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Long-distance moves and labour market outcomes of dual-earner couples in the UK and Germany

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Abstract: Chances are high that partners in dual-earner couples do not receive equal occupational returns from long-distance moves, because job opportunities are distributed heterogeneously in space. Which partners are more likely to receive relatively higher returns after moves? Recent research shows the stratification of returns by gender and highlights the importance of gender roles in mobility decisions. I extend past literature in two ways. First, while past research mostly examined partners separately, I directly test for gender differences in matched pairs of women and men in dual-earner couples and account for the nonindependence of both careers. Second, I compare evidence from the United Kingdom (UK) and Germany to shed light on the effects of institutional and normative contexts. For my analysis, I draw longitudinal data from the British Household Panel Survey and the German Socio-Economic Panel Study (1991-2008). My results show that women in dual-earner couples are temporarily adversely affected in their careers by long-distance moves in the UK and West Germany after controlling for various characteristics of both partners. Women in East Germany are not affected by long-distance moves. Moves do not change wage rates significantly for women and men that stay in employment in both countries.

Keywords: Residential mobility; gender inequalities; cross-national comparison; actor-partner interdependence model

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1. Introduction

Long-distance moves are often occupationally motivated and individuals are assumed to move to job opportunities to increase their life-time earnings (e.g. Becker 1995: 53; Sjaastad 1962).¹ Individuals in dual-earner couples are constrained in their mobility, as both careers have to be considered in the decision of whether and where to move. It is unlikely that both partners will receive equally good job offers at a new location at the same time, because job opportunities are dispersed in geographical space and job offers emerge at relatively random times (Böheim & Taylor 2002; Mincer 1978). Therefore, long-distance moves can be expected to have divergent effects on the labour market outcomes of both partners. This paper tackles the following research question: How do occupational returns of long-distance moves differ between partners in dual-earner couples? Long-distance moves are assumed to have a stronger effect on labour market outcomes than short-distance moves, since the distance to the old place of work will increase substantially after long-distance moves in most cases and individuals usually prefer to limit their commuting (Boyle, Feng & Gayle 2009; Mincer 1978; Smits 1999).²

It is highly relevant to analyse the divergent effects of long-distance moves on partners in dual-earner couples for three reasons. First, couples do not have a unitary utility function and couples may not unconditionally pool their income (Beblo 2001: 12ff; Ott 1992: 23). One partner's gains and another partner's losses from long-distance moves cannot simply be summed up to analyse the welfare of couples. Additionally, the effects of moves on labour market outcomes should not be averaged over the whole household. Instead, individuals' outcomes and their intra-couple relations should be analysed, particularly since couples may dissolve. Second, the analysis of couples with two earners is especially relevant, considering that in the majority of couples in Europe both partners work and, thus, a great share of couples must coordinate two careers (Dingeldey 2001; Giele & Holst 2004). Even though most women participate in the labour force, gender inequality is persistent in dual-earner couples. Women are still largely responsible for family work (Hardill & Wheatley 2010: 257).

¹The data from the British Household Panel Survey used in this publication were made available through the ESRC Data Archive. The data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex (now incorporated within the Institute for Social and Economic Research). Neither the original collectors of the data nor the Archive bear any responsibility for the analyses or interpretations presented here. The data for Germany used in this publication were made available to me by the German Socio-Economic Panel Study (SOEP) at the German Institute for Economic Research (DIW), Berlin.

²Partners may also decide to split and form a second household to accommodate both careers, but I focus on couples that cohabit before and after the move in the present paper. I further discuss this issue in Section 3.

While almost all men work full-time, a high share of women work part-time to accommodate this arrangement. Thus, one may expect gendered effects of moves on careers. In addition, women may be more adversely affected by moves today than they have been in the past, on average, because women's greater participation in the labour market means that they have more to lose after moves (Blackburn 2010: 88). Third, and more generally, there is the widely shared idea in the literature on residential mobility that long-distance moves — especially of men — increase earnings and are an important avenue for upward social mobility (e.g. Blau, Duncan & Tyree 1967: 243ff; Markham et al. 1983; Sabagh, Arsdol & Butler 1969). However, evidence shows that economic returns and employment effects vary strongly for movers: only some win, while others lose (Clark & Withers 2002; Jacobsen & Levin 2000). Further research is needed to qualify the determinants of this variation in outcomes.

To explain the effects of moves on labour market outcomes in heterosexual couples, early research has taken a gender-neutral stance. Divergence in outcomes was explained with differences in human capital and occupational positions of both partners. This gender-neutral stance has been criticised strongly in recent years (e.g. Abraham, Auspurg & Hinz 2010; Bielby & Bielby 1992). Empirical findings show that women are adversely affected by mobility even after controlling for human capital and other characteristics (e.g. Blackburn 2010; Clark & Huang 2006; T. J. Cooke 2003; LeClere & McLaughlin 1997; McKinnish 2008; Nisic 2010). This is evidence that women are often tied movers or trailing spouses that move because of their partners' careers and face negative consequences for their own careers. In the literature, it is argued that these disparities are due to certain gender role norms. Because of these norms, men's careers are prioritised in mobility decisions in couples. However, past research has two important short-comings: First, only few studies have analysed pooled samples of female and male partners and directly tested the relative differences in outcomes by gender. Second, cross-national research is rare. Comparative research has only been conducted for the United States (US) and the United Kingdom (UK) so far, but both countries share similarities in their welfare systems and labour markets (Esping-Andersen 1990: 27; Hall & Soskice 2001: 27–31). Comparisons with other countries with divergent institutional settings are lacking.

The present paper aims at narrowing these gaps in research. First, my empirical strategy allows to directly test gender differences in the effects of long-distance moves on employment. By running analysis on pooled samples of women and men, I provide direct statistical tests that show whether women are more likely to leave employment after moves than men. In my analysis, I explicitly account for the nonindependence of partners' careers in dual-earner couples and model the outcomes

of moves for both partners as interdependent. I also test whether changes in earnings differ between movers and stayers in dual-earner couples conditional on staying employed. Second, I extend comparative research by considering the institutional and normative contexts of the UK and Germany in my analysis. Germany provides an interesting case because of its extensive family policy with a strong emphasis on the traditional division of labour in the household and divergent gender norms in East and West Germany (Kilkey & Bradshaw 1999: 176f; Sainsbury 1999: 247). By comparing the UK and Germany and considering East-West differences in Germany, similarities and differences in the effects of long-distance moves across divergent institutional contexts can be scrutinised.

This paper is structured as follows. In Section 2, I sketch the theoretical background for the present analysis, review relevant literature and describe the institutional and normative contexts in the UK and Germany. I also derive hypotheses about the effects of long-distance moves on careers. I then describe my data, operationalisation of variables and empirical strategy in Section 3. I present the results of the empirical analysis in Section 4. In my empirical analysis, I proceed in three steps: First, I show descriptive statistics on employment after moves and average changes in wage rates. Second, I run multivariate analysis to estimate the effect of long-distance moves on the chances to leave employment for women and men. Third, I examine average wage rates for movers and stayers by gender. Finally, I balance the presented evidence in Section 5.

2. Background

In the human capital approach, Mincer (1978), building on earlier work on individual mobility behaviour (e.g. Sjaastad 1962; Todaro 1969), argues that couples relocate to maximise their *collective* income. Thus, couples will move to a new location if both partners gain or if the gain of one partner is higher than the loss of the other partner. It is very likely that both partners' returns from moving are lower than if they would have moved individually, as individuals cannot maximise their individual utility, but have to consider the couples' collective utility. At the same time, it is likely that one partner's returns are relatively higher than the other partner's returns, because both partners are unlikely to receive equally good job offers at a new location. One partner may even face negative returns. In the decision to move, the partner's career is prioritised that would receive a better job offer at the new location as long as the couple gains collectively. This approach is fundamentally gender-neutral, because women's and men's careers are equally likely to be prioritised if they have the same

human capital and receive the same job offers. Observed gender inequalities are explained with differences in human capital and divergent occupational positions, e.g. due to discontinuous employment histories (Mincer 1978; Sandell 1977; DaVanzo 1981).

Mincer assumes that couples maximise a unitary utility function in their decision regarding whether and where to move. In bargaining models, the assumption of a unitary utility function is rejected (Abraham, Auspurg & Hinz 2010). Instead, it is assumed that partners bargain to maximise their individual utility (Beblo 2001: 15ff; Ott 1992: 23). Partners' alternatives outside the couple and their relative resources shape their potential to assert their interests. Partners who earn a higher share of the couples' labour income can be assumed to have more bargaining power in the decision to move and will be better able to assert a new location for the household that meets their own interests (Blood & Wolfe 1960: 29ff). The bargaining approach is also fundamentally gender-neutral. It assumes that careers of women and men with the same share of the household income are equally likely to be prioritised in the decision to move. Observed gender inequalities are assumed to be due to the lower average power resources of women.

These gender-neutral perspectives on the decision to move have been criticised strongly for ignoring underlying factors that drive gender inequality in outcomes of long-distance moves (e.g. Abraham, Auspurg & Hinz 2010; Bielby & Bielby 1992). It is argued that traditional gender norms of male breadwinners and female family caretakers are still relevant in many couples. In couples that subscribe to these traditional roles, women are more engaged in family work than in paid work on the labour market; even in childless couples men's careers are mostly prioritised (Bussemaker & Kersbergen 1999; Hochschild 1989). Following this perspective, decisions to move are not rationally utility maximising for the couple or the result of explicit bargaining between partners, because men's power in this decision is subtle and based on implicit norms (Abraham, Auspurg & Hinz 2010; Bielby & Bielby 1992; T. J. Cooke 2008b). Instead, women's potential losses after moves are considered to be less important than men's gains, prioritising his career in the decision to move. Thus, the gender role perspective assumes that even in couples where both partners have the same human capital, occupational position and the same relative resources, men's careers will still be prioritised in the mobility decision, if the couple subscribes to traditional gender roles.

A fourth perspective highlights women's and men's occupational positions in the labour market to understand divergence in outcomes after residential mobility. This perspective brings the importance of external and structural conditions to the fore

(Halfacree 1995; Shauman & Noonan 2007; Shauman 2010). Gender inequality in returns of mobility are assumed to be due to sex-segregation in occupations that differ in the association between geographical mobility and upward job mobility (Shauman & Noonan 2007). For women working in typically female-segregated jobs, such as shop assistants, social mobility and geographical mobility is assumed to be less associated than for men working in male-segregated jobs, such as engineers (Morrison & Lichter 1988). Thus, men have higher returns from mobility on average. In addition, residential mobility of dual-earner couples may increase the risk for women to work in female-segregated jobs, because these jobs are ubiquitous and moves may push women into these positions (Halfacree 1995; an issue already addressed by Mincer 1978).

The empirical evidence is strong for earning losses of partnered women after long-distance moves in the US and UK (Blackburn 2006; Blackburn 2010; Lichter 1983; McKinnish 2008; Sandell 1977; Shauman & Noonan 2007). Other papers report no significant changes after moves for women, but even then women seem to profit less than men from moves on average (Clark & Huang 2006; T. J. Cooke 2003; LeClere & McLaughlin 1997; for Germany: Nisic 2010). Women's losses are in contrast to earning gains for partnered men (Blackburn 2010; T. J. Cooke 2003; Clark & Huang 2006; McKinnish 2008; for Germany: Nisic 2010; Sandell 1977). The effect of moves on earnings varies in magnitude across studies. For example, Cooke et al. (2009) finds the immediate effect of long-distance moves on women's earnings to be about half as large as the effect of a childbirth. Because of the simultaneous gains in earnings of men, "migration contributes as much to the intrafamily earnings gap as does childbirth" (Cooke et al. 2009: 165). The differences between women and men remain significant in most cases when controlled for both partners' human capital, occupational position and family status. This is in contrast to the human capital model. There is some evidence for the bargaining approach, but results also show that even 'powerful' female partners' careers are regularly subordinated to less 'powerful' men's careers (Abraham, Auspurg & Hinz 2010; Boyle et al. 1999). Evidence for the structural approach is weak as well (Shauman & Noonan 2007). The weak evidence in favour of alternative explanations of gender differences lends support to the gender role approach. Empirical findings also directly support the gender-role model by showing that the adverse effect of moves on women is stronger in couples subscribing to traditional gender roles (Bird & Bird 1985; Boyle et al. 1999; T. J. Cooke 2008a; Jürges 2006; Shihadeh 1991; Smits, Mulder & Hooimeijer 2003).

The literature shows that the negative effect of moves on women's careers is

mainly due to a reduction in labour market participation. In the US, employed women are likely to leave work after a move or to reduce their work hours (Blackburn 2006; Boyle, Feng & Gayle 2009; LeClere & McLaughlin 1997; Long 1974). Thus, the loss in income after long-distance moves for women is mainly due to the fact that women do not find a new full-time position, rather than due to lower earnings if they find a position (Jacobsen & Levin 1997). Those women that stay in employment after a move do not seem to experience earning losses in the US (LeClere & McLaughlin 1997). However, Shauman & Noonan (2007) finds negative returns even for those women staying in employment, but the results are not corrected for selection into employment. In France, women that stay in employment can even increase their earnings slightly (Pailhé & Solaz 2008). Moves also lead to unemployment and reduced work hours of partnered women in the UK and this explains a big share of their losses in earnings (Boyle, Feng & Gayle 2009; Rabe 2011). It is found that the negative effects of moves are rather short lived (Lichter 1983). Most studies suggest that negative as well as positive effects of moves on earnings and employment status level out a few years after a move. For example, for men in the UK, moves initially increase earnings for movers compared to stayers. But the difference is no longer significant three years after a move took place (Böheim & Taylor 2007). Negative effects also seem to be only temporary. Clark & Withers (2002) shows that labour participation rates of women fall immediately after a move, but within 10 months after the event participation rates are back to pre-move levels in the US.

In light of past empirical research, I follow the gender role approach and I expect couples to prioritise men's careers on average irrespective of both partners' human capital and occupational position as well as the partners' share of the couple's labour income as an indicator for relative resources. Thus, I expect that residential mobility of dual-earner couples benefits men's careers more than women's careers. I expect that the differences between women and men will be stronger in couples in which men have substantively higher relative resources. In addition, I expect women to be tied movers on average. That is to say that their individual careers are adversely affected by the move compared to staying put. I derive the following hypotheses: *In couples, men will profit more from long-distance moves than women with regard to their careers on average — even controlling for both partners' human capital and contributions to the couple's labour income (H1). In couples in which men contribute a substantially higher share to the household's income relative to women, the gender differences will be stronger than in more equal couples on average (H2). Partnered women that move are negatively affected in their career compared to women staying put on average (H3).*

The structural approach highlights the effect of labour market conditions on gendered outcomes of moves. Conditions in national labour markets diverge and societal norms for gender roles vary across countries (Treas & Widmer 2000). Thus, one can expect the effect of long-distance moves on women’s careers to vary by country. For example, past empirical research shows that women’s careers in the UK are stronger adversely affected by long-distance moves than in the US (Boyle et al. 2001; Boyle et al. 2002; Cooke et al. 2009). In my analysis, I consider the cases of Germany and the UK. Germany is characterized by an extensive family policy which favours a traditional division of labour in the household, while the UK is characterized by rudimentary family policy relying on the market and providing better (non-public) child care facilities — at least than in West Germany (Gornich & Meyers 2004; Kilkey & Bradshaw 1999; McGinnity & McManus 2007; L. P. Cooke 2011: 31ff). Tax regulations facilitate main-breadwinner couples in the UK and male-breadwinner constellations in Germany (McGinnity & McManus 2007; Sainsbury 1999: 247). Norms about gender roles differ between the UK and Germany, but also within Germany. Treas & Widmer (2000) categorises East Germany as having “work oriented” gender norms, where attitudes are more favourable for working mothers than in other countries. West Germany and the UK belong to the cluster of countries with “family accommodating” gender ideology, where mothers of young children are expected to stay home and mothers of school-age children are expected to work only part-time (Treas & Widmer 2000).

The two countries are also highly divergent cases in respect to their labour markets (Dingeldey 2007). Germany is a coordinated market economy (CME), while the UK is a liberal market economy (LME). As a result, one can observe higher labour mobility in the UK compared to Germany, because of more company-specific knowledge and involvement of workers in CMEs compared to LMEs (Hall & Soskice 2001: 8ff). Because of the higher overall job mobility and better opportunities for taking up new jobs, moves may be less disruptive for careers in the UK than in Germany. Because of the slightly higher labour market involvement of women in the UK, more egalitarian gender role norms and the slightly less gendered family policy, I expect long-distance moves in the UK to affect women’s careers less adversely than in Germany. I also expect West German women to be stronger adversely affected by moves than East German women, because of the aforementioned differences in gender norms between East and West Germany. These expectations lead to the following hypothesis: *Gender inequality in effects of long-distance moves on careers will be weakest in the UK, modest in East Germany, and strongest in West Germany on average (H4).*

3. Data, measurement and empirical strategy

Data

To analyse changes in careers of partners in dual-earner couples after long-distance moves, data from longitudinal surveys must be used. For Germany, I draw my data from the Socio-Economic Panel Study (SOEP), which was established in 1984 and is a nationally representative panel survey of the German population run by the German Institute for Economic Research (Wagner, Frick & Schupp 2007). All samples excluding the innovation sample and the high-income sample are used in the present analysis. The data for the UK are drawn from the British Household Panel Survey (BHPS) that is run by the Economic and Social Research Council UK Longitudinal Studies Centre with the Institute for Social and Economic Research at the University of Essex and started in 1991. The original sample for the BHPS was drawn in 1990 and is representative of the population in private households in the UK at that time. Additional regional boosting samples and purpose-specific samples have been added later on. All samples excluding the low-income European Community Household Panel sample are used in the present analysis (Taylor et al. 2010). In both panels, respondents are interviewed annually and one household member provides supplementary information on the household in general. Both panels employ several measures to follow individuals that move, but in the BHPS only original sample members (OSM), which have been sampled in 1991, their children and sample members that have a child with an OSM are followed. Due to the high rate of identified movers, panel attrition due to moves is not considered a problem for both data sets (Buck 2000; TNS Infratest 2010).

Sample

My analytic sample consists of data for the years 1991-2008. I only consider stable couples, i.e. couples that live together at two subsequent interviews, in which one partner is the head of the household. For example, I do not consider couples which decide for a living-apart-together (LAT) arrangement to accommodate both careers and establish a second household. This may be a problem for my analysis, if couples forming a LAT partnership are a selective group of all couples. However, I cannot include LAT couples in my analysis, as they can only be identified in few waves in the BHPS. While the SOEP provides information whether respondents live in LAT partnerships, information about careers is only available for one partner. I also do not consider couples in the year they break up. It may be expected that couples

are more likely to break up if one of them would have been adversely affected by a long-distance move. Thus, couples with less adverse effects of moves may select into stable couples and my results may be interpreted as conservative estimates for the effects of moves on dual-earner couples. As I focus on dual-earner couples, I only include couples in which both partners work more than 10 and less than 81 hours per week at the time of the interview. I exclude respondents that work less than 10 hours on average, because I consider their employment as relatively unimportant for the economic situation of the couple. I exclude respondents with more than 80 work hours per week, because these cases are implausible. I only include couples in which both partners are at least 20 years old and not older than 55 years, because these respondents are in their prime working age. I exclude self-employed respondents and respondents with a second job because of problems measuring their work hours and labour income. I drop members of the armed forces, because their mobility behaviour is non-voluntary. Finally, I only include respondents that have been observed at least twice. After all these operations, my analytic sample consists of 3,506 unique British couples which contribute 31,955 individual-year observations and 5,132 German couples which contribute 41,233 individual-year observations to the sample.

Dependent variables

To describe careers, I use two indicators. First, the *leaving employment* variable is binary and coded 1 if the respondent is unemployed or inactive at the next interview and coded 0 if the respondent is still in employment, entered education or other activities, e.g. maternity leave, at the next interview. The employment status only reflects the status at the time of the interview. Respondents may have been out of employment between the interviews, but have taken up new employment until the next interview. In this case, the variable also has the value 0. Second, to describe the quality of pre- and post-move jobs for those that maintain employment, I analyse the hourly gross wage rate at the next interview in accordance with recent literature (e.g. Böheim & Taylor 2007). The hourly wage rate is a more accurate measure of potential life-time earnings than the gross labour income, because the hourly wage rate is independent from the work hours of individuals. Past literature shows that women, especially, have temporarily decreased work hours after moves (Boyle, Feng & Gayle 2009; Rabe 2011). I use imputed, current, monthly, gross labour wages at the time of interview deflated to prices of 2006 and I adjust wages across countries using purchasing power parity. The unit of wage rates is purchasing power parity dollars (PPP-\$). I use reported normal working hours and overtime to compute

hourly wage rates. I assume that for paid overtime respondents receive a 50-% wage premium (see similarly Böheim & Taylor 2007; Rabe 2011).³

Table 1: Descriptive statistics

Variable	M	SD	MIN	MAX
Wage rate (log)	2.64	0.49	0.03	6.00
Leaves employment until $t + 1$	0.04	0.18	0.00	1.00
Long-distance move	0.02	0.13	0.00	1.00
Germany	0.56	0.50	0.00	1.00
Southeast England	0.08	0.28	0.00	1.00
East Germany	0.18	0.39	0.00	1.00
Women	0.50	0.50	0.00	1.00
Age	39.17	8.47	20.00	55.00
Married	0.82	0.38	0.00	1.00
Children age 0 to 9	0.39	0.68	0.00	4.00
Owner	0.65	0.48	0.00	1.00
Male dominated	0.41	0.49	0.00	1.00
Education				
Basic	0.29	0.45	0.00	1.00
Intermediate	0.42	0.49	0.00	1.00
Higher	0.29	0.45	0.00	1.00
Occupational position				
Professional/manager/technician	0.41	0.49	0.00	1.00
Skilled non-manual	0.28	0.45	0.00	1.00
Skilled manual	0.25	0.43	0.00	1.00
Partly & unskilled positions	0.06	0.25	0.00	1.00
Time with company (years)	7.71	8.08	0.00	42.30
Permanent position	0.84	0.37	0.00	1.00
Work hours	37.98	10.16	10.06	80.00

Data: BHPS wave 1-18, SOEP v26 wave 8-25 (individual level, unweighted)

Explanatory variable

The main independent variable in the present analysis measures residential mobility. *Long-distance move* is coded 1, if respondents move across county borders in Germany or Local Authority District (LAD) borders in the UK. The variable is coded 0, if respondents do not move or move within county or LAD borders. This

³The amount of paid overtime is not reported in the SOEP before 2001. Instead a categorical variable measures, whether respondents are compensated with free time, extra pay, or both for overtime or whether they are not compensated at all. I use this variable as a proxy for paid overtime before 2001 (no paid overtime if not compensated or compensated with free time; all overtime is paid if compensated with extra pay; 50 per cent of overtime is paid if compensated with extra pay and free time).

approach has been used in past research in the UK (e.g. Böheim & Taylor 2007; Rabe 2011) and Germany (e.g., a paper that also takes into account the distance between counties' capitals: Jürges 2006) as well as in the US (e.g., for moves across borders of metropolitan areas: Shauman & Noonan 2007). Arguably, this is a relatively imprecise proxy for long-distance moves. Moves across county and LAD borders may be very short, if the former and new location is close to a mutual border. At the same time, moves within administrative borders may be long, if the county or LAD covers a large area. For robustness checks, I also construct a binary variable that is based on the euclidian metric between past and new locations of respondents in kilometres. The distance between residential locations is computed by the survey teams of the BHPS and SOEP using geo-coded address data. The variable *move longer than 50 km* is coded 1, if the distance is more than 50 kilometres and coded 0 otherwise. 50 km is a common threshold for long-distance moves in the literature (e.g. Boyle et al. 2003). Geo-coded addresses are only available for the SOEP starting in 2000. Therefore, I use the binary proxy variable long-distance move for the main analysis. The average distance of moves across administrative borders is 65.55 km (median: 17.42 km), while the average distance of moves within administrative borders is 2.97 km (median: 1.67 km).

Control variables

I control for *age* and also include age as a squared term in case there are non-linear patterns, which may be caused by divergent behaviour over the life course. I include a continuous variable measuring the number of *children aged 0 to 9* in the household to control for employment changes due to family responsibilities. To measure education as a proxy for human capital, I use the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) classification scheme (König, Lüttinger & Müller 1988). I construct three categories of education and include corresponding dummy variables in the analysis: *basic* (CASMIN 1a, 1b, 1c), *intermediate* (2a, 2b, 2c), and *higher* education (3a, 3b). I control for *owner* (coded 1) and tenants (coded 0) to account for the fact that owners face higher costs of moving. If respondents live together with their spouse, the variable *married* is coded 1 and 0 otherwise. I include this control, because married partners are more likely to make long-term agreements, e.g. about future decisions to move. I include binary variables for *East Germany* (coded 1 for East Germany, coded 0 for West Germany and the UK) and *Southeast England* (coded 1 for Southeast England including London and coded 0 for the rest of the UK and Germany), because of the particular labour market conditions in these regions and differences in gender ideologies between East and West Germany. The

binary variable *male-dominated couple* is coded 1, if the male partner’s individual annual labour income contributes at least two thirds to the couple’s collective annual labour income. Otherwise the variable is coded 0. This is a proxy for the relative bargaining power of partners in the decision to move. I measure the occupational status of respondents using four binary variables. I use the one-digit International Standard Classification of Occupations (ISCO) code to compute these variables. I generate the variables *professional/manager/technician* (ISCO 1-3), *skilled non-manual* (ISCO 4-5), *skilled manual* (ISCO 6-8), and *partly and unskilled positions* (ISCO 9).⁴ I use three other variables to further specify the occupational situation of respondents. *Time with company* measures the time respondents work in their current company in years. The variable is continuous. The binary variable *permanent position* is coded 1, if respondents have a permanent work contract and is coded 0 otherwise. The continuous variable *work hours* measures the number of hours worked including overtime in an average week in the current job. Table 1 shows descriptive statistics for all variables. Those variables at the individual level, i.e. age, education, occupational position, time with company, permanent position, and work hours, are also measured for respondents’ partners and included in the analysis.

Empirical strategy

I present evidence for and against my hypotheses in three steps. First, I show descriptive findings on the average probability to leave employment and changes in wage rates. I also show how these variables are correlated within couples. Second, I use multivariate methods that account for intra-couple correlation to model the dependent variable leaving employment. Kenny, Kashy & Cook (2006: 144) suggests actor-partner interdependence models (APIMs) for such dyadic data (cf. the appendix for a more technical description of the multivariate methods). APIMs allow to estimate actor effects, i.e. intrapersonal effects, and partner effects, i.e. interpersonal effects, at the same time by including variables describing the respondent and her or his partner (Kenny, Kashy & Cook 2006: 146). By including couple-level random effects, APIMs control for the selection into couples (Cook & Kenny 2005). I use a multi-level regression approach for distinguishable dyads, i.e. dyads in which the two members can be differentiated based on a variable such as gender, to estimate APIMs. Dyadic data with several observations over time can be characterised as multi-level data where individual-year observations are at the first level, individuals

⁴Members of armed forces (ISCO 0) are dropped from the analysis.

at the second level and couples at the third level.⁵ Following from my theoretical model, I expect differences between women and men in the effects of moves on careers. To test this expectation, I follow the strategy of Raudenbush et al. (1995) and include separate intercepts for women and men in my model (cf. also Kenny, Kashy & Cook 2006: 176). I allow the intercepts to vary by couple and I allow these random effects to be correlated with each other. I also interact the intercepts with all dependent variables in the model. The interactions result in two different coefficients for each variable — one for women and one for men. The dependent variable in this part of the analysis is binary and I use a logit transformation to estimate the model.

Third, I use multivariate methods to model the effect of residential moves on hourly wage rates for those staying in employment. Those staying in employment after a residential move may be a selective group. If the selection into being employed at $t+1$, i.e. in the next year (t indicates the present year), is non-random, conclusions from regression models that do not account for this selectivity may be misleading. For the present analysis, this is especially important, because I hypothesise that after long-distance moves, women are more likely to leave employment than men. Those women that stay in employment may differ in unobserved characteristics from those leaving employment. For example, women that are more determined to pursue their career may be more likely to stay in employment. These women are also likely to have higher wage rates. This selectivity may bias coefficients upwardly for the effect of moves on wage rates, if selection into employment at $t+1$ is not controlled for. I follow the strategy of Lillard (1993) to model selectivity by simultaneously estimating a selection equation and a wage rate equation (see also Lillard, Brien & Waite 1995; Steele et al. 2005). The selection equation is modelled using a probit regression, while the wage rate equation is modelled using a linear regression. I include individual-level random effects that are allowed to be correlated in both models to control for individual-specific, unobserved characteristics, e.g. determination to pursue a career, that may affect labour market participation and wage rates at the same time.

⁵I treat the same individual in different couples as independent and do not use cross-classified multi-level models, because only 2.59 per cent of all individuals are observed in more than one couple.

4. Results

Descriptive findings

In general, couples are found to be less mobile than singles in the literature and couples are especially unlikely to move long distances (e.g. Clark, Deurloo & Dieleman 2000; Clark & Huang 2003; Li 2004). Table 2 shows that only 2 per cent of couples move long-distances in the UK and Germany in a given year, on average. Annual mobility rates are significantly lower for dual-earner couples compared to male-breadwinner couples in both countries at least at the 95 %-confidence level. One of the causes for lower long-distance mobility among dual-earner couples may, in part, be due to the unsuccessful procurement of an adequate new job for both partners after moves. Because dual-earner couples are less mobile, it can be expected that partners in these couples are more likely to be tied stayers than partners in other couples (Nisic 2010). Couples in the UK are more mobile on average than couples in Germany. This is especially apparent in the share of couples that experience at least one long-distance move in the observation period. About 13 per cent of all couples in the UK move at least once, but only 8 per cent of couples in Germany.

The present analysis deals with dual-earner couples only. Approximately 78 per cent of couples in the UK are dual earners, compared to roughly 64 per cent in Germany. The last column in Table 2 indicates the small number of long-distance moves which I observe for dual-earner couples. This is a clear limitation of my analysis. Due to the small case numbers, differences between stayers and movers and differences within the group of movers are difficult to identify. In general, panel data sets, such as the BHPS and SOEP, offer only limited opportunities to analyse rare events, e.g. long-distance moves. On the other hand, panel data sets offer rich information on the conditions of these events and allow over-time analyses. To increase the number of observed long-distance moves and profit from the benefits of panel data, most of the multivariate analysis is conducted for pooled samples of British and German couples.

Table 3 shows the average rate of individuals leaving employment, the average wage rate, and the average percentage change in wage rates for women and men for all dual-earner couples by mover status in the UK and Germany. I test for statistical differences in each category by gender and by mover status. The upper panel of Table 3 shows the average rate of individuals leaving employment until $t + 1$, conditional on being employed at t . In both countries, women in dual-earner couples are significantly more likely than men to leave employment until $t + 1$ and become inactive or unemployed. Among stayers, about 4 per cent of British women

Table 2: Mobility rates and number of observed long-distance moves by type of couple

Type of couple	Share of all couples	Couples that...		Observed moves
		...move per year in per cent	...move ever	
UK				
All couples	100	2	13	763
Labour participation				
Male-breadwinner	17	3	12	140
Dual-earner	78	2	15	527
Germany				
All couples	100	2	8	783
Labour participation				
Male-breadwinner	28	2	8	234
Dual-earner	64	1	7	439

Data: BHPS wave 1-18, SOEP v26 wave 8-25 (household level, cross-sectional weights, number of observed moves unweighed)

Note: Only long-distance moves.

leave employment while only 2 per cent of British men do so. In Germany, 4 per cent of women and 3 per cent of men in dual-earner couples leave employment until $t+1$, on average. Long-distance movers are more likely to leave employment, but the differences by mover status are only statistically significant for women. For British women, the proportion of those leaving employment more than triples for movers compared to stayers. About 13 per cent of female long-distance movers are no longer employed after the move. This share is significantly higher compared to the share of British men. In Germany, about 9 percent of female long-distance movers are no longer employed after a long-distance move. I do not find a significant difference in drop out rates after moves between German women and men. Long-distance moves of dual-earner couples seem to be more disruptive for women's careers than for men's careers. While men continue to work in the same job or change to a new job quickly, a considerable share of women seem to leave employment after moves. Thus, moves of dual-earner couples seem to take place after the male partner received a job offer for the new location. For women in dual-earner couples, moves often seem to be speculative, i.e. they do not have a job offer before the move. This supports the argument that men are more often leading spouses and women are often trailing spouses in dual-earner couples.

The middle panel in Table 3 shows the average hourly gross wage rates at the interview before a move takes place. The average wage rates are markedly lower for female stayers and movers in both countries compared to men. In the UK, female stayers in dual-earner couples earn about PPP-\$ 13.45 on average, while male stayers earn about PPP-\$ 5 more. In Germany, female stayers earn PPP-\$ 13.72 and male stayers earn PPP-\$ 17.67. In the UK, movers earn significantly more than stayers. Women and men earn about PPP-\$ 3 more at the interview before they move compared to those that do not move. In Germany, movers and stayers do not differ in their average wage rates. The findings for the UK may indicate that especially highly-qualified dual-earner couples move. This would be in accordance with earlier findings that highlighted the importance of moves for high-status occupational positions (e.g. Hardill 2002: 11ff). In Germany, moves of dual-earner couples do not seem to be more likely for high-income couples.

Across all four groups, wage rates increase on average between t and $t + 1$ (cf. lower panel in Table 3). British, female stayers increase their wage rate by 10 per cent on average. British men increase their wage rate by 8 per cent on average, which is significantly lower than the increase for women. German women in dual-earner couples increase their wage rates by 9 per cent, which is significantly more than the increase for German men. The latter increase their wage rate only by 7 per cent. These results are conditional on staying in employment. While female movers in both countries increase their wage rates slightly less than stayers, these differences are not statistically significant at the 95-% confidence level. Men increase their wage rates more if they move in both countries, but these differences are also not significant. Identifying significant differences may be hampered by the small number of long-distance moves. These findings represent the first evidence that long-distance moves do not seem to strongly affect careers of women and men in dual-earner couples as long as they are able to maintain employment. First, this suggests that women in dual-earner couples may not be negatively affected by long-distance moves if they manage to maintain employment. Second, this indicates that moves of dual-earner couples do not have positive earning returns for partners on average — at least in the short run (cf. also Davies Withers & Clark 2006). This is in contrast to findings on positive returns for other types of movers, e.g. all men in the UK as reported by Böheim & Taylor (2007). Men in dual-earner couples may benefit less from moves, because they are more constrained in their decision to move than men without employed partners.

Partners in dual-earner couples have to coordinate their careers and family work. In most cases, the decision to move is made by both partners and, thus, the outcomes

of this decision for both partners are likely to be nonindependent. Kenny, Kashy & Cook (2006: 95) highlights the importance of analysing potential nonindependence between individuals in couples. Table 4 shows that nonindependence in couples exists with regard to changes in wage rates and leaving employment, but the correlation in couples is relatively weak. For stayers in the UK and Germany, changes in wage rates and leaving employment are positively correlated. Thus, individuals are more likely to increase their wage rates if their partners also increase their wage rates. Individuals are also more likely to leave employment if their partners do so. This indicates homogamy in the observed couples.

The picture looks different for movers in both countries. In the UK, the correlation between partners' changes in wage rates is no longer significant, but again this may be due to the low number of observed moves. The correlation for leaving employment is higher for movers than for stayers in the UK. In Germany, wage rates of movers are negatively correlated, but the correlation is not significantly different from 0. The correlation for leaving employment is also higher for movers than for stayers in Germany. These findings show that, in those couples which maintain employment for both partners, at most one partner increases her or his wage rate on average. Partners in dual-earner couples do not receive similarly higher wage offers after a long-distance move. In Germany, there is weak evidence that if one partner receives a

Table 3: Average proportion leaving employment, average wage rate and change in wage rates by mover status

Mover status	UK			Germany		
	Women		Men	Women		Men
Proportion leaving employment						
Stayer	0.04	###	0.02	0.04	###	0.03
Mover	0.13***	###	0.03	0.09*		0.04
Wage rate						
Stayer	13.45	###	18.39	13.72	###	17.67
Mover	16.89***	###	21.09***	14.26	###	18.14
Change in wage rate as proportion						
Stayer	0.10	##	0.08	0.09	###	0.07
Mover	0.09		0.11	0.08		0.16

Data: BHPS wave 1-18, SOEP v26 wave 8-25 (cross-sectional weights)

Note: Only dual-earner couples. Difference between stayer and mover: *** significant at 0.1% two-tailed, ** significant at 1%, * significant at 5%. Difference between women and men: ### significant at 0.1% two-tailed, ## significant at 1%, # significant at 5%.

higher wage rate at the new location, the other partner faces earning losses. Together, with findings from Table 3, this indicates that women are likely to receive lower wage rates if their male partners increase their wage rates after long-distance moves. For changes in employment, one partner is not more likely to leave employment if the other partner maintains employment. Thus, dual-earner couples do not seem to trade off one partner’s employment against the other partner’s employment. These findings call for appropriate multivariate techniques to account for the nonindependence of partners in dual-earner couples (Kenny, Kashy & Cook 2006: 43ff). Accordingly, I use actor-partner interdependence models in the following multivariate analysis.

Table 4: Intra-couple correlation of changes in wage rate and leaving employment for dual-earner couples

Mover status	UK		Germany	
	Wage rate ¹	Employment ²	Wage rate ¹	Employment ²
Stayer	0.04***	0.02**	0.07***	0.04***
Mover	0.09	0.08*	-0.07	0.10*

Data: BHPS wave 1-18, SOEP v26 wave 8-25 (unweighted)

Note: ¹: Pearson product-moment correlation coefficient. ²: Cohen’s κ . Bivariate correlation: *** significant at 0.1% two-tailed, ** significant at 1%, * significant at 5%.

Multivariate findings

Employment

Table 5 shows the estimation results for the logistic regression APIM with the dependent variable leaving employment. For the sake of parsimonious reporting, coefficients for women and men are presented in two separate columns, however they are estimated in one pooled model. I test for each pair of coefficients, if significant gender differences exist. The substantially interesting variable measures the occurrence of long-distance moves. Including the long-distance move variable significantly increases model fit.⁶ The model indicates that women’s odds of leaving employment are about 3.3 ($\approx e^{1.195}$) times higher if they move long distances compared to staying put. This is significantly different from having no effect at the 99.9-% confidence level. For men, the odds of leaving employment after long-distance moves are about 1.6 ($\approx e^{0.467}$) times higher compared to stayers and this is not significantly different from having no effect. The difference between women and men is significantly

⁶LR ratio test: LR $\chi^2(2) = 40.69, p = 0.000$.

different from 0 at the 95-% confidence level. Thus, women are more likely to leave employment after long-distance moves than men and than women that stay put. Men are not more likely to leave employment if they move compared to staying. These effects are controlled for individuals' human capital, occupational position, family status, region, country-specific period effects, characteristics of the partner, and the relative share of labour income in the couple. The findings are also controlled for unobserved individual differences in the likelihood to leave employment and for the correlation of these characteristics between partners by including random intercepts and allowing the intercepts to correlate in couples.

I use the model presented in Table 5 to predict the probability to leave employment for women and men in the UK and Germany, grouped by their mover status holding all other variables at their mean. The predictions are only based on the fixed part of the model and are presented in Figure 1. In both countries, female stayers have a higher predicted probability to leave employment than male stayers. According to the model, about 1 in 50 female stayers leaves employment in the UK and Germany, while about 1 in 100 men leave employment. Women that move have a much higher probability to be out of work. About 1 in 13 female movers in the UK leaves employment. In Germany, 1 in 25 women leaves employment. For men, the probability to leave employment does not differ significantly between stayers and movers in both countries. The predicted probabilities indicate that women in the UK have a higher chance to leave employment after moves than women in Germany. This would refute H4. I further test these differences below.

The findings from Model 1 support two of my hypotheses. According to H1, I expect women in dual-earner couples to be negatively affected in their careers by long-distance moves compared to men. My findings show that this expectation holds with regard to the employment status controlled for a wide range of covariates. Thereby, my findings reject the human capital approach, which assumes that gender differences are due to lower human capital and occupational positions of women. I find that women are more likely to leave employment after long-distance moves than equally qualified men. These findings do not, however, provide direct support for one of the other theoretical approaches. H3 stated that women in dual-earner couples that move are negatively affected in their careers compared to women staying put. The findings show that women are indeed more likely to leave employment if they move, compared to staying. This is evidence that women are more likely to be tied movers than men. Women are more likely to move for the sake of their partners' careers and face adverse consequences for their own employment.

Table 5: Actor-partner interdependence model leaving employment until $t + 1$

	Model 1	
	Women	Men
	Pooled sample	
Germany	-0.684** (-3.28)	-0.616* (-2.18)
Age	-0.121* (-2.57)	-0.224*** (-3.55)
Age ² /100	0.179** (2.97)	0.331*** (4.36)
Married	0.323** (3.17)	### (-2.37)
Children aged 0 to 9	0.195*** (3.96)	0.237*** (3.39)
Owner	-0.258*** (-3.40)	-0.287** (-3.04)
Education (ref: Intermediate)		
Basic	0.208* (2.45)	0.151 (1.41)
Higher	-0.074 (-0.79)	-0.280* (-2.18)
Occupational position (ref: Professional/manager/technician)		
Skilled non-manual	0.195* (2.41)	0.166 (1.11)
Skilled manual	0.724*** (6.06)	0.497*** (4.38)
Partly & unskilled positions	0.666*** (5.56)	0.542** (3.21)
Time with company (years)	-0.041*** (-6.78)	-0.048*** (-8.60)
Permanent position	-0.828*** (-9.69)	-0.977*** (-8.27)
Work hours	-0.005 (-1.41)	# (-3.60)
Male dominated	0.554*** (7.28)	### (-2.19)
Partner: Age	-0.055 (-1.12)	0.022 (0.36)
Partner: Age ² /100	0.054 (0.88)	-0.009 (-0.12)
Partner: Education (ref: Intermediate)		
Basic	0.043 (0.51)	0.275* (2.45)

continued on next page

continued		
	Model 1	
	Women	Men
	Pooled sample	
Higher	-0.062 (-0.66)	0.146 (1.26)
Partner: Occupational position (ref: Professional/manager/technician)		
Skilled non-manual	-0.049 (-0.44)	0.134 (1.32)
Skilled manual	0.086 (1.00)	0.248 (1.59)
Partly & unskilled positions	0.044 (0.30)	0.384* (2.42)
Partner: Time with company (years)	-0.005 (-1.10)	-0.008 (-1.23)
Partner: Permanent position	0.071 (0.61)	0.059 (0.47)
Partner: Work hours	0.002 (0.54)	0.001 (0.15)
Long-distance move	1.195*** (7.54)	# (1.83)
Constant	-3.745*** (-15.34)	-3.845*** (-12.13)
Random effects		
Variance Intercepts	0.793*** (5.86)	1.236*** (5.87)
Covariance Intercepts		0.541*** (4.64)
Observations	66,056	
Individuals	14,071	
Couples	8,020	
LL	-8877.88	

Data: BHPS 1-18, SOEP v26 wave 8-25 (individual level, unweighted)

Note: Multi-level logistic regression model with random intercepts, binary dependent variable: left employment between t and $t + 1$ (coded 1), otherwise (coded 0); unstandardised coefficients, z statistics in parentheses; *** significant at 0.1% two-tailed, ** significant at 1%, * significant at 5%; difference between woman and men: ### significant at 0.1% two-tailed, ## significant at 1%, # significant at 5%; model also includes the following covariates not shown here: country-specific year dummies, Southeast England, East Germany.

The other variables in the model behave as expected and I do not discuss them further here. My model shows that characteristics of respondents' partners have little impact on the probability to leave employment. For theoretical reasons, I do not exclude these variables from the model. I only find few significant gender differences in the coefficients. Married women are more likely to leave employment

than cohabiting women, while married men are less likely to leave employment than cohabiting men. Men that work longer hours are less likely to leave employment, while women’s likelihood to leave employment is not affected by their work hours. In male-dominated couples, women are more likely to leave employment and men are less likely to leave employment. The model presented with random effects offers a better fit than a model without random effects.⁷ I find statistically significant variance of intercepts between individuals. This shows that time-constant, unobserved heterogeneity affects the likelihood to leave employment. For example, certain individuals may have better unobserved skills. I also find a significant correlation of random intercepts within couples. This finding indicates that couples share certain unobserved characteristics that affect the likelihood to leave employment.

I re-run the model using the move variable that is constructed from the actual distance of a move. Moves of more than 50 kilometres are categorised as long-distance moves. This reduces the number of observations for Germany substantially, because the information on moving distances is only available after 2000 in the SOEP. I only observe 52 moves of dual-earner couples that are longer than 50 kilometres in Germany after 2000. The alternative estimation results show similar effects for moves that are longer than 50 km on women’s employment as reported before (estimation not shown here). The estimated effect for men is stronger in the alternative specification. I do not find a statistically significant difference between women and men in the effects of moves that are longer than 50 km on employment in the alternative specification. All in all, the alternative specification at least supports the conclusion that women’s employment is negatively affected by long-distance moves. Gender differences are not supported by the alternative specification, but this may be due to the much small number of observed moves.

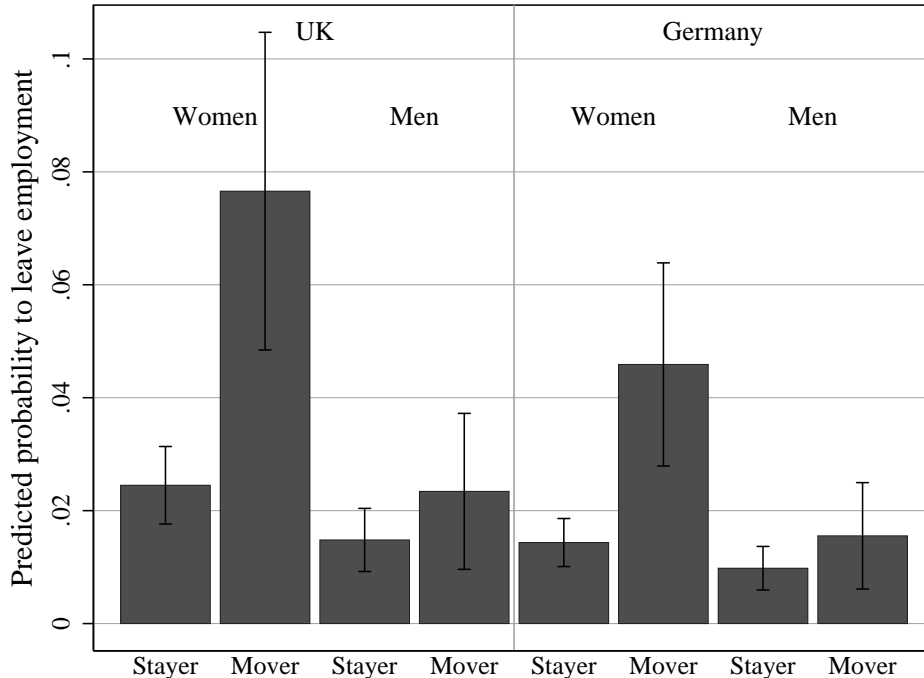
In Table 6, I present two models with interaction effects that allow to test H2 and H4. The former hypothesis states that women in male-dominated couples are more likely to be negatively affected by long-distance moves than women in more egalitarian couples. I test this expectation in Model 2 by allowing the effect of long-distance moves to vary between male-dominated and other couples. The main effect of male-dominated couples indicates that female stayers are more likely to leave employment than female stayers in other couples and the other way around for male stayers. The main effect for long-distance moves indicates that female movers’ odds in more egalitarian couples are 3.1 ($\approx e^{1.135}$) times higher to leave employment than female stayers in more egalitarian couples. Men in more egalitarian couples are equally likely to leave employment if they move or stay. The interaction effect of

⁷LR ratio test: LR $\chi^2(3) = 137.48, p = 0.000$.

male-dominated couples and long-distance moves shows that female movers in male-dominated couples are not more likely to leave employment than female movers in more egalitarian couples. Thus, I do not find evidence for H2.

In H4, I expected that gender differences will be strongest in West Germany, moderate in East Germany and weakest in the UK. In Model 3, Table 6, I test this hypothesis by interacting the variable long-distance move with dummies for East and West Germany. The main effect for long-distance moves shows that women's chances to leave employment are increased by long-distance moves in the UK. This is not the case for men. The difference between women and men in the UK is statistically significant at the 95-% confidence level. The interaction effects for West Germany and long-distance moves indicate that women in West Germany are less likely to leave employment after moves than women in the UK, while men are more likely to leave employment. However, these differences are not statistically significant. East German women and men are less likely to leave employment after moves than women and men in the UK, but again the differences are not significant. I also test combinations of main and interaction effects. The tests show that women in

Figure 1: Predicted probabilities for leaving employment



Data: BHPS wave 1-18, SOEP v26 wave 8-25 (unweighted)

Note: Predicted probabilities based on fixed part of Model 1. All other variables held at mean. Whiskers indicate 95-% confidence interval.

West Germany are significantly more likely to leave employment after long-distance moves than stayers, while female movers in East Germany are not more likely to leave employment than stayers.⁸ Men in West Germany are also more likely to leave employment if they move compared to staying.⁹ Employment of men in East Germany is not significantly affected by long-distance moves.¹⁰ In the light of these findings, I have to reject H4. I only find significant gender differences in the UK. These findings are reproduced when estimating the models separately by country (estimation not reported here).

How can the unexpected differences between the UK, West and East Germany be explained? First, dual-earner couples are less prevalent in West Germany than in the UK and East Germany. Therefore, dual-earner couples in West Germany may be a more selective group of couples than in the other two contexts. They may be more likely to have non-traditional gender role norms than dual-earner couples in the other two cases and, thus, may be more likely to weigh both partners' careers equally. Second, even though there are no significant differences, women and men in East Germany seem to be less adversely affected by long-distance moves in their careers compared to stayers in the other two cases. This may indicate that East Germans are more likely to move to *maintain* employment than West Germans and Britons, because of the unfavourable labour market conditions in most regions in East Germany. Third, the German labour market is characterised by less job mobility than in the UK. Therefore, long-distance moves may be generally more disruptive for careers in Germany than in the UK and this may have an adverse effect on men's careers in West Germany; while it does not have an additive negative effect for women in West Germany.

Past empirical evidence shows that the adverse effect of long-distance moves for women's employment is only temporary in most cases. I re-estimate Model 3 with the dependent variable *leaving employment until t + 2*, i.e. the second interview after a move may have taken place (estimates not shown here). In accordance with past literature, I do not find a significant effect of long-distance moves on the employment status at $t + 2$ for women and men in the UK and both parts of Germany. Movers are as likely as stayers to be in employment. Thus, after long-distance moves women in the UK and West Germany seem to be only temporarily more likely to be out of work compared to stayers. Soon after the move, most women take up employment again. This is in accordance with the idea that men in dual-earner couples are more

⁸For women in East Germany: $\chi^2(1) = 0.58$, $p = 0.447$; for women in West Germany: $\chi^2(1) = 20.28$, $p = 0.000$.

⁹For men in West Germany: $\chi^2(1) = 9.58$, $p = 0.003$.

¹⁰For men in East Germany: $\chi^2(1) = 0.70$, $p = 0.404$.

likely to be leading spouses that receive a job offer for the new location before a move. Women are more likely to be trailing spouses and move without a job offer. These women then have to wait for a job offer at the new location. Most women that initially left employment seem to work again eventually. Still, the interruptions of their careers may have negative long-term effects on their wage trajectories and add further volatility to their discontinuous work histories on average.

Table 6: Actor-partner interdependence model dropping out of work to $t + 1$ with interactions

	Model 2		Model 3	
	Women	Men	Women	Men
	Pooled sample		Pooled sample	
West Germany	-0.685** (-3.29)	-0.616* (-2.17)	-0.679** (-3.26)	-0.642* (-2.26)
East Germany	0.667*** (6.69)	1.012*** (8.37)	0.007 (0.03)	0.405 (1.42)
Male dominated	0.547*** (7.10)	-0.217* (-2.14)	0.551*** (7.25)	-0.223* (-2.21)
Long-distance move	1.135*** (5.56)	0.506 (1.76)	1.359*** (6.53)	0.203 (0.46)
Male dom.*Long-dist. move	0.148 (0.47)	-0.176 (-0.29)		
West Ger.*Long-dist. move			-0.143 (-0.42)	0.862 (1.54)
East Ger.*Long-dist. move			-0.973 (-1.77)	-0.843 (-0.95)
Observations	66,056		66,056	
Individuals	14,071		14,071	
Couples	8,020		8,020	
LL	-8,877.73		-8,873.17	

Data: BHPS 1-18, SOEP v26 wave 8-25 (individual level, unweighted)

Note: Multi-level logistic regression model with random intercepts, binary dependent variable: left employment between t and $t + 1$ (coded 1), otherwise (coded 0); unstandardised coefficients, z statistics in parentheses; *** significant at 0.1% two-tailed, ** significant at 1%, * significant at 5%; models also include all covariates from Model 1.

Wage rate

My analysis shows that women in dual-earner couples are more likely to leave employment after long-distance moves than men. What is the effect of long-distance moves on those women that *maintain* employment? If women stay in employment after long-distance moves, do they change their wage rates just as men? Table 7 shows estimation results for models predicting the logged hourly wage rates at the

next interview. The substantially interesting independent variable is long-distance moves. I allow the effect of long-distance moves to vary between male-dominated couples and other couples. The models are corrected for the selection into employment by estimating them simultaneously with a selection equation (cf. Table 8 in the appendix). The selection equation includes variables measuring human capital, the occupational position, demographic characteristics and a variable indicating long-distance moves. The selection equation includes a variable measuring children aged 0 to 9 and the partner's occupational position. These variables are assumed to affect the respondents' supply of labour, but not wage offers received by the respondents. I run the models separately by gender and country, as it can be assumed that the selection into employment after long-distance moves is different for women and men in both countries based on the findings that I presented before.

The models show that long-distance moves do not have an impact on wage rates of partners in dual-earner couples, on average. The main effect of long-distance moves shows that for women and men in more egalitarian couples, long-distance moves neither increase nor decrease wage rates on average. The interaction effect of being in a male-dominated couple and experiencing a long-distance move is neither significant for women nor for men in either country. Thus, wage rates of partners in male-dominated and other couples are not differently affected by long-distance moves. Concerning wage rates, these findings reject H2 stating that female movers in dual-earner couples would be worse off than female stayers with regard to their career. If women manage to maintain employment, or find a new position right after a move, their wage rates are not adversely affected by the move compared to wage rates of women that do not move. I also find no support for H3 with regard to wage rates. The wage rates of women in male-dominated couples are similarly affected by moves to wage rates of women in other couples. Because I estimated models separately by gender and country, I cannot directly test for differences between women and men, or between the UK and Germany. However, the estimated effects of moves for all groups are very similar and it seems that there are no strong differences between the groups. Thus, I can reject H1 and H4 regarding wage rates.

The findings for women reproduce past results. Partnered women are more likely to drop out of work after long-distance moves than men. However, if they maintain employment, their wage rates do not change differently from men's wage rates (e.g. Jacobsen & Levin 1997; LeClere & McLaughlin 1997). The findings that men's earnings after long-distance moves do not change in dual-earner couples differ from past research for all men, which mainly finds positive returns (e.g. Blackburn 2010; McKinnish 2008). Thus, for men in dual-earner couples, decisions to move may be

more constrained than for singles or men in male-breadwinner couples. Singles and male-breadwinner couples can maximise wage returns for a single male earner, while dual-earner couples have to coordinate two careers. Even in male-dominated couples, men seem to be unlikely to maximise their individual returns to mobility.

Table 7: Wage rate models with selection equation

	Model 4	Model 5	Model 6	Model 7
	UK		Germany	
	Women	Men	Women	Men
Age	0.050*** (7.98)	0.064*** (8.82)	0.042*** (7.56)	0.032*** (6.42)
Age sq./100	-0.062*** (-7.44)	-0.074*** (-7.99)	-0.049*** (-6.77)	-0.036*** (-5.82)
Married	0.015 (0.89)	0.029 (1.62)	0.010 (0.62)	0.027* (2.15)
Education (ref: Intermediate)				
Basic	-0.186*** (-10.32)	-0.200*** (-10.10)	-0.115*** (-8.28)	-0.045*** (-3.93)
Higher	0.263*** (16.69)	0.169*** (9.79)	0.201*** (13.57)	0.223*** (16.08)
Occupational position (ref: Professional/manager/technician)				
Skilled non-manual	-0.136*** (-8.61)	-0.111*** (-5.01)	-0.139*** (-11.03)	-0.113*** (-7.11)
Skilled manual	-0.138*** (-4.35)	-0.137*** (-7.42)	-0.218*** (-10.61)	-0.161*** (-12.96)
Partly & unskilled positions	-0.165*** (-5.48)	-0.179*** (-5.57)	-0.224*** (-10.25)	-0.209*** (-10.06)
Permanent position	0.025 (0.79)	0.059 (1.32)	0.035* (2.36)	0.036* (2.45)
Time with company (years)	0.002 (1.17)	-0.000 (-0.06)	0.009*** (11.93)	0.005*** (8.71)
Work hours	0.003*** (4.80)	0.001 (1.39)	0.002** (2.86)	0.001 (1.58)
Male dominated	-0.088*** (-5.73)	0.066*** (4.43)	-0.069*** (-5.16)	0.043*** (4.47)
Long-distance move	0.011 (0.22)	-0.011 (-0.21)	0.025 (0.48)	-0.004 (-0.10)
Male dom.*Long-dist. move	-0.008 (-0.09)	0.007 (0.08)	-0.018 (-0.19)	-0.004 (-0.05)
Constant	1.431*** (11.64)	1.297*** (8.93)	1.647*** (15.15)	2.113*** (20.88)
Random effects				

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continued				
	Model 4	Model 5	Model 6	Model 7
	UK		Germany	
	Women	Men	Women	Men
$\rho_{Intercepts}$	-0.03 (-0.39)	-0.07 (-1.44)	0.07 (1.69)	-0.07 (-1.93)
$\rho_{Residuals}$	0.05 (0.79)	-0.01 (-0.12)	0.00 (0.10)	-0.02 (-0.30)
Observations	14,730	14,526	20,001	19,675
Individuals	2,927	2,862	4,275	4,347
LL	-5,805.66	-4,154.99	-7,798.02	-2,988.22

Data: BHPS 1-18, SOEP v26 wave 8-25 (individual level, unweighted)

Note: Multi-level linear regression model (level 1: individual-year observations, level 2: individuals) simultaneously estimated with multi-level probit regression (dependent variable: valid wage rate information at $t + 1$), unstandardised dependent variable: hourly wage rate (log) at $t + 1$; unstandardised coefficients, z statistics in parentheses; *** significant at 0.1% two-tailed, ** significant at 1%, * significant at 5%; models also include the following covariates not shown here: year dummies, Southeast England, East Germany.

The findings on wage rates have to be qualified due to at least two issues which demand more attention in future research. First, I only test for effects of moves directly after the event. It may be that moves have a positive effect on long-term wage trajectories. Thus, in the long-run, wages may be higher for those that moved in the past, even though no direct effect can be detected. However, past research for men in the UK shows that returns of moves level out after three years (Böheim & Taylor 2007). Second, I do not test for a change in the relative wage rates of both partners. Even if the move has only a small effect on both partners' individual wage rate, the gap between both wage rates may be substantially widened (Cooke et al. 2009). In addition, earnings of those women that initially leave employment after a move, and take up a new position later on, may be lower than before. Therefore, the relative individual labour income of both partners may change. If women's relative income decreases compared to their partners, their bargaining power in future decisions on moves may deteriorate (Lundberg & Pollak 2003).

The control variables in the model have the expected effects and I do not discuss them here. The results for the selection model are presented in Table 8 in the appendix. The variables also have the expected effects. The parameters ρ that indicate the covariance for intercepts respectively residuals across the two equations are not significantly different from 0. Thus, I do not find evidence that unobserved characteristics affect the probability to be employed at $t + 1$ and the wage rate at $t + 1$, simultaneously. When comparing models with and without the selection equation

only small differences in the size and significance of coefficients are apparent (cf. Table 9 in appendix). The substantial interpretation of the wage rate model does not change, if the selection equation is not estimated simultaneously.

5. Conclusion

This paper analysed the effects of long-distance moves on employment and wage rates of women and men in dual-earner couples. The analysis is one of the few that directly tests the differences in employment outcomes between women and men. In addition, the analysis contributes innovatively to past research by being explicit about the nonindependence of effects of long-distance moves on both careers in dual-earner couples. The analysis also tested for regularities across three divergent institutional and normative contexts: the UK, West and East Germany. I find long-distance moves initially increase the chances for women to leave employment considerably in dual-earner couples in the UK and West Germany. The probability to leave employment is higher for female movers compared to female stayers in these contexts. The negative effect of long-distance moves on employment is only temporary and at the second interview after a move; female movers are as likely to be employed as female stayers. Women in East Germany are not more likely to leave employment than women that stay put. In the UK, the probability to leave employment is also higher for female movers compared to male movers. These findings hold controlled for measures of the human capital and occupational positions of both partners. I do not find women to be differently affected by moves in couples in which the man earns at least two thirds of the couples' labour income than in other couples. Those women and men that are able to maintain employment are not affected in either way by long-distance moves in their wage rates.

The analysis clearly rejects the human capital approach for the UK. After controlling for human capital differences between women and men, and accounting for their divergent occupational positions, I still find women to be more likely to leave employment after long-distance moves than men in the UK. For East and West Germany, I do not find significant differences between women and men. The bargaining approach is not supported in my analysis in any of the three contexts. I do not find significant differences between women that earn more than a third of the couples' labour income and which should have more bargaining power in a decision to move; or, on the other hand, women that earn not more than a third of the couples' labour income and which should have less influence in a decision to move. More specific measures of relative power may be used in future research to further

validate this finding. The structural approach is, to some degree, supported in the present analysis. After controlling for occupational positions of women and men, the negative effect of long-distance moves for women does not vanish in the UK and West Germany. However, I find that the divergent labour market conditions in East Germany seem to moderate the effect of moves, so that female movers are not more likely leave employment than stayers. Again, future research may use more refined measures of the occupational positions of respondents and labour market conditions to validate this finding.

My findings give indirect support to the gender role approach, at least for the UK. Dual-earner couples seem to prioritise men’s careers because of implicit norms of gender-appropriate behaviour. Decisions to move seem to be influenced by the fact that male partners’ “role as provider is taken for granted and mutually recognized as legitimate by both spouses” (Bielby & Bielby 1992: 1261). Thus, men in dual-earner couples are mostly leading spouses and women are trailing spouses. This is not because men can expect higher returns or have more bargaining power, but because men’s labour income is given a higher importance than women’s income. However, evidence for the gender role approach is only indirect, as I did not directly test for differences across couples that subscribe to different gender role norms. In traditional couples, the effect of long-distance moves on labour market outcomes of women should be more adverse than in non-traditional couples. The finding that there is no negative effect of moves on earnings of women that maintain employment points to the fact that in many couples both partners’ employment is considered in the decision to move. My findings do not directly support the gender role approach for Germany, though the approach is also not clearly rejected; because dual-earner couples in Germany — at least in West Germany — may be more likely to have non-traditional gender role norms than dual-earner couples in the UK. Future research should explicitly test for different gender roles across couples. With the BHPS, gender attitudes can be directly measured. For the SOEP, Jürges (2006) uses a measure of gender roles based on time-use data that could also be applied in future research. I refrained from using these measures here, since they are not comparable across countries.

The present analysis is limited in two additional ways. First, and most importantly, the analysis is limited due to the small number of long-distance moves of dual-earner couples observed in both data sets. A detailed analysis of subgroups of movers is problematic and yields only weakly specified results. Future research may use special mover surveys or census-based data to reach sufficient case numbers. Second, the variable indicating long-distance moves is only a proxy for the actual

distance of a move. I checked the robustness of my results by using the actual moving distance. This alternative specification supported my findings regarding negative effects of long-distance moves on women's employment. With a growing number of observations with information on distances of moves in the SOEP, future research can use this measure directly instead of using proxies for the distance.

Geographical mobility of the labour force is strongly supported by policy makers to increase efficiency and is seen as an important building block of an activating social policy to reduce spatial mismatch unemployment. The Commission of the European Communities (2007) recommends the implementation of social policies that increase factor mobility to its entire member states to foster labour market integration. Geographical mobility is also an important stepping stone for professional and managerial careers (e.g. Hardill 2002: 11ff; Markham et al. 1983). My findings show that long-distance mobility may come at the price of undermining labour market participation for women in dual-earner couples. Policy makers should be aware of these wider consequences of long-distance mobility. To mitigate the negative effects of long-distance mobility, only necessary long-distance mobility should be promoted and the awareness of potentially negative consequences of mobility for partners should be increased (cf. also Hofmeister & Schneider 2009). Large companies should be motivated to run dual-career programs to support employment of trailing spouses. The establishment of second households as an alternative to the relocation of whole households may also be supported. For families, this implies that sufficient public child care is made available to help temporarily single parents to reconcile family and paid work.

A. Appendix

Logistic multi-level actor-partner interdependence model

The logistic multi-level actor-partner interdependence model with two intercepts for individual i in couple c at time t can be written in the following form:

$$\log \left(\frac{Pr(y_{cit+1} = 1)}{1 - Pr(y_{cit+1} = 1)} \right) = \alpha_w + \alpha_m + (\alpha_w + \alpha_m)(\beta_1 z_{ct} + \beta_2 x_{cit} + \beta_3 p_{cit}) + \nu_{wc} + \nu_{mc} + \epsilon_{cit}, \quad (1)$$

where the first line represents the fixed part and the second line represents the random part of the equation. α_w and α_m are intercepts for women and men respectively. The intercepts represent the baseline probability for women and men for $y = 1$, if all variables in the model equal 0. z_{ct} is a vector of couple-level variables, e.g. marital status, x_{cit} is a vector of individual-level variables, e.g. education, and p_{cit} is a vector of characteristics of the partner, e.g. education of partner. The terms for all these variables are multiplied by the two gender-specific intercepts, and vectors of coefficients β_1 , β_2 and β_3 are estimated separately for women and men. ν_{wc} and ν_{mc} are random variables that represent the couple-specific variation in the intercepts for women respectively men. The two random effects are allowed to correlate to allow for selection into couples that is due to unobserved characteristics of both partners. Finally, ϵ_{cit} is random error. The model is estimated using the command `xtmelogit` in Stata.

Simultaneous equation sample selection model

For individual i at time t the following equation system can be specified to analyse effects of residential mobility on wage rates:

$$\begin{aligned} y_{it+1}^* &= \alpha_y + \beta_{yit} x_y + \nu_{yi} + \epsilon_{yit}, \quad y_{1it} = 1 \text{ if } y_{1it}^* > 0, \quad 0 \text{ otherwise} \\ \log(w_{it+1}) &= \alpha_w + \beta_{wit} x_w + \nu_{wi} + \epsilon_{wit} \\ cov_\nu(\nu_{yi}, \nu_{wi}) &= \rho_\nu \\ cov_\epsilon(\epsilon_{yit}, \epsilon_{wit}) &= \rho_\epsilon. \end{aligned} \quad (2)$$

The first line represents a probit model which constitutes the selection equation. The second line represents a linear regression model which constitutes the substantially interesting wage rate equation. In both equations, I allow for individual-level, time-constant random effects ν_{yi} and ν_{wi} . I assume that the random effects are jointly

normally distributed with a mean of 0 and a variance of 1. The random effects capture unobserved heterogeneity. ν_{yi} is allowed to correlate with ν_{wi} and ϵ_{yit} is allowed to correlate with ϵ_{wit} . By allowing ν_{yi} and ν_{wi} to correlate, I control for individual-specific, unobserved characteristics, e.g. determination to pursue a career, that may affect labour market participation and wage rates at the same time. By testing $H_0: \rho_\nu = 0$, I can evaluate whether unobserved heterogeneity affects both dependent variables at the same time. If the null hypothesis is rejected, this is evidence that unobserved characteristics affect the probability to be employed at $t+1$ and the wage rate at $t+1$ at the same time. Thus, those staying in employment are a selective, non-random group even after conditioning on observed characteristics. By allowing the random errors to be correlated, I control for this selection on time-constant characteristics. The equation system is estimated using the user-written `cmp` ado file for Stata (Roodman 2011).

Additional wage rate estimation results

Table 8: Wage rate model selection equation

	Model 8	Model 9	Model 10	Model 11
	Women	UK Men	Germany Women	Men
Age	0.083*** (4.43)	0.090*** (3.65)	0.117*** (6.68)	0.101*** (4.34)
Age sq./100	-0.075** (-2.97)	-0.132*** (-4.24)	-0.121*** (-5.27)	-0.140*** (-4.89)
Married	-0.355*** (-7.04)	0.056 (0.86)	-0.336*** (-6.73)	0.077 (1.25)
Children aged 0 to 9	-0.054* (-2.21)	-0.092** (-2.81)	-0.030 (-1.10)	-0.054 (-1.50)
Owner	0.048 (0.86)	0.113 (1.62)	0.035 (1.00)	0.009 (0.20)
Education (ref: Intermediate)				
Basic	-0.065 (-1.27)	-0.072 (-1.12)	-0.104* (-2.50)	-0.092 (-1.74)
Higher	-0.016 (-0.36)	0.012 (0.20)	0.110* (2.31)	-0.130* (-2.02)
Occupational position (ref: Professional/manager/technician)				
Skilled non-manual	0.071 (1.67)	0.100 (1.35)	0.018 (0.46)	-0.048 (-0.65)

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continued				
	Model 8	Model 9	Model 10	Model 11
	UK		Germany	
	Women	Men	Women	Men
Skilled manual	-0.152 (-1.80)	0.058 (0.96)	-0.079 (-1.31)	-0.074 (-1.28)
Partly & unskilled positions	-0.084 (-1.01)	0.083 (0.76)	-0.204** (-3.27)	-0.087 (-0.92)
Permanent position	0.341*** (4.47)	0.702*** (6.32)	0.294*** (6.82)	0.312*** (5.03)
Time with company (years)	0.010* (2.14)	-0.001 (-0.13)	0.017*** (6.91)	0.022*** (8.67)
Long-distance move	-0.404*** (-4.32)	-0.173 (-1.24)	-0.354** (-3.11)	-0.163 (-1.08)
Partner: Occupational position (ref: Professional/manager/technician)				
Part.: Skilled non-man.	0.088 (1.62)	0.045 (0.87)	0.125* (2.25)	0.024 (0.51)
Part.: Skilled manual	0.114** (2.62)	0.015 (0.13)	0.108** (2.81)	0.028 (0.37)
Part.: Partly & unskilled pos.	0.275** (3.07)	0.030 (0.29)	0.159* (2.18)	-0.083 (-1.07)
Constant	-0.828* (-2.43)	-0.453 (-0.95)	-1.628*** (-5.10)	-0.512 (-1.12)
Observations	14,730	14,526	20,001	19,675
Individuals	2,927	2,862	4,275	4,347
LL	-5,805.66	-4,154.99	-7,798.02	-2,988.22

Data: BHPS 1-18 (individual level, unweighed), SOEP v26 wave 8-25 (individual level, unweighed)

Note: Multi-level probit regression simultaneously estimated with multi-level linear regression (dependent variable: hourly wage rate (log) at $t + 1$), binary dependent variable: valid wage rate information at $t + 1$; unstandardised coefficients, z statistics in parentheses; *** significant at 0.1% two-tailed, ** significant at 1%, * significant at 5%; models also include the following covariates not shown here: year dummies, Southeast England, East Germany.

Table 9: Wage rate models without selection equation

	Model 12	Model 13	Model 14	Model 15
	UK		Germany	
	Women	Men	Women	Men
Age	0.050*** (14.78)	0.064*** (19.33)	0.041*** (13.46)	0.031*** (11.75)
Age sq./100	-0.061*** (-14.04)	-0.073*** (-17.86)	-0.048*** (-12.33)	-0.034*** (-10.86)

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continued				
	Model 12	Model 13	Model 14	Model 15
	UK		Germany	
	Women	Men	Women	Men
Married	0.016 (1.66)	0.029*** (3.34)	0.012 (1.27)	0.030*** (4.01)
Education (ref: Intermediate)				
Basic	-0.180*** (-11.32)	-0.190*** (-11.60)	-0.113*** (-10.50)	-0.049*** (-5.60)
Higher	0.263*** (20.22)	0.179*** (13.36)	0.214*** (16.41)	0.227*** (20.66)
Occupational position (ref: Professional/manager/technician)				
Skilled non-manual	-0.138*** (-18.92)	-0.116*** (-12.66)	-0.141*** (-15.76)	-0.111*** (-9.82)
Skilled manual	-0.142*** (-8.42)	-0.140*** (-16.46)	-0.208*** (-13.52)	-0.155*** (-17.67)
Partly & unskilled positions	-0.168*** (-11.25)	-0.186*** (-13.67)	-0.228*** (-15.14)	-0.202*** (-14.74)
Permanent position	0.023 (1.76)	0.059*** (3.53)	0.032*** (4.88)	0.034*** (5.69)
Time with company (years)	0.002** (2.82)	-0.000 (-0.16)	0.009*** (16.29)	0.005*** (13.93)
Work hours	0.003*** (9.98)	0.001** (3.28)	0.002*** (5.44)	0.001* (2.55)
Male dominated	-0.090*** (-13.37)	0.065*** (11.09)	-0.070*** (-12.02)	0.042*** (9.60)
Long-distance move	0.013 (0.72)	-0.012 (-0.72)	0.025 (1.36)	-0.004 (-0.30)
Male dom.*Long-dist. move	-0.007 (-0.22)	0.010 (0.34)	-0.020 (-0.53)	-0.011 (-0.40)
Constant	1.585*** (23.46)	1.459*** (20.90)	1.825*** (29.30)	2.270*** (40.42)
Random effects				
Variance intercepts	0.092 (29.57)	0.118 (30.97)	0.089 (35.50)	0.068 (37.24)
Variance residuals	0.052 (72.27)	0.046 (73.14)	0.043 (80.83)	0.029 (82.02)
Observations	13,601	13,880	17,496	17,925
Individuals	2,809	2,814	3,997	4,135
LL	-2,145.02	-1,725.79	-1,547.35	1,598.21

Data: BHPS 1-18, SOEP v26 wave 8-25 (individual level, unweighted)

Note: Multi-level linear regression model (level 1: individual-year observations, level 2: individuals) simultaneously estimated with multi-level probit regression (dependent variable: valid wage rate information at $t + 1$), unstandardised dependent variable: hourly wage rate (log) at $t + 1$; unstandardised coefficients, z statistics in parentheses; *** significant at 0.1% two-tailed, ** significant at 1%, * significant at 5%; models also include the following covariates not shown here: year dummies, Southeast England, East Germany.

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