Title

Family Dynamics of Domestic Labour across Short- and Long-Distance Relocations

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Abstract

Family relocations within developed countries have well-established gendered consequences in the realm of paid employment, with men's careers improving and women's careers deteriorating. However, the literature has been opaque as to their potential effects on other life domains, including partnered men's and women's relative shares of domestic labour. We address this gap in knowledge by theorising and examining how within-couple gender gaps in domestic work evolve across short- and long-distance family relocations over the life course, paying attention to the over-time dynamics before and after event occurrence. To accomplish this, we use panel data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey and fixed-effect panel regression models. Our results indicate that family relocations increase women's but not men's housework hours, enlarging within-couple gender gaps in housework hours. These effects are channelled by shifts in women's employment situation and fertility episodes. We observe both anticipation and adaption effects.

1. Introduction

Domestic divisions of labour are a fundamental site for gender inequality, and have been subject to considerable attention in the social science literature. In recent years, this literature has shifted its focus to the role of family dynamics and life course transitions. For example, a substantial amount of recent research has been devoted to examining how the relative shares of paid and unpaid work undertaken by men and women are influenced by entering a cohabiting relationship, getting married, becoming a parent, and experiencing relationship dissolution (Gupta 1999; Kluwer et al 202; Baxter, Hewitt and Haynes 2008). Typical findings from these studies are that life course transitions have transformative effects on the number of hours that men and women allocate to doing housework, more so amongst women. However, this growing body of evidence is still incomplete, as the influence of some life course events and transitions on household divisions of labour remains underexplored.

We are interested in one event that has the potential to alter the gender-balance in household arrangements, but has not yet been examined in this context: family relocations. Long-standing demographic, sociological and economic research has unveiled how family migration within countries is an important factor promoting and perpetuating gender inequality at work. Family moves are often motivated by an opportunity to enhance the work career of the male partner (Mincer, 1978; Perales and Vidal, 2013), with the female partner following him and hence becoming a 'tied mover' or 'trailing spouse' (Cooke, 2008). As a result, after family relocations women experience increased odds of becoming unemployed or underemployed, wage losses and slowed career progression, relative both to non-movers and their own partners (Taylor, 2007; Cooke et al., 2009; Boyle et al., 2009). Thus, family migration is a factor that exacerbates overall as well as within-couple gender inequality (Halfacree, 1995). However, despite the literature on family relocations is generally concerned with gender divisions of labour, empirical tests have been restricted to outcomes in the paid

work realm, such as hourly wages, weekly hours of work, and employment status. To date, it has been silent on whether family relocations also promote the emergence of work-related gender inequalities in the domestic realm, such as housework time. This is limiting, because of the important intersections between paid and unpaid work over the life course. Specifically, residential relocations are closely related to family episodes, and often involve shifts in the characteristics of dwellings, and the geographical context that may affect levels of social support and access to care services. As a result, family relocations may be conducive to re-negotiations of couple's work arrangements.

The aim of this paper is to reconcile the separate literatures on gender inequality due to family relocations and gendered divisions of household labour. There are three reasons why family relocations and gender divisions of household labour may be interrelated, either directly or indirectly:

(i) increases in household labour resulting from the preparation of a house move and adaptation to the new location (Boyd and Grieco, 2003);
(ii) the fact that family migration exacerbates within-couple differences in paid work outcomes favouring male partners (Cooke et al., 2009; Boyle et al., 2009); and
(iii) evidence that fertility is intimately connected to both residential trajectories (Kulu and Milewsky, 2007; Vidal et al., 2013) and housework divisions (Baxter et al., 2008).

We contribute to the literature on housework by expanding our understanding of how life course events and transitions affect the allocation of domestic work within the household, and to the literature on family relocations by examining whether the consequences of such events for gender relations extend beyond the realm of paid work. More specifically, we test whether or not women in couples that undertake family moves increase their share of couple housework hours, comparing short-distance and long-distance housing transitions. From a life-course perspective, family relocations are transitions, i.e. processes spanning before and beyond the occurrence of the observed event. As other key life course transitions, migrations can have effects on other life domains before, during and after the event occurrence (Courgeau, 2014). Thus, we also pay attention to the dynamics in partnered men and women's share of housework labour before and after the move. To accomplish this, we use 12 years of panel data on a representative Australian national sample, the Household, Income and Labour Dynamics in Australia (HILDA) Survey, and state-of-the-art couple-level panel regression models.

Our results indicate that women's but not men's housework hours increase after families undertake short-distance and, especially, long-distance relocations. Consequently, family relocations contribute to strengthening traditional gender divisions of labour. This effect begins before family moves take place, persist over time and results from fertility episodes around migration events and changing employment conditions for migrant women. These findings add to the body of evidence illustrating how life course transitions can contribute to enlarging gender inequalities in paid and unpaid work.

2. Background

2. 1. Domestic work and life course events

In social science, the notion of 'work' is broadly defined as the expenditure of effort towards the completion of a task or obtainment of a reward, and typically split into two components: 'labour market work' and 'domestic work'. 'Labour market work' relates to work associated with monetary remuneration that is done in the context of an employer-employee relationship or in self-employment. 'Domestic work' relates to work that is undertaken unpaid and usually undertaken within households. It may be defined to include unpaid care work such as care of children and other dependents, but it is often restricted to housework tasks such as preparing meals, cleaning, cooking, shopping, laundry and yard work. In virtually all societies across national and temporal contexts men spend more time than

women on paid work, while women spend considerably more time than men on domestic work (Cooke and Baxter, 2010). Although there is some evidence of declining gender gaps in housework and childcare, the rates and levels of change have been slow with women continuing to shoulder the bulk of this work (Sullivan, 2000; Bianchi *et al.*, 2000). This is surprising, particularly in western nations, given women's increased involvement in paid work, increased levels of support for gender equality, and household changes associated with the second demographic transition, such as declining levels of fertility (England, 2010).

To explain uneven gender divisions of domestic work, most research draws on one of two main frameworks. The first is a rational economic approach which explains it in terms of spousal investments in human capital (Becker, 1983). Under this approach, men and women make differential investments in education, the labour market and family work in order to maximise rewards to the household. The assumption is that these investments are made in a gender-neutral way, according to which spouse has the most earning power. Men typically earn more and spend more time in paid work than women. Economically, it is then rational for women to bear the main burden of unpaid work in order to maximise overall household economic returns. Confirming this thesis, there is evidence that relative economic contribution to the household is closely associated with levels of domestic work contributions (Bittman et. al 2003). However, contradicting the rational economic approach, there is also evidence that even when women earn more than their partners, they still undertake the largest share of domestic work (Baxter and Hewitt 2013). To explain that, an alternative approach has argued that the division of domestic work is not organized according to rational economic considerations relating to time and money, but rather is an indicator of gender display or 'doing gender' (West and Zimmerman, 1988). Under this approach, housework is a gender affirming activity for women and a gender deviant activity for men (England et al., 2003; Yee Kan, 2000). But, evidence remains mixed, since most research still relies on cross-sectional averages.

Increasing evidence using longitudinal data has contributed to overcoming existing contradictions in this literature. For example, this has shown that domestic work is not static across the life course and that partnered men and women invest different amounts of time in domestic work at different life stages. Entry to parenthood for example is a life stage that has been found to increase women's time on housework tasks, and both men's and women's time on childcare tasks (Baxter *et al.*, 2008; Craig, 2007). Relationship formation and dissolution are also associated with changing levels of investment by men and women in domestic work (Gupta, 1999). For women, entry into a partnership is strongly associated with an increase in time on domestic work, while for men relationship dissolution is associated with increases (Hewitt *et al.*, 2010; Gupta, 1999). There is also evidence that employment transitions and changes in paid work hours lead to variations in domestic work time, particularly amongst women (Baxter *et al.*, 2008).

While the evidence for links between life course events and time on domestic work is gradually accumulating, there are two key gaps in our knowledge. First, theoretical explanations for variations in gender divisions of domestic work across the life course are still rather limited. Second, there is an evident gap in empirical evidence on the associations between some life course events and transitions and divisions of domestic work. While there is emerging evidence of the effects of parenthood, relationship formation and dissolution on domestic work arrangements, there is little evidence about the effects of other important life course events, such as family relocation. Empirical research has shown that long-distance residential relocations of couples are associated with the emergence and/or widening of gender gaps in labour market outcomes. However, to our knowledge, no previous study has investigated the associations between family relocations and domestic divisions of labour.

2. 2. Family relocations and work-related gender inequality

Up to the 1960s empirical research on family relocations was undertaken at the level of the individual. Given the prevalence of one-earner male-breadwinner households at the time, most studies were only concerned with men and paid employment, and their spouses and families remained under-theorised and under-researched. Attempts to introduce gender into theories of family relocation date back to the 1970's, following the so-called 'gender revolution' that took place in many Western countries. A vast literature devoted to explaining the predictors and outcomes of migration in couple households within industrialized countries has emerged since then. This was first concerned with answering the question of whether women's increasing achievements in education and paid work were a cause for decreasing family migration rates. Related evidence pointed in this direction: traditional families (i.e. those with a male breadwinner) were more likely to undertake geographic moves (Long, 1974; Da Vanzo, 1976; Mincer, 1978). As for gender divisions of household work, gender-neutral human capital theories of household specialization were most prominently used to explain this finding. Such theories maintained that, to maximise overall household income, it is economically efficient for household members to specialize in either labour market or domestic work. Given gender differences in human capital at the time, this invariably meant that husbands would seek paid work and wives would remain home. In that scenario, maximising household utility meant maximising the employment prospects of the male partner (Mincer, 1978; Bruegel, 1999). Consequently, couple moves were often led by the husband in response to career opportunities emerging elsewhere. By the same token, wives tended to follow their partners at the expense of their own career prospects.

Despite substantial achievements by women in the realms of education and work and societal shifts towards less traditional gender attitudes (Lesthaeghe, 1995), the allocation of migration roles within couples, with a male 'lead migrant' and a female 'tied migrant', has remained surprisingly stable in Western countries (Tenn, 2010; Cooke, 2011). Following from this, a substantial body of evidence has demonstrated that family relocation reinforces traditional gender roles within families, by decreasing the employment prospects of female migrants relative to both their partners and other women. Family relocations have positive effects for partnered men and a negative effect for partnered women concerning employment rates, paid work hours, wages, and occupational status (Bailey and Cooke, 1998, Boyle et al., 1999, 2002, 2003; Smits, 1999; Cooke, 2001; Smits, 2001; Cooke, 2003; Clark and Davis-Withers, 2002; Clark and Huang, 2006; Pailhé and Solaz, 2008; Rabe, 2006;). This has led several authors to argue that 'gender display' models, such as those outlined for domestic work, may be more appropriate in explaining the continuing prevalence of male-led family relocation episodes (Markham and Pleck, 1986; Shihadeh, 1991; Bielby and Bielby 1992; Halfacree, 1995).

However, the existing literature has paid disproportionate attention to the gendered impacts of family relocations on market work - particularly employment and wages, while it remains rather opaque as to potential impacts on outcomes in other life domains - such as subjective wellbeing, relationship quality and stability, children's developmental trajectories, childcare arrangements or household divisions of labour. The latter is what this article is concerned about and constitutes an important gap in knowledge, as we know that men's and women's labour market outcomes are intersect strongly with their relative shares of household labour. Only a handful of studies have tackled gendered divisions of labour market and household work as a consequence of family moves. However, these have been concerned with trans-national rather than within-country moves – which are a rather different phenomenon. These revolve around narratives of expatriate, Western 'trailing wives' moving to locations where different gender norms prevail, such as Beijing (Airelli 2007), Hong Kong (Leonard 2008), or Singapore (Lundstroem 2012). These studies are concerned with selective 'elites' of international movers and cross-national differences in gender relations, and are thus not very useful in informing the present study.

3. A life course approach to gender, family relocation and domestic work

In this section, we draw upon the two distinct literatures introduced in the previous sections to develop research hypotheses on the potential relationships between gender, family relocations and domestic work. To do so, we also draw upon principles from residential mobility research that adopts a 'life course approach' (Mulder, 1993; Baizán, 2002; Courgeau, 2014). This rests on several principles, two of which are of particular relevant to our purposes. First, it contends that family relocation is a means for families to accomplish life goals and so the timing of family relocations is interconnected with the occurrence of life course events in other domains (such as education, employment or family formation). Second, it argues that the impact of life events such as family relocations is not restricted to the immediate future, but can instead stretch over time and begin before the event has taken place.

Life course approaches contend that family relocations are interconnected with a number of life course events in complex ways. The timing and placement of residential relocations over the life course is especially contingent on family and employment transitions. Generally speaking, migrations and rehousing are means to reach goals materialized through events in other domains of life (Mulder, 1993). Employment- and career-related events such as seeking and obtaining a new job are conducive to family relocations (Van Ham et al., 2001). As explained before, long-distance family relocations are more often undertaken to benefit the employment situation of men, and typically derive in career losses for their female partners (Rabe, 2006; Boyle et al., 1999, 2003). Residential transitions are also strongly related to family changes (Kulu and Milewski, 2008). For example, childbirth increases markedly after family relocations (Clark and Huang, 2003; Andersson, 2004; Clark and Davies-Withers, 2009), while the reverse is also true (Kulu, 2008; Clark and Davies-Withers, 2009). Family and employment situations are also highly interconnected with the domain of housing: better jobs conduce to better housing, and upgrades in housing, and job conditions are important pre-requisites for having children (Michelin and Mulder, 2008). Very often, childbirth-related family relocations are associated with families transiting into house ownership, and single family housing (Mulder and Wagner, 2001; Feijten and Mulders, 2002; Kulu 2007; Spallek et al., 2014). Drawing on this notion of interconnectedness, we propose three possible channels for family relocation to be associated with shifts in domestic work in gendered ways, relating to housing, employment and fertility decisions.

A first explanation for why family relocations may affect domestic divisions of labour is based on shifts in relative spousal resources across this transition, including education, income potential and available time. Time spent on labour market work is inversely associated with time spent on domestic work, as it decreases the time available to undertake housework. As discussed before, family relocations have well-established impacts on the relative share of paid work time undertaken by the male and female partners, increasing men's share and decreasing women's (Geist and McMannus 2012). Accordingly, this would increase women's availability and decrease men's availability for domestic work. Thus, it is likely that changes in domestic work around family relocations are explained by changes in the employment circumstances of the male and female partners.

A second interrelated explanation for why family relocations may affect domestic divisions of labour is based on changes in family circumstances, especially childbirth. We know that family relocations tend to be accompanied by increases in family size (Kulu and Milewski, 2008), and that newborns and young children increase women's housework hours more than men's (Craig 2007). Consequence, any increases in women's share of housework with residential relocations might be explained by changes in family composition.

A third explanation for why family relocations may affect domestic divisions of labour is based on changes in the characteristics of the dwellings and locations in which people live. Family relocations, particularly those over long distances, are commonly theorised as a mechanism for upwards mobility (Huinink et al. 2014). Thus, these often result in families moving into home ownership, larger dwellings and better suited homes (Clark et al. 2003). Efforts devoted to improve, adapt and maintain dwellings which are perceived to be a permanent home may be higher than those devoted to dwellings perceived as transitory homes. This may translate into an increase in the number of total housework

hours, particularly in the period following immediately from the residential change. Relatedly, moves to distant locations entail a reorganization of housework and childcare arrangements (e.g. housekeepers or child-minders). Day-to-day activities such as doing the shopping may be more difficult and take longer to accomplish. Relatives or neighbours are lost as sources of support in childcare and housework, and local knowledge erodes. Studies have shown that, when a sudden shock changes total care and housework hours, for example when a child, parent or close relative suffers an accident or falls sick – it is typically women who take up the additional burden. We expect similar patterns to operate with rehousing, and for women to take up any planned or unplanned increases in housework hours due to locational disruptions.

These lead us to predict that:

H1. Family relocations will have gendered net effects on divisions of domestic work, with women being expected to undertake a higher share of domestic work (gender bias hypothesis)

H2. The traditionalizing effect of family relocations on divisions of domestic work will be explained by…

- *(i) Changes in the relative paid work outcomes of the male and female spouses (gendered careers hypothesis)*
- *(ii) Changes in the nature of the family dwelling and the location of residence (spatial disruption hypothesis)*
- *(iii) Family transitions around the family relocations (interdependent fertility hypothesis)*

Life course research poses that events have consequences which do not simply emerge after their occurrence, but that unfold and evolve in complex ways (Mayer, 2009). Two time dimensions are of relevance to our research: anticipation effects and adaptation effects.

In our context, anticipation effects can take two forms. First, the interconnectedness of life events means that an event that occurred before the family relocation and potentially triggered it (e.g. the birth of a child or a workplace change) may be responsible for the changes in domestic work observed around family relocations. Knowledge on the prospective occurrence of an event (event 'a') might trigger a second event (event 'b'), with the result that event 'a' might end up occurring after event 'b'. For example, workers may be aware of employers' intentions to relocate their premises and move to a home in the vicinity of the new premises. Similarly, families expecting a child begin adapting their living arrangements (including housing) during pregnancy. In the geographic mobility literature, these relationships have been recognised and discussed both theoretically (Mulder and Wagner, 1993) and methodologically (Willet and Singer, 2003). Second, it is possible that preparation for family relocations is in itself a costly endeavour that increases total housework hours. For example, re-housing may be preceded by time-consuming administrative tasks that some may deem as 'housework' (e.g. house inspections or arranging contracts) or adjustments to the new dwelling and the dwelling left behind (e.g. cleaning the premises, transferring belongings, extra odd jobs such as gardening). From this perspective and paradoxically, the consequences of family relocations on domestic divisions of labour begin prior to the move. Given that women's housework hours are more responsive to changes in other life domains and that women are overrepresented amongst 'tied movers', one might expect anticipation effects to have gendered consequences.

Adaptation effects refer to long-term dynamics in outcomes following the occurrence of a life event. A strand of the family relocation literature has paid attention to how individual and family outcomes evolve as time after the event elapses. Using longitudinal research designs studies have shown that the positive effects of family relocations on men's careers persist over time, but the negative effects on women's careers are sometimes short-lived and disappear a few years after the move (Lichter, 1983; Spitze, 1984; Clark and Withers, 2002; van Ham, 2002; Mulder and van Ham, 2005; Clark and Huang, 2006; Blackburn, 2010). Mirroring as well as following on from changing circumstances surrounding partners' paid work situations, we would expect any family relocation effects on

household divisions of labour to change as time since relocation elapses. One possibility is that effects are transitory or short-lived. Another is that they translate in more permanent long-term arrangements.

In a broad way, we hypothesise that:

> *H3. The effect of family relocations on divisions of domestic work will begin prior to the move (anticipation hypothesis)*

> *H4. The effect of family relocations on divisions of domestic work will evolve as time after the move elapses (adaptation hypothesis)*

4. Data

We are interested in the potential associations between the family relocations and the hours devoted to housework by the male and female partners. To examine this, we use Australian panel data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey (Watson and Wooden, 2012; Summerfield et al., 2013). The HILDA Survey is a large and rich longitudinal dataset that tracks individuals living in the same households over time. Information from all household members is collected annually through a mixture of face-to-face interviews and self-complete questionnaires. Currently, data for years 2001 to 2012 is available.

This dataset is well-suited for our purposes for several of reasons:

(i) it contains annual, detailed information on housework hours and household geographic mobility, as well as other important contextual factors;
(ii) its large sample size guarantees a sufficient number of family relocations for robust inference of the relationships of interest;
(iii) it enables examination of long-term changes over time, virtue of its panel nature; and
(iv) it allows estimation of couple-level models in which information from the male and female partners is jointly considered, virtue of its household structure.

Additionally, it is worth noting that the HILDA Survey has greater year-on-year respondent retention rates than comparable household panels such as the British Household Panel Survey (BHPS) and the German Socio-Economic Panel (SOEP) (Watson and Wooden, 2014).

Exploiting the household structure of the HILDA Survey data, we combine information from the male and female spouses to create dyadic yearly observations of couples (as opposed to individuals). These enable us to jointly examine how the characteristics of the male and female partners influence an outcome that is at the couple level. Following conventions in the literature on family relocations, we exclude same-sex couples, couples in which one of the spouses does not answer the survey that year, or has missing information on model variables.

The HILDA Survey question on housework hours is asked annually and is located within a time-use module in the self-complete questionnaire. The actual questionnaire item reads:

> *"How many hours would you spend on each of the following activities in a typical week? […] Housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing".*[1]

[1] Note that childcare is not supposed to be included in the calculation of weekly housework hours, though some respondents might do so.

This information has been used by previous studies to examine how housework hours are related to ethnic background (Ting et al., 2014) or marital status (Baxter et al., 2010), amongst others. Since this information is asked of all household members, it is possible to construct a summary indicator of the relative contributions to housework of the male and female partners. Here, these are captured using a variable that contains the difference in weekly housework hours by the female and male partners (female hours - male hours). Therefore, the resulting variable gives the number of additional housework hours done by the female partner, compared to the male partner. This is the outcome variable in our multivariate analyses.

The HILDA Survey also contains the requisite information on whether individuals moved houses since the previous interview round. Additionally, when individuals moved houses, the distance in kilometers between the former and current residence is available. We consider two types of moves, following conventions in the literature. First, short-distance relocations (house changes) are defined as moves of less than 50 kilometers. Second, long-distance relocations (family migrations) are moves of 50 kilometres or more. Comparing these two processes will enlighten whether it is rehousing per se, or the disruption of daily activities and arrangements inherent in long-distance moves that couples' renegotiation of domestic work. Note that, as is typical in the literature, we only consider moves in which neither partner moves in or out of the couple household, and that occur between adjacent survey waves.[2]

For each type of move, two sets of variables are developed. We first create dummy variables taking the value 0 if the family has not being observed to experience a relocation, and the value 1 when a relocation event has been observed to occur. This enables comparisons of the relative housework contributions made by the male and female partners before and after the move, and estimation of the overall effect of migration on housework.

We then create variables capturing the time dimensions of family relocation, used to address the hypotheses concerning transitoriness and persistence of their effects on housework. This consists of a set of splines for the years before and after the first observed relocation spell:

(i) from two years before the relocation event until it occurs (anticipation)
(ii) from the relocation event until one year after it (short term consequences)
(iii) from one to five years after the relocation event (long term consequences)

We additionally include polynomial forms of these variables into the model to capture non-linear time dynamics. Families which never experience the event, score 0 in all of these variables. As will be explained later, because our model is a within-group model, this practice does not affect model estimation.

5. Empirical specification

We are interested in how short- and long-distance family relocations affect the within-couple gender gap in housework hours. To model these relationships, we follow previous research and fit linear fixed-effects regression models for panel data (see e.g. Cooke et al. [2009] for research on the impact of migration on men's and women's wages). Fixed-effect regression models are within-group regression models that are particularly useful to how outcomes change with the occurrence of an event or transition. These models leverage the panel data to estimate how deviations from individuals' usual characteristics associate with deviations from their usual outcomes (Allison, 2009). This is accomplished by time-demeaning the data, and effectively controls all unobserved and unobservable

[2] The latter implies that respondents who abandon the panel and return to it at a different address are not considered to be 'movers' and that several moves occurring across adjacent waves are not considered.

factors potentially correlated with the explanatory and outcomes variables – minimizing omitted variable bias due to these. In our context, the model can be expressed as:

$$H_{it} - \bar{H}_i = (M_{it} - \bar{M}_i)\beta + (X_{it} - \bar{X}_i)\gamma + (e_{it} - \bar{e}_i)$$

where H_i is the difference in weekly housework hours between the male and female partners in each couple i across all yearly periods t; M_i are two dummy variables capturing short- and long-term residential moves (specified differently depending on the analysis); X_i is a vector of time-changing explanatory variables and β is the vector of associated coefficients; and e_i is the usual stochastic error term. Because this is a within-group model, the impact of time-constant variables (e.g. ethnicity or socio-economic background) cannot be directly retrieved.

To test our hypotheses, we fit a series of nested models that progressively add potential mediators of the association between family relocations and within-couple gender differences in housework hours to a base model:

- Model 0 (base) includes variables capturing short- and long-distance family relocations, age, age squared, and and second and higher order family relocations
- Model 1 adds to Model 0 control variables capturing housing and location
- Model 2 adds to Model 0 control variables capturing family composition and relationships
- Model 3 adds to Model 0 control variables of spousal economic resources
- Model 4 includes all previous variables

6. Results

In this section we discuss the results of our empirical analyses. We begin by examining average housework hours of partnered men and women in the year immediately preceding and the year immediately succeeding short- and long-distance relocations, as well as in all time periods preceding and succeeding the first observed short- and long-distance family relocations (Table 1). While women do almost three times as many housework hours as men, there are no substantive or statistically significant differences in the number of weekly hours men and women allocate to housework before and after family relocations. It follows that the gender gaps in housework hours do not increase following the family relocation episode.

TABLE 1 ABOUT HERE

Altogether, these results show no evidence of family relocations being associated with housework hours, but these simple descriptive statistics mask more complex patterns over time and relationships that emerge after basic variables such as age are controlled. We therefore move to discuss the results of more robust multivariate fixed-effect panel regression models in which the outcome variable is the difference in weekly housework hours between the female and male partners – hereby referred to as the within-couple gender gap in weekly housework hours (Table 2). Model coefficients give the predicted change in the within-couple gender gap in housework hours associated with a one-unit within-couple change in the explanatory variables. For the family relocation variables, they give the average difference in the gender gap in housework hours for the *same* couples before and after they undertake the first observed relocation in the HILDA Survey panel.

TABLE 2 ABOUT HERE

Model 0 controls only for age and its square and higher order family relocations. Results from this basic model reveal that short- and long-distance relocations are associated with statistically significant increases of 0.6 and 1 hours in the within-couple gender gap in housework hours, respectively.

Subsequent models add theoretically-relevant sets of explanatory variables to Model 0. Model 1 adds variables capturing housing and location. Their associated coefficients indicate that living in a large house and in non-urban areas is associated with women doing a greater share of the housework, but dwelling type and house ownership are not significantly associated with it. Adding this set of variables changes the statistical significance and magnitude of the coefficients on short- and long-distance family relocations very little. This suggests that the changes in the within-couple gender gap in housework hours associated with family relocations observed in Model 0 is not explained by changes in the characteristics of the houses and locations in which people live.

Model 2 adds variables on fertility and relationships. The number of children and the presence of young children in the household substantially increase the gender gap in weekly housework hours, whereas marital status and relationship duration have no significant effects. Importantly, adding this set of variables to the initial model renders the model coefficients on the family relocation variables small and statistically insignificant, which suggests that the raw effects of family relocations on the within-couple gender gap in weekly housework hours are channeled by changes in family composition.

Model 3 adds variables that jointly capture the resources brought to the household by the male and female spouses. Visibly, the model shows that the within-couple gender gap in weekly housework hours is more responsive to variation in women's than men's employment-related characteristics. Women's education, employment, paid work hours, and wages decrease the within-couple gender gap in weekly housework hours. Only men's paid work hours significantly affect this. Including these variables also renders the coefficient on long-distance family relocations small and statistically insignificant, and substantially reduces the magnitude and significance of the coefficient on short-distance family relocations. This suggests that the relative resources that the male and – especially – the female spouses bring to the household are important factors mediating the previously observed associations between family relocations and the within-couple gender gap in housework hours.

Finally, Model 4 (our fully specified model) adds all variables to the model, with the results mirroring those for models 2 and 3. Altogether, results from these regression models reveal that both short- and long-distance family relocations are associated with increases in the within-couple gender gaps in weekly housework hours, particularly long-distance relocations. Such effects operate through fertility behavior and shifts in the employment circumstances of partnered women around the occurrence of family relocations.

However, these models are only simplistic representations of the time dynamics in household labor that might operate around family relocations. Hence, we additionally estimate models that deploy more flexible parametrizations of the time effects in the forms of splines and polynomial terms (quadratic and cubic) for these splines. Results from these models are enlightening, and are better represented graphically[3] (Figure 1).

In the base model (M0), for short- and particularly long-distance family relocations there is evidence of an anticipation effect, whereby women's relative share of weekly housework hours increases slightly prior to the family relocation event. However, this anticipatory effect almost vanishes in the full models (M4), due to both family transitions (M2) and spousal resources (M3). For short-distance moves, there is a mild long-term trend towards women taking over progressively more of the housework as time after the event elapses. For long-distance moves, a long-term U-shaped trend emerges in the full model (M4). From event occurrence, the division of household labor reverts back

[3] A version of the models depicted in Figure 1 and included in the Appendix (Table A1) is illustrative as to which factors explain differences in the time-effects of family relocations on the within-couple gender gap in housework hours across models. Because it is difficult to ascertain how the magnitude and significance of coefficients change across models when polynomial terms of the variables of interest are used, we revert to linear splines.

to pre-migration levels and 2-3 years after the move it becomes progressively less egalitarian. This post-migration pattern becomes more pronounced as sets of additional variables are added in Models 1-3. All in all, our results clearly evidence that earlier analyses obscured complex dynamics in the gender division of household labour across different types of family relocations.

FIGURE 1 ABOUT HERE

Figure 2 complements these findings by providing a graphical representation of analogous, separate regression models of men's and women's weekly housework hours. Strikingly, men's housework hours experience virtually no change across either form of family relocation. Women's housework hours, however, change markedly before and after the events, in very ways similar to those observed for the gender differences in the modelled earlier (Figure 1). This is clear evidence that, as for other life course transitions, family relocations change the gender balance in domestic labour by women adapting to emerging life circumstances, with men's behaviour being largely unresponsive to these.

FIGURE 2 ABOUT HERE

7. Summary and preliminary conclusions

In this paper, for the first time in the literature we combine state-of-the-art knowledge on family migration, domestic divisions of labour, and life course transitions to theorise and later test how short- and long-distance family relocations affect the division of household labour within couples. We accomplish this using Australian panel data and fixed-effect panel regression models. Key findings indicate that:

(i) family relocations increase women's but not men's housework hours - and consequently widen within-couple gender gaps in housework hours,
(ii) these effects are channelled by shifts in women's employment situation and fertility episodes,
(iii) there are both anticipation and adaption effects.

These findings are mostly in support of our hypotheses. Hypothesis 1 is supported in base regression models, where we observe that women's relative share of housework increases with both types of family relocations considered. Hypotheses 2a and 2b were also supported, as these associations were mediated by spousal economic resources and changes in family composition. Hypothesis 2c, contending that changes in the characteristics of the homes and locations in which people live would channel the effects of family relocations on gender division of housework, was however rejected. Our two time-related hypotheses inspired by life course theory (Hypotheses 3 and 4) were also supported, particularly for long-distance family relocations: we observe anticipation effects (whereby domestic divisions of labour become more female-dominated prior to a move) and long-term effects (whereby domestic divisions of labour evolve over time after the move). The long-term trends are however different for short-distance relocations (linear increase) and long-distance relocations (U-shaped).

Altogether, out findings contribute to the literature on domestic divisions of labour by providing evidence that rehousing and internal migrations are triggers of gender inequalities in this realm. They also contribute to existing debates on the consequences of family migration, by illustrating that the gendered impacts of migration are not confined to the paid-work realm, but extend to other domains of life. More broadly, our research evidences how adopting a life course approach to examine gender inequality is valuable, as the life course principles of interconnectedness and time dynamics enabled us to unveil important and previously obscured relationships.

Despite its manyfold contributions, this study still suffers from some shortcomings. For example, we were unable to include some variables of theoretical importance in the models, such as gender role

attitudes and whether families outsource domestic work. Additionally, most of our analyses consider only the first move observed for couples in the HILDA Survey, but we have no means of determining how many prior moves were experienced before entering the study. Finally, the literature is unambiguous in that migrants are a selective subgroup of the population, and methods to correct for such selectivity should be incorporated into our analyses.

Future research should be devoted to continue investigating how life course events and transitions can affect life outcomes in ways in which that promote the emergence and perpetuation of gender-based inequalities oppressing women. Scholars of family relocation should look further than into their work-related outcomes, and begin exploring its potential consequences on other life spheres – including subjective wellbeing, relationship quality and satisfaction, and child wellbeing.

8. Tables and figures

Table 1. Weekly housework hours of male and female partners

	Women	Men	Women-Men
Year before a short-distance move	16.4	6.2	10.1
Year after a short-distance move	16.6	6.1	10.7
Year before a long-distance move	18.2	6.5	11.7
Year after a long-distance move	17.6	6.3	11.5
All periods before 1st short-distance move	18.0	6.1	12.0
All periods after 1st short-distance move	18.1	6.2	11.7
All periods before 1st long-distance move	18.0	6.3	11.7
All periods after 1st long-distance move	18.7	6.6	11.9

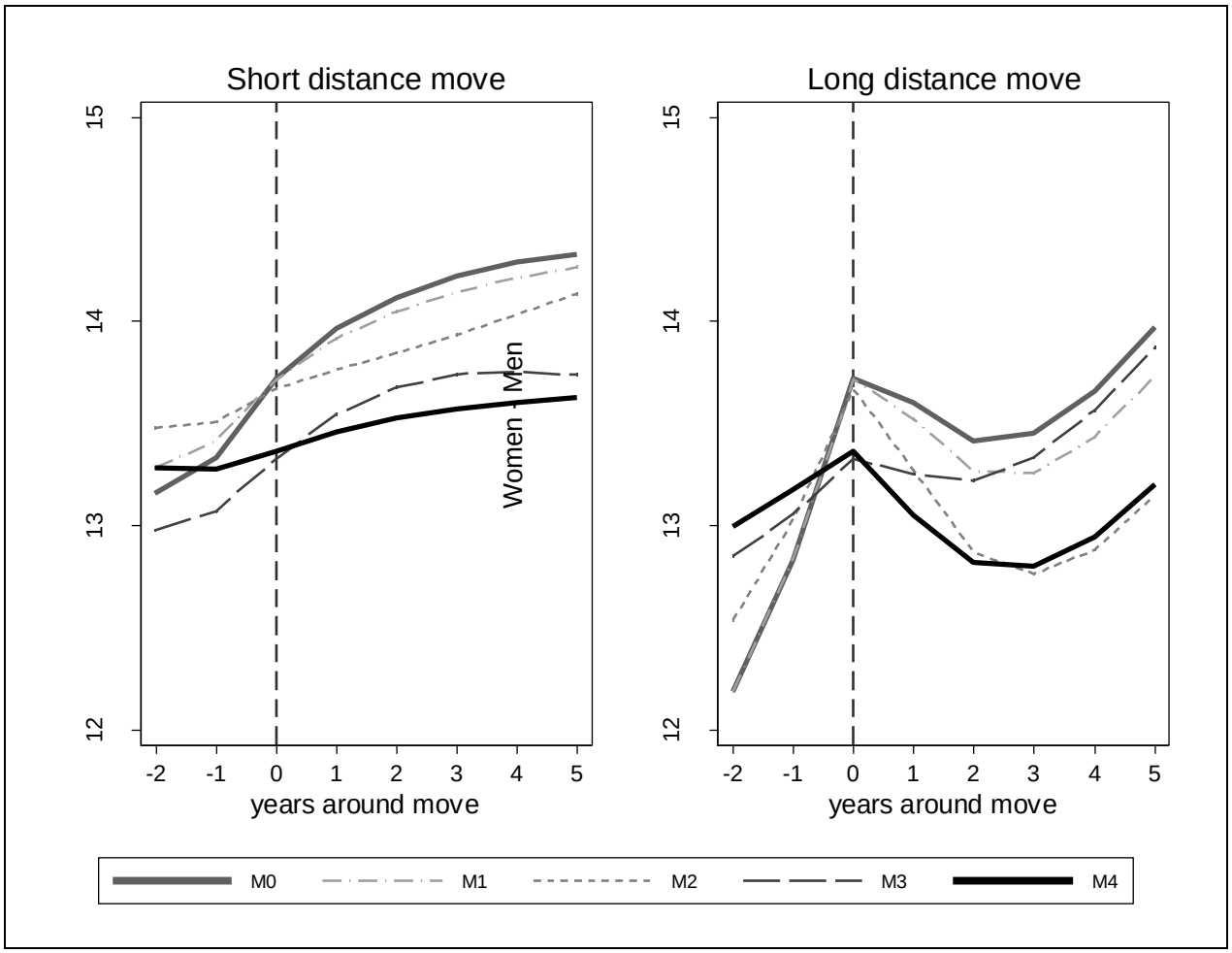
Notes: HILDA Survey 2001-2012. There are no statistically significant differences at the 0.05 level using t-tests.

Table 2. Fixed-effect models of the gender gap in weekly housework hours

	Model				
	0	1	2	3	4
Family relocation					
Short-distance move has been observed	0.58**	0.43*	0.20	0.36*	0.08
Long-distance move has been observed	0.95***	0.83**	0.28	0.19	-0.20
Housing and location					
Family owns house		0.24			0.24
Family lives in a flat *(reference)*					
Family lives in a detached house		0.59			-0.37
Family lives in a semi-detached house		-0.62			-0.98**
Number of bedrooms in family home		0.69***			0.49***
Family lives in a non-urban area		1.11***			1.24***
Fertility and relationships					
Child born in observation year			1.13***		0.23
Children under 3 years old in the household			1.95***		1.01***
1 child			5.67***		2.75***
2+ children			10.91***		6.97***
Married			0.94		0.48
Relationship duration, in years			-0.03		-0.04
Spousal resources					
Woman's education: Low *(reference)*					
Woman's education: Certificate				-1.02*	-0.66
Woman's education: Degree				-0.27	-0.12
Woman is employed				-1.19***	-1.35***
Woman's usual weekly work hours				-0.21***	-0.18***
Woman's wages over sample median				-0.43**	-0.30
Woman commutes for 10+ weekly hours				-0.11	-0.04
Man's education: Low *(reference)*					
Man's education: Certificate				0.78	0.49
Man's education: Degree				1.03	1.02
Man is employed				0.41	0.50
Man's usual weekly work hours				0.10***	0.09***
Man's wages over sample median				0.28	0.19
Man's commutes for 10+ weekly hours				-0.21	-0.18
N (couples)	*40,389*	*40,389*	*40,389*	*40,389*	*40,389*
N (couple-year observations)	*7,717*	*7,717*	*7,717*	*7,717*	*7,717*
R^2 *(within)*	*0.01*	*0.01*	*0.03*	*0.06*	*0.07*

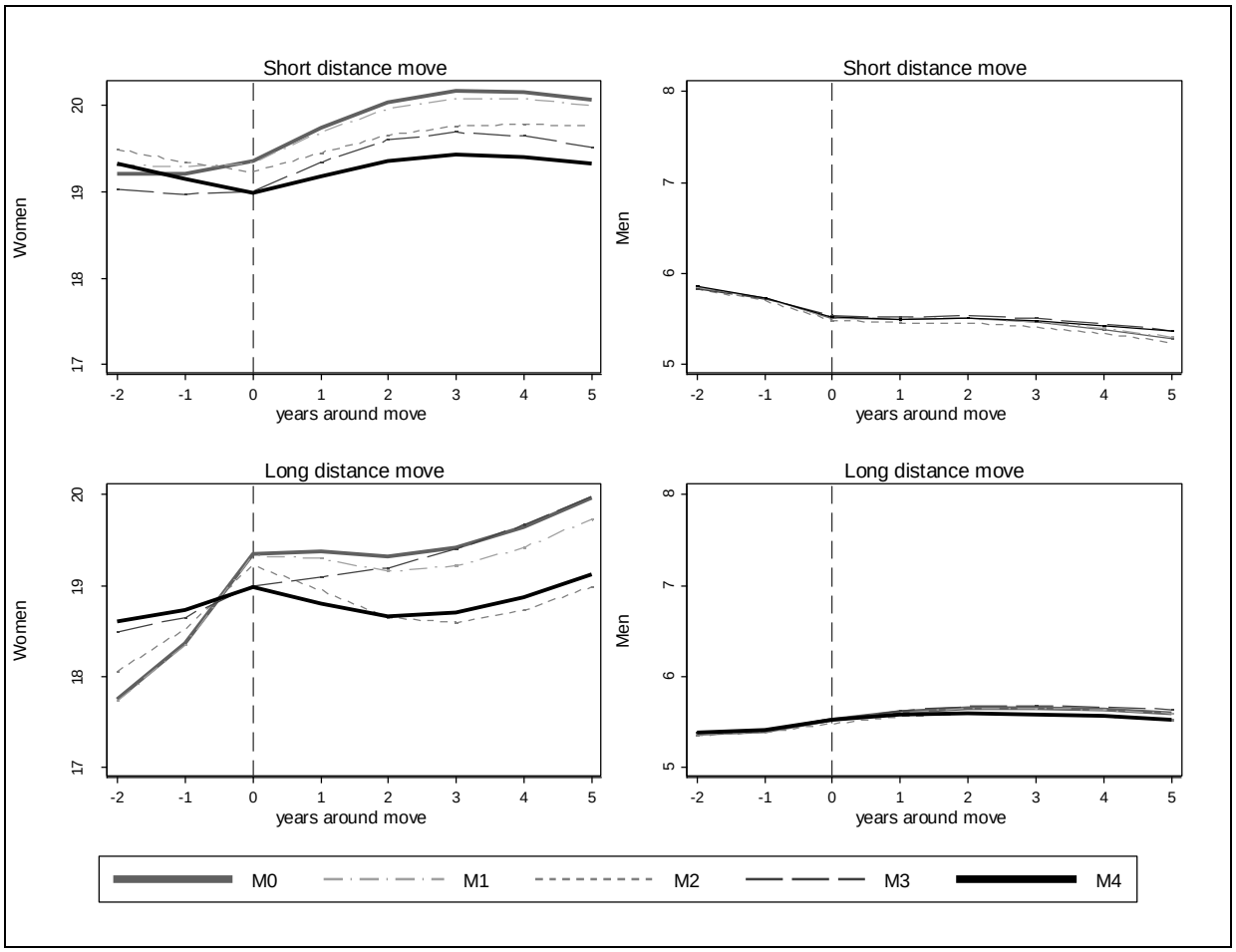
Notes: HILDA Survey data (2002-2012). Significance levels: * 0.1 ** 0.05 *** 0.01. All models control for age, age-squared, and second and higher order family relocations.

Figure 1. Within-couple gender gap in weekly housework hours, model predictions



Notes: HILDA Survey data (2002-2012). Control variables as for Table 2.

Figure 2. Men's and women's weekly housework hours, model predictions



Notes: HILDA Survey data (2002-2012). Control variables as for Table 2.

Appendix

Table A1. Fixed-effect models of the gender gap in weekly housework hours, splines

	Model				
	0	1	2	3	4
Time around short-distance family relocations					
From 2 years before until the event	-0.04	-0.03	-0.11	-0.06	-0.10
From the event until 1 year after	0.76**	0.62**	0.45	0.70**	0.44
From 1 year to 5 years after	0.04	0.05	0.07	-0.02	-0.00
Time around long-distance family relocations					
From 2 years before until the event	0.22**	0.22**	0.14	0.09	0.06
From the event until 1 year after	-0.17	-0.31	-0.65	-0.34	-0.70*
From 1 year to 5 years after	0.27**	0.25**	0.18	0.28**	0.20*
N (couples)	*40,389*	*40,389*	*40,389*	*40,389*	*40,389*
N (couple-year observations)	*7,717*	*7,717*	*7,717*	*7,717*	*7,717*
R^2 (within)	*0.01*	*0.01*	*0.03*	*0.06*	*0.07*

Notes: HILDA Survey data (2002-2012). Significance levels: * 0.1 ** 0.05 *** 0.01. Control variables as for Table 2.