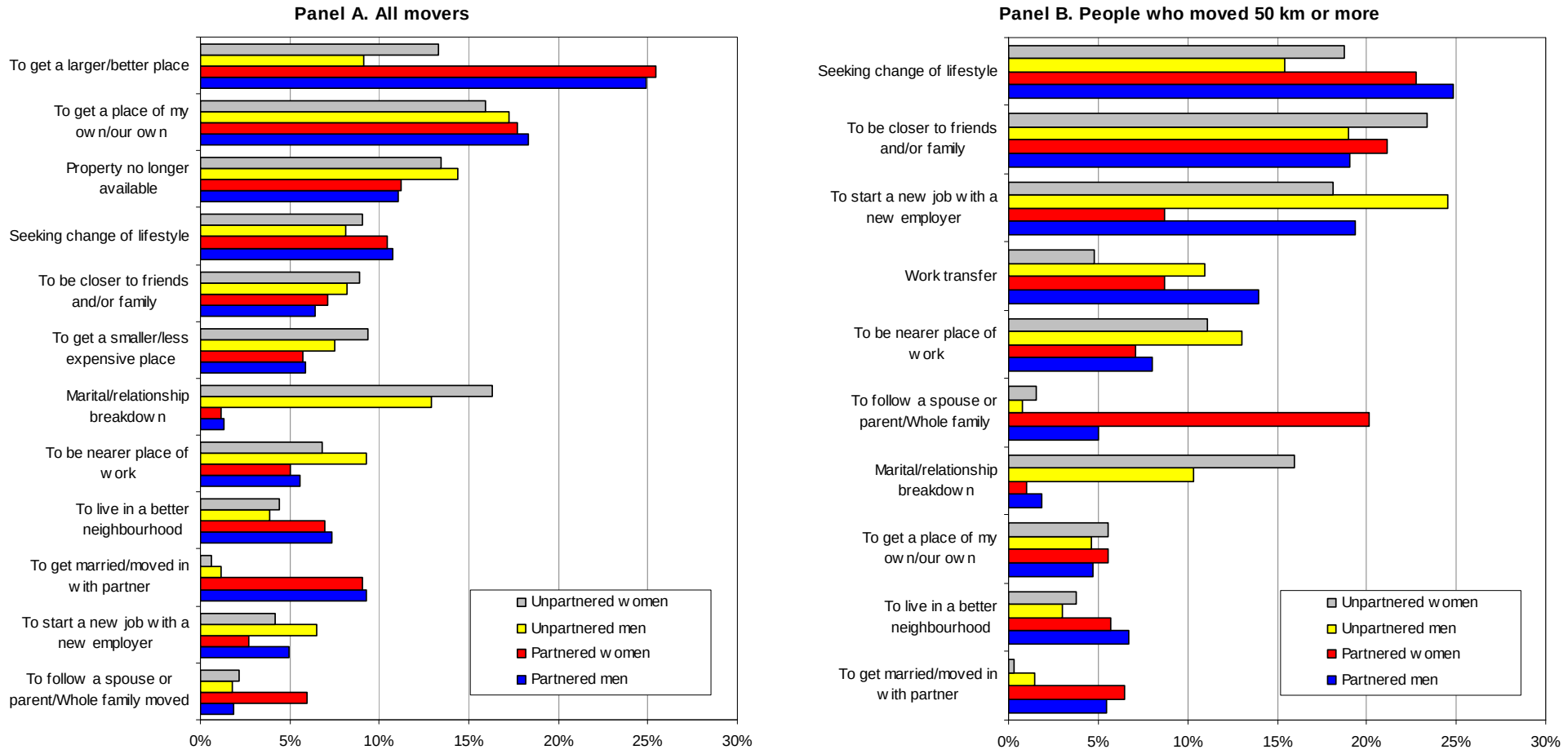
Figure 1: Main reasons for moving



Notes: Sample restricted to respondents aged 22 to 59 years. Unweighted sample statistics.

Table 1 Descriptive statistics at time *(t-1)*, by long-distance mover status between *(t-1)* and *t*

Variable	Long-distance movers			Did not move long distance		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Family characteristics:						
De facto	505	0.293**	0.456	22,065	0.185	0.388
Number of children aged 0-4	505	0.509**	0.767	22,065	0.361	0.666
Number of children aged 5-9	505	0.303+	0.605	22,065	0.348	0.645
Number of children aged 10-14	505	0.228**	0.551	22,065	0.368	0.674
Age of the youngest child	505	5.016**	9.213	22,065	8.730	9.576
New child	505	0.081*	0.273	22,065	0.053	0.224
Wife's characteristics:						
Age	505	35.160**	9.309	22,065	39.914	9.246
Education:						
Year 11 or lower	505	0.208**	0.406	22,062	0.295	0.456
Year 12	505	0.176	0.381	22,062	0.158	0.365
Diploma or certificate	505	0.287	0.453	22,062	0.261	0.439
Bachelor	505	0.226**	0.418	22,062	0.174	0.379
Post graduate	505	0.103	0.304	22,062	0.111	0.315
Employment:						
Employed	505	0.701	0.458	22,065	0.730	0.444
Employed full time	505	0.388	0.488	22,065	0.370	0.483
Employed part time	505	0.313*	0.464	22,065	0.360	0.480
Weekly earnings (Dec 2009 prices)	505	528.83	572.82	22,065	530.47	559.69
Husband's characteristics:						
Age	505	37.487**	9.556	22,065	42.166	9.459
Education:						
Year 11 or lower	505	0.170*	0.376	22,061	0.211	0.408
Year 12	505	0.119	0.324	22,061	0.102	0.303
Diploma or certificate	505	0.408	0.492	22,061	0.424	0.494
Bachelor	505	0.192*	0.394	22,061	0.148	0.356
Post graduate	505	0.111	0.314	22,061	0.114	0.318
Employment:						
Employed	505	0.877*	0.329	22,065	0.911	0.285
Employed full time	505	0.790**	0.408	22,065	0.841	0.365
Employed part time	505	0.087	0.282	22,065	0.069	0.254
Weekly earnings (Dec 2009 prices)	505	1,072.18	903.13	22,065	1,065.73	923.20
Wife earns more than husband	505	0.212	0.409	22,065	0.219	0.413
Wife has a higher educational attainment than husband	505	0.327*	0.469	22,065	0.279	0.448
Family earnings:						
Total family earnings	505	1,601.02	1102.69	22,065	1,596.20	1143.39
Intra-family earnings gap (husband's earnings less wife's earnings)	505	543.35	1035.19	22,065	535.26	1011.82
Share of wife's earnings in family earnings	440	0.342	0.296	19,618	0.354	0.307

Note: Figures are unweighted statistics. Significant differences between values for movers and non-movers is reported using two-tailed tests: ** significant at 1 per cent; * significant at 5 per cent; + significant at 10 per cent level.

Table 2: Earnings and employment at time *t*, by long-distance mover status between *(t-1)* and *t*

	Long-distance movers			Did not move long distance		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Wife employed	512	0.592**	0.492	22,058	0.732	0.443
Wife employed full time	512	0.311**	0.463	22,058	0.371	0.483
Wife employed part time	512	0.281**	0.450	22,058	0.361	0.480
Wife's weekly earnings	512	480.814+	635.187	22,058	531.585	558.072
Husband employed	512	0.867**	0.340	22,058	0.911	0.285
Husband employed full time	512	0.799*	0.401	22,058	0.841	0.365
Husband employed part time	512	0.068	0.253	22,058	0.070	0.255
Husband's weekly earnings	512	1100.235	920.133	22,058	1065.075	922.805
Combined family earnings	512	1581.049	1153.821	22,058	1596.661	1142.229
Intra-family gender earnings gap	512	619.420+	1081.162	22,058	533.490	1010.613
Wife's share in family earnings	439	0.310**	0.315	19,619	0.355	0.306

Note: Figures are unweighted statistics. Significant differences between values for movers and non-movers is reported using two-tailed tests: ** significant at 1 per cent; * significant at 5 per cent; + significant at 10 per cent level.

Table 3: Changes in earnings and satisfaction with employment opportunities, by long distance mover status

	Long-distance movers			Did not move long distance		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Change in weekly earnings – wife	495	-45.092*	596.367	17,904	10.049	380.159
Change in weekly earnings – husband	495	43.616	819.148	17,904	14.960	683.075
Change in satisfaction with employment opportunities – wife	434	0.090	2.384	15,235	0.014	2.025
Change in satisfaction with employment opportunities – husband	457	0.206*	2.028	16,570	-0.006	1.881

Notes: Figures are unweighted statistics. 'Satisfaction with employment opportunities' variable is collected only from respondents who feel that this question is relevant in their circumstances, therefore, the sample size for this variable is smaller. Significance of difference between values for movers and non-movers is reported using two-tailed tests: ** significant at 1 per cent; * significant at 5 per cent; + significant at 10 per cent level.

Table 4: Probability of couple moving long distance

	Coefficients	Average Marginal Effects
Wife's age	-0.074*	-0.0006**
	(0.033)	(0.0002)
Wife's age, squared	0.001+	
	(0.000)	
Husband's age	-0.003	-0.0001
	(0.032)	(0.0002)
Husband's age, squared	-0.000	
	(0.000)	
De facto couple	0.089	0.0025
	(0.062)	(0.0018)
New child	-0.028	-0.0007
	(0.096)	(0.0024)
Number of children aged 0-4	0.036	0.0009
	(0.041)	(0.0011)
Number of children aged 5-9	-0.051	-0.0013
	(0.042)	(0.0011)
Number of children aged 10-14	-0.074+	-0.0020
	(0.045)	(0.0012)
Age of the youngest child	-0.001	-0.0000
	(0.005)	(0.0001)
Wife's education: (*Year 12 = Reference*)		
Year 11 or lower	-0.049	-0.0013
	(0.087)	(0.0021)
Diploma or certificate	0.037	0.0010
	(0.079)	(0.0022)
Bachelor degree	-0.037	-0.0010
	(0.096)	(0.0024)
Postgraduate degree	-0.172	-0.0040
	(0.125)	(0.0026)
Wife's employment:		
Full time	-0.011	-0.0003
	(0.087)	(0.0023)
Part time	-0.021	-0.0006
	(0.069)	(0.0018)
Current earnings	0.000	0.0000
	(0.000)	(0.0000)
Husband's education: (*Year 12 = Reference*)		
Year 11 or lower	-0.062	-0.0016
	(0.100)	(0.0024)
Diploma or certificate	0.088	0.0023
	(0.090)	(0.0025)
Bachelor degree	0.223*	0.0070+
	(0.112)	(0.0041)
Postgraduate degree	0.215	0.0069
	(0.132)	(0.0050)
Husband's employment:		
Full time	-0.288**	-0.0095**
	(0.089)	(0.0037)
Part time	-0.094	-0.0023
	(0.111)	(0.0025)
Current earnings	0.000	0.0000
	(0.000)	(0.0000)
Wife earns more than husband	-0.044	-0.0011
	(0.074)	(0.0019)
Wife is more highly educated	0.202*	0.0059*
	(0.088)	(0.0029)

(continued on next page)

Table 4: Probability of couple moving long distance

	Coefficients	Average Marginal Effects
Identifying variables:		
Satisfaction with house – wife	-0.027+	-0.0007+
	(0.014)	(0.0003)
Satisfaction with house – husband	-0.033*	-0.0009*
	(0.015)	(0.0004)
Satisfaction with neighbourhood – wife	-0.036*	-0.0010*
	(0.015)	(0.0004)
Satisfaction with neighbourhood – husband	-0.037*	-0.0010*
	(0.016)	(0.0004)
Log-likelihood	-2185.378	
χ^2 (joint significance of identifying variables)	65.43	
Prob > χ^2	0.0000	
Number of couple-year observations	22,563	
Number of couples	4,168	

Notes: Random-effects probit model. Dependent variable takes the value of 1 if the couple migrated between *t* and *t+1*. Independent variables also include wave dummies. Standard errors in parentheses: ** p<0.01, * p<0.05, + p<0.1

Table 5: Probability of employment

	Women		Men	
	Not corrected for self-selection	Selection-corrected	Not corrected for self-selection	Selection-corrected
Family characteristics:				
De facto relationship	0.045**	0.047**	-0.020*	-0.014
	(0.012)	(0.013)	(0.008)	(0.008)
New child between *t-1* and *t*	-0.113**	-0.114**	0.001	0.001
	(0.007)	(0.007)	(0.006)	(0.006)
Number of children aged 0-4	-0.088**	-0.086**	-0.010**	-0.006
	(0.005)	(0.005)	(0.004)	(0.004)
Number of children aged 5-9	-0.037**	-0.039**	-0.011**	-0.014**
	(0.005)	(0.006)	(0.003)	(0.003)
Number of children aged 10-14	-0.014**	-0.016**	-0.004	-0.009**
	(0.005)	(0.005)	(0.003)	(0.003)
Age of the youngest child	0.001	0.001	0.001	0.001+
	(0.002)	(0.002)	(0.001)	(0.001)
Family moved long distance between *t-1* and *t*	-0.084**	-0.083**	-0.020*	-0.017**
	(0.011)	(0.011)	(0.006)	(0.006)
Family moved long distance between *t-2* and *t-1*	-0.022+	-0.022+	-0.005	-0.006
	(0.012)	(0.012)	(0.007)	(0.007)
Years since last move	-0.000	-0.0005+	-0.000	-0.000
	(0.000)	(0.0003)	(0.000)	(0.000)
Individual characteristics:				
Age	0.005*	0.004*	-0.004**	-0.005**
	(0.002)	(0.002)	(0.001)	(0.001)
Employed full time at *t-1*	0.016*	0.016*	-0.002	-0.003
	(0.006)	(0.006)	(0.003)	(0.003)
Employed part time at *t-1*	0.022**	0.022**	-0.010*	-0.010*
	(0.005)	(0.005)	(0.004)	(0.004)
Highest education *(Year 12 = Reference)*				
Year 11	-0.031	-0.032	-0.025	-0.021
	(0.032)	(0.032)	(0.022)	(0.021)
Diploma or certificate	0.063*	0.066*	-0.010	-0.001
	(0.027)	(0.027)	(0.017)	(0.017)
Bachelor	0.188**	0.188**	0.064**	0.075**
	(0.041)	(0.041)	(0.020)	(0.019)
Postgraduate degree	0.121*	0.120*	0.096**	0.103**
	(0.047)	(0.047)	(0.024)	(0.023)
Inverse Mills ratio	–	0.028**	–	0.095**
		(0.009)		(0.006)
Observations	18,397	18,395	18,397	18,395
Log-likelihood	-3594.027	-3589.460	-1632.837	-1447.712
Pseudo-R2	0.663	0.663	0.698	0.733

Notes: Probit estimates, reporting average marginal effects. Time-averages of independent covariates and wave dummies are also included but not reported. Standard errors in parentheses: ** p<0.01, * p<0.05, + p<0.1

Table 6: Individual and family earnings

	Wife's weekly earnings		Family weekly earnings		Wife's share in family earnings	
	Not corrected for self-selection	Selection-corrected	Not corrected for self-selection	Selection-corrected	Not corrected for self-selection	Selection-corrected
Family characteristics:						
De facto relationship	45.32*	41.37+	7.99	-21.12	0.037**	0.040**
	(22.91)	(22.98)	(38.05)	(38.42)	(0.012)	(0.012)
New child between *t-1* and *t*	-209.90**	-208.22**	-207.59**	-195.40**	-0.110**	-0.112**
	(17.18)	(17.20)	(31.01)	(30.86)	(0.009)	(0.009)
Number of children aged 0-4	-166.59**	-169.39**	-186.81**	-207.55**	-0.062**	-0.060**
	(11.58)	(11.61)	(21.62)	(21.62)	(0.007)	(0.007)
Number of children aged 5-9	-98.08**	-95.27**	-138.51**	-118.55**	-0.018**	-0.020**
	(9.22)	(9.27)	(19.25)	(19.44)	(0.006)	(0.006)
Number of children aged 10-14	-54.21**	-49.79**	-82.33**	-50.21**	-0.003	-0.007
	(7.94)	(8.01)	(15.34)	(15.80)	(0.005)	(0.005)
Age of the youngest child	-12.78**	-12.63**	-17.90**	-16.96**	-0.003*	-0.004*
	(2.84)	(2.83)	(5.83)	(5.73)	(0.002)	(0.002)
Family moved long distance between *t-1* and *t*	-85.74**	-87.12**	-118.61**	-129.66**	-0.039**	-0.038**
	(24.99)	(25.02)	(42.17)	(42.92)	(0.014)	(0.014)
Family moved long distance between *t-2* and *t-1*	-16.10	-15.43	-63.58	-58.96	-0.002	-0.003
	(20.94)	(20.95)	(41.38)	(41.23)	(0.014)	(0.014)
Years since last move	-0.64	-0.76	-3.43*	-4.75**	0.000	0.000
	(0.78)	(0.78)	(1.65)	(1.67)	(0.000)	(0.000)
Wife's characteristics:						
Age	30.49**	35.13**	77.32**	107.96**	0.004	-0.000
	(9.69)	(9.92)	(16.39)	(16.71)	(0.004)	(0.004)
Age squared	-0.33**	-0.37**	-0.64	-0.94*	-0.000*	-0.000+
	(0.11)	(0.11)	(0.44)	(0.44)	(0.000)	(0.000)
Employed full-time at *t-1*	152.39**	153.14**	110.22**	115.37**	0.070**	0.069**
	(13.87)	(13.89)	(25.85)	(25.80)	(0.009)	(0.009)
Employed part-time at *t-1*	68.49**	68.93**	57.48*	60.44**	0.043**	0.043**
	(9.54)	(9.55)	(22.71)	(22.61)	(0.008)	(0.008)
Highest education: *(Year 12=Reference)*						
Year 11 or lower	48.59	52.60	33.04	64.33	-0.034	-0.036
	(49.64)	(49.87)	(119.31)	(118.13)	(0.039)	(0.039)
Diploma or certificate	70.45+	65.32+	-17.58	-52.64	0.050	0.054+
	(36.96)	(37.49)	(107.86)	(108.73)	(0.032)	(0.031)
Bachelor degree	354.61**	349.69**	353.64**	322.30**	0.108**	0.113**
	(59.51)	(60.03)	(118.29)	(122.61)	(0.038)	(0.038)
Postgraduate degree	372.18**	372.00**	462.89**	464.09**	0.087*	0.088*
	(73.61)	(73.74)	(144.51)	(146.76)	(0.041)	(0.041)

(continued on next page)

Table 6: Individual and family earnings

	Wife's weekly earnings		Family weekly earnings		Wife's share in family earnings	
	Not corrected for self-selection	Selection-corrected	Not corrected for self-selection	Selection-corrected	Not corrected for self-selection	Selection-corrected
Husband's characteristics:						
Age	–	–	73.90**	78.18**	-0.012	-0.012
			(27.51)	(27.44)	(0.008)	(0.008)
Age squared	–	–	-0.99*	-1.02*	0.000**	0.000**
			(0.42)	(0.42)	(0.000)	(0.000)
Employed full-time at *t-1*	–	–	176.00**	186.24**	-0.051**	-0.051**
			(36.06)	(37.32)	(0.017)	(0.018)
Employed part-time at *t-1*	–	–	39.41	41.08	-0.017	-0.016
			(36.26)	(37.24)	(0.019)	(0.019)
Highest education: *(Year 12=Reference)*						
Year 11 or lower	–	–	111.66	113.41	-0.140**	-0.141**
			(116.14)	(119.86)	(0.052)	(0.052)
Diploma or certificate	–	–	33.13	11.71	-0.124**	-0.122**
			(96.34)	(100.69)	(0.039)	(0.039)
Bachelor degree	–	–	315.74*	268.61+	-0.228**	-0.223**
			(135.76)	(142.22)	(0.053)	(0.053)
Postgraduate degree	–	–	374.45*	350.25*	-0.237**	-0.234**
			(153.07)	(158.60)	(0.052)	(0.052)
Inverse Mills ratio	–	-66.41**	–	-480.48**	–	0.056**
		(20.45)		(64.76)		(0.016)
Constant	-551.60**	-490.99**	-1,694.87**	-1,267.61**	0.578**	0.528**
	(106.50)	(106.64)	(260.83)	(263.70)	(0.066)	(0.068)
Observations	18,397	18,395	18,395	18,395	16,361	16,361
Number of unique couples	4,022	4,020	4,020	4,020	3,759	3,759
Rho	0.4816	0.4804	0.5662	0.5597	0.3973	0.3926
Overall R2	0.4724	0.4735	0.3145	0.3249	0.4199	0.4226

Notes: Random effects estimates. Time-averages of independent covariates and wave dummies are also included but not reported. Standard errors in parentheses: ** p<0.01, * p<0.05, + p<0.1