

Life Course Research

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Philipp M. Lersch

# Residential Relocations and their Consequences

Life course effects in England  
and Germany



Springer VS

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**Herausgegeben von**

Prof. Dr. Steffen Hillmert, Universität Tübingen

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Philipp M. Lersch

# Residential Relocations and their Consequences

Life course effects  
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Dissertation Universität Bremen, 2012

ISBN 978-3-658-04256-1  
DOI 10.1007/978-3-658-04257-8

ISBN 978-3-658-04257-8 (eBook)

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

Library of Congress Control Number: 2013953570

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*To Gertrude Wagner*

# Foreword

Though central to the sociological concept of the life course, which typically relies on the dimensions of both time and space as basic axes of descriptions, residential relocations have received comparatively little attention by sociological research over the past few years. To date, it has primarily been the social determinants of geographical mobility that have been analysed. While there has been repeated evidence about the substantial effects of individual life situations on residential mobility, we have known relatively little about the other direction of causality, i.e. the individual consequences of residential moves.

In contrast to conventional research, this study by Philipp Lersch now offers a careful and thorough analysis of such consequences in individual life courses. The study is based on micro-level panel data and has special merits in offering a unique combination of regional mobility, social inequality and life course research. Moreover, it is explicitly designed as a comparative study between Germany and the UK - or, in the empirical analyses, England, due to data restrictions - which puts emphasis on the role of institutions when interpreting systematic differences in observed behaviour. Differences in the housing markets of Britain and Germany are well known and obvious sources of specific mobility patterns. However, when looked at in a life course perspective, it becomes obvious that other institutional differences are also highly relevant, concerning, in particular, the labour markets, welfare institutions, and gender relations. It is a special merit of this study to bring these areas, which are too often studied separately, together conceptually and to link them empirically on the level of various life course events. This approach is straightforward as residential moves are typically associated with events like job mobility, union formation and dissolution.

The methodologically advanced analyses yield a multitude of interesting results; some of them may be unexpected, but again the author is able to give them meaning by embedding them in the life course context. Residential moves do not generally improve life situation (e.g., with regard to 'room stress', i.e. available apartment

size relative to individual needs), but this depends strongly on the specific kind of the life event that is associated with the move. In this sense, the study is directed at important mechanisms of social inequality. One might go even further and fully include social origin and the parental context in order to study links with inter-generational mechanisms of the transmission of social (dis-)advantage. In any case, the results will provoke the search for additional comparative evidence, and the analytical framework proposed may well enable further research to be built on it.

This book is part of the series Life Course Research (Springer VS Research). In this series we publish empirical studies - in both English and German - which focus on transitions along the life course, and promoting comparative research is a matter of particular concern for us. The work by Philipp Lersch fits therefore perfectly into this series. It is an important book for any researcher interested in the life course in general and links between residential mobility and social inequality in particular. I hope many readers will benefit from it.

Tübingen, September 2013

*Steffen Hillmert*

# Preface

This is a shortened version of my doctoral dissertation at the University of Bremen. I thank my supervisors Michael Windzio, Olaf Groh-Samberg and Mark Taylor for their advice and support. They patiently answered all my questions and made myriads of constructive suggestions. Many discussions with Sergi Vidal, Yvonne Lott, Nate Breznau, Markus Kiesel and Krishantha Kamaladiwala improved my work substantially.

The research was generously funded by the Bremen International Graduate School of Social Sciences (BIGSSS) at the University of Bremen and Jacobs University Bremen. I am grateful to the faculty, staff and all fellows at BIGSSS for creating such an inspiring and cordial atmosphere. Part of the research was conducted at the Institute for Social and Economic Research (ISER), Colchester, and at the German Institute for Economic Research (DIW), Berlin, where Jan Goebel was especially helpful. None of these institutions or persons are in any way responsible for the resulting work and all errors remain my own.

The 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 ISER). 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 DIW, Berlin.

For their unconditional support I thank my whole extended family, but especially Judith, Ruth, Simon and Andreas. Without the encouragement, inspiration and affection of my friends — near and far — this book would have never been written.

I am very grateful to Yvonne for everything.



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# Chapter 1

## Introduction

“Migration is one of the important ways by which people can improve their lives.”  
(DaVanzo 1981: 90)

Individuals’ homes are places for numerous vital activities and satisfy basic needs. They offer comfort, protection, privacy and room for self-expression, stimulation and recreation. Individuals eat and sleep, love and hate, work and relax in their homes and homes are status symbols used to distinct oneself from others. Outside their homes, individuals take a stroll, chat with the people next door, see the physician, or go shopping in their neighbourhoods. Workers commute to their work places in the region and if they look for new jobs, they will mostly search the regional labour market first. Thus, individuals’ homes, their neighbourhoods and regions are important determinants of their quality of life and constitute a relevant dimension of social stratification. Where individuals live matters (Buck 2000a; Tickamyer 2000; Groh-Samberg 2009: 75). How individuals come to live at particular locations at various times in their lives and under which conditions relocations change the quality of these locations over the life course are therefore important questions in analysing social stratification; and they have not yet received the attention that they deserve.

Individuals relocate throughout their life courses and subsequent residential locations situate life courses in specific places (Elder 2003: 64). At least one relocation from the parental nest is common, but most individuals relocate more often. In Germany 65 per cent of the population aged 15 and over relocated at least twice in their lives and about 18 per cent relocated more than four times. In the United Kingdom (UK), about 71 per cent of the population aged 15 and over moved at least twice and 30 per cent even more than four times in their lives (Bonin et al. 2008: 36, Table 5). Little is known about how these relocations change the quality of individuals’ residential locations. Mostly, it is assumed that relocations are positive events that improve the lives of individuals on the whole (Lu 1998: 1474). For example, the prominent model of the ‘housing ladder’ assumes that household units improve the



quality of their housing with each relocation. In this model, the residential trajectory, i.e. the sequence of residential locations, is a continuous upward trajectory regarding price, size and quality of the dwelling (Kendig 1984; Pickles and Davies 1991). More generally, geographic mobility is believed to be associated with upward social mobility and societal progress in industrial and even more in post-industrial societies. This ‘promise of mobility’ can be understood as one of modernity’s core pillars (Hochstadt 1999: 20): Those leaving their hamlets and travelling to the urban industrial centres, those crossing oceans and making their lives abroad, and those business travellers working in the transit zones of international airports are the key figures of the modern world. They are the *movers* and shakers. Similarly, there is a strong belief in modern societies that residential relocations are positive life events.

Too often overlooked is the variation in outcomes of residential relocations. For some, the promise of mobility may hold and their relocations constitute improvements in their lives. For others, relocations may bring about negative changes in at least some areas of life and some others may be not affected by relocations at all. For example, Clark, Deurloo and Dieleman (2006: 335) show that only one quarter of movers gain in the economic status of their neighbourhoods and housing quality at the same time. Some movers receive better job offers after their relocations, but the labour market outcomes of relocations vary considerably between movers (Jacobsen and Levin 2000). This variation indicates that relocations are *contingent life course events*. Relocations as such may have more or less positive as well as negative outcomes. Which conditions of relocations explain the variation in outcomes is the research puzzle of the present work.

In the following, I use the term ‘*residential relocation*’ to denote a *change of address for the main place of residence of an individual*. Every change regardless of the distance between the old and new address is considered a residential relocation. The terms ‘residential relocation’ and ‘relocation’ are used interchangeably. Even though, the term ‘residential relocation’ is not widespread, I think it is useful to distinguish it from other concepts of movement. For example in the literature, the term ‘residential move’ is often used to denote changes of address only between places of residence that are in the same local area or region. The term ‘migration’ is mostly used to describe inter-regional changes of residence, but is also widely used to describe movements across national borders. The term ‘mobility’ has been used for all types of changes in residence as well as recurrent movements, e.g. between the place of work and the place of residence. None of these alternative terms fully captures the social phenomenon that I analyse in the following chapters.

## 1.1 Research Problem and Research Questions

In his theory of social production functions, Lindenberg (1996: 169) postulates that individuals are driven by two universal goals: “physical wellbeing and social ap-

proval". These universal goals can be fulfilled by striving for universal instrumental goals: "stimulation and comfort" (ibid.: 171) are instrumental for physical well-being, while "status, behavioral confirmation and affection" (ibid.: 171) are instrumental for social approval. These first-order instrumental goals can be achieved by time-variant, lower-order instrumental means. Residential locations, i.e. dwellings, their neighbourhood and regional areas, are such lower-order instrumental means to achieve universal goals. Dwellings provide shelter from the elements and environmental hazards, privacy and a self-controlled space and, thus, help to achieve the instrumental goal of comfort. At the same time, dwellings offer space for self-expression, social interaction and leisure activities, which supports the goal of stimulation. Dwellings also function as status symbols and, thus, contribute to the goal of social approval. The same can be said about neighbourhoods and regions which may also facilitate the goal attainment of individuals.

The World Bank (1993: 15) defines the following features of a residential location as essential for goal attainment:

"Everyone is housed, with a separate unit for every household. Housing does not take up an undue portion of household income. House prices are not subject to undue variability. Living space is adequate. Structures are safe and provide adequate protection from the elements, fire, and natural disasters. Services and amenities are available and reliable. Location provides good access to employment. Tenure is secure and protected by due process of law. Households may freely choose among different housing options and tenures [...]."

Residential locations meet these criteria to varying degrees. Locations are heterogeneous and some support goal attainment of individuals more than others. Alba and Logan (1993: 1391, emphasis in original) use the term "*place stratification* [...]" [to indicate] that places are ordered hierarchically and consequently are associated with more or less favourable life chances and quality of life for the people who reside in them." For example, some dwellings have leaking roofs and are crowded. Other dwellings are air-conditioned and provide private rooms for all residents. Some neighbourhoods are divided by major roads which increase the number of accidents as well as the level of pollution and noise in the neighbourhood. Other neighbourhoods host spacious green areas and only little traffic moves through the area. Some regions' economies decline and job searchers find no opportunities to take up work. Other regions prosper and regional employers pay competitive salaries to attract labour. It follows that particular locations are less supportive for individual goal attainment, while individuals at other locations can use their location as an instrumental mean to reach their goals of comfort, stimulation and status. Therefore, residential locations are a relevant dimension of social stratification that affects individuals' life chances.

This begs the question of how individuals come to live at particular locations. Individuals are literally born into locations that are consequences of the residential choices of their parents. After their adolescences, individuals normally begin their own residential trajectory by leaving the parental nest and establishing their own

(shared) households. After leaving the parental nest, residential relocations determine the locations that individuals live at. Individuals may improve their residential location by relocating to places which offer better opportunities for goal attainment, or by modifying the location itself. Whether individuals improve their situation depends on two issues.

First, individuals need the necessary willingness, resources, and opportunities to be able to relocate and the capability to be residentially mobile is not equally given to all individuals (Kaufmann, Bergman and Joye 2004). Bauman (2000: 86, emphasis in original) argues that globalised societies are to a great extent stratified by the “*degree of mobility*” of their members. Thus, with regard to relocations, some individuals may grasp the opportunities and relocate, while other individuals are stuck and do not relocate.

Second, even if individuals relocate, they will not necessarily improve the quality of their locations to the same degree, since favourable residential locations are scarce and relocations are conditioned by restrictions and constraints. It follows that the classic sociological question about social inequality must be enhanced with spatial aspects of social stratification. The question is not only who gets what, but “*who gets what where?*” (Lobao and Hooks 2007: 2, emphasis in original). To analyse changes in the quality of locations is thereby closely linked to the explanation of social inequalities over the life course which remains an important endeavour for sociologists (Diewald and Mayer 2009). Relocations must be understood as contingent life course events that may change individuals’ qualities of location in various positive and negative ways. Less positive or negative outcomes must be considered not only as irregularities, but as potential outcomes of relocations.

Thus, the main hypothesis of the present analysis is that the *outcomes of relocations vary across movers and that they are systematically stratified due to particular conditions of relocations and characteristics of movers*. By stratified, I mean that some movers may gain more than other movers from relocating, while some movers may reduce the quality of their location. By systematically, I mean that these unequal outcomes are not randomly distributed across all movers, but are associated with certain conditions. These conditions may be expected to be found at three levels: individual conditions, e.g. economic resources; household conditions, e.g. the presence of children; and structural conditions, e.g. the average quality of housing in the local area. To shed light on these conditions is the purpose of the present analysis and motivates the following central research question: *Which individual, household and contextual conditions shape the outcomes of residential relocations over the life course?* In other words: Which factors determine whether households relocate upwardly, horizontally, or downwardly with regard to the quality of their residential location?

The research question is framed within the life course perspective (for a recent overview, cf. Mayer 2009). The life course perspective highlights individual agency over the time of individuals’ lives, but also acknowledges that individuals are restricted in their agency due to biographical dependencies, interdependencies between

different life domains, interdependencies between individuals, as well as contextual opportunities and constraints resulting from individual embeddedness in particular historical times, places and institutions. By framing the research question in this way, residential relocations can be analysed as events in the flow of time of individuals' lives that are — as much as all biographical events — undetermined and contingent in their outcomes as such, and can only be explained in all their variation by considering individual resources and restrictions and contextual opportunities and constraints.

## 1.2 Gaps in Research and Innovative Contributions

Various aspects of residential locations have been analysed for some time in the field of sociology. Especially housing has been the subject of extended research including Norbert Elias (e.g. 2003 [1969]: 75ff), who analyses changes in the housing situation in conjunction with general social changes and the civilisation process, and Pierre Bourdieu (e.g. 1984: 372ff), who examines the housing situation as a results of habitus and taste and identifies class differences in the layout, furnishing and style of dwellings. The neighbourhood was a research topic for the Chicago School of Sociology as early as in the 1920s (e.g. Burgess 2007 [1925]). The geographical space of regions was part of sociological research for a long time. Sociological studies of regional effects can be traced, for example, to the work of Emile Durkheim (1951 [1897]: 104ff) who analysed the impact of regional characteristics on suicides. Starting with the spatial turn in the late 1960s which was inspired by the work of Henri Lefebvré (1991 [1974]) amongst other scholars, space played an increasingly prominent role in sociology. However, classic sociological studies of residential locations treated locations as given and static. The first comprehensive study that analysed the dynamics of relocations was the seminal work '*Why families move*' of Rossi (1955).

A second strand of social research investigates the determinants of residential relocations in the disciplines of demography, economics, geography, (social) psychology and sociology (Dieleman 2001). The earliest work on relocations was by Ernest Ravenstein (Ravenstein 1876, 1885, 1889) at the end of the 19<sup>th</sup> century. Until the mid-20<sup>th</sup> century, research focused on the macro-level determinants of aggregated relocation flows. Beginning with rational choice models of residential relocations, the level of analysis shifted to individuals and their behaviours (e.g. Sjaastad 1962). Most of the research thereafter focussed on the individual motivations for relocations and analysed the impact of individual and household characteristics as well as the life course on the propensity to relocate. Fundamental to most of this research was the assumption that households relocate, because they are better-off at new locations.

A third strand of literature deals with the association between characteristics of individuals and households and the quality of their locations from a mostly cross-

sectional perspective. This research tries to establish links between individual resources such as income and individual heterogeneity such as immigration status on the one hand, and quality of housing and the neighbourhood on the other hand. For example, households with more income are found to live in better housing and neighbourhood quality (Clark and Huang 2003). Most of this research deals with between-individual differences, i.e. scholars try to identify differences between individuals that can explain variation in the quality of locations.

There are a number of gaps in previous research that the present work aims to close. First, this study goes beyond past work by changing the perspective on residential relocations. Instead of conceptualising relocations as inherently positive life events, the *contingency of relocations* is highlighted. In the present research the variation in outcomes is taken into focus, instead of treating downward and horizontal relocations as mere irregularities.

Second, past work on the outcomes of relocations mainly focussed on specific subgroups, e.g. immigrants, specific outcomes, e.g. room stress, and specific characteristics of movers, e.g. economic resources. In the present work, I aim at bringing together these efforts. To this end, I construct a coherent theoretical framework that combines individual, household and structural explanatory factors based on the life course perspective. I test this framework for different outcomes of relocations. The outcomes that are examined in the present analysis are 1) room stress, i.e. the relation between room needs and available rooms, as a measure of housing quality; 2) composite indices to measure neighbourhood quality; and 3) employment status as a measure of labour market outcomes. These outcomes relate to changes in the dwelling, the neighbourhood, and the region respectively. Analysing the employment status also allows examination of within-household differences in relocation outcomes.

Third, past literature mostly focussed on cross-sectional associations between outcomes of relocations and conditions of these relocations. Instead, rich longitudinal data and panel data analysis is used in the present work. Panel data offers in-depth information on the pre- and post-relocation situation of individuals. This allows relating changes in the quality of locations to relocations and to other changes in individuals' life courses, to changes in their households and to changes in structural conditions. Thereby, the dynamic nature of life courses can be captured and more credible claims about determinants of relocation outcomes can be made than is possible with cross-sectional data.

Fourth, little is known about structural conditions that shape the outcomes of residential relocations. At the regional level, it is not well understood, how housing markets affect outcomes of relocations. At the national level, it is unclear how national particularities of housing markets may influence outcomes of relocations. In addition, as long as hypotheses are not tested in different national contexts, it cannot be assessed in which way findings apply generally or are only due to national idiosyncrasies (Diewald and Mayer 2009). Therefore, I examine regional conditions of relocations and compare outcomes of relocations in England and Germany.

## 1.3 Organisation of Study

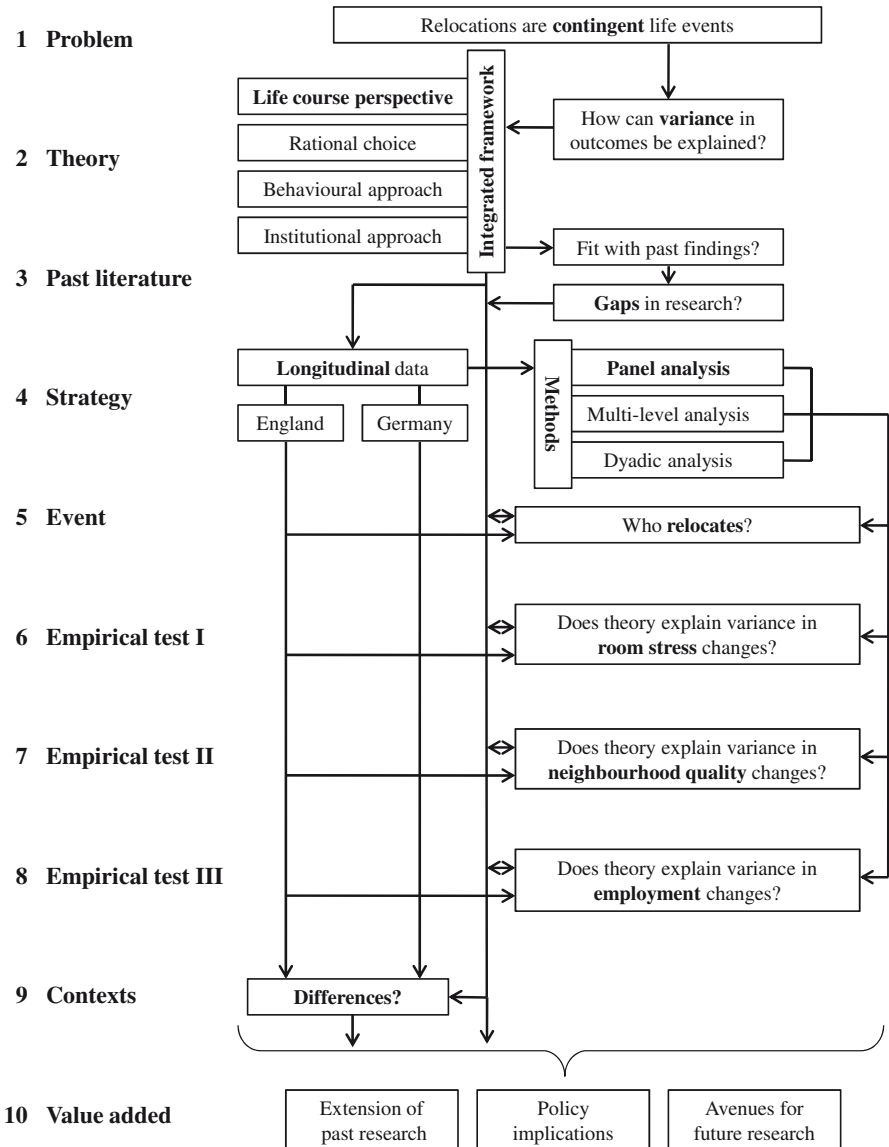
The organisation of this study is presented in Figure 1.1. In the present introduction, relocations are conceptualised as contingent life course events. The following research question is raised: which conditions explain the variation in outcomes of relocations? In Chapter 2, I review theoretical approaches that may provide hints to answer this question. After sketching early theoretical approaches to residential relocations, the presentation focuses especially on micro-level approaches that have been developed since the 1960s. The rational choice model, the behavioural model and the life course perspective are described. Macro-level opportunities and constraints for residential relocations are identified using the institutional approach. These theoretical approaches are integrated to derive the theoretical framework. The framework mainly builds on the life course perspective, but incorporates elements from the other described approaches. The framework highlights individual life course conditions, economic resources, situational conditions of decision making, structural conditions in housing markets, and gendered roles in couples as potential explanatory factors for the variance in outcomes of relocations. The framework is used to formulate hypotheses that guide the empirical analysis.

In Chapter 3, past literature is summarised. I consider literature on the determinants of residential relocations, the effects of relocations on changes in room stress, the effects of relocations on changes in neighbourhood quality, and the effects of relocations on employment in dual-earner couples. These findings from past research are placed within the presented theoretical framework and provide first insights about the validity of the hypotheses. The literature review is also used to identify more specific gaps in past research concerning each outcome.

The research design and the empirical strategy are described in Chapter 4. I choose a quantitative empirical approach to answer the research question. After justifying the case selection, I provide a description of England's and Germany's institutional characteristics with regard to their housing markets, labour markets, welfare systems, and gender relations that may effect outcomes of relocations. The two longitudinal datasets, i.e. the British Household Panel Survey (BHPS) for England and the Socio-Economic Panel Study (SOEP) for Germany, used in the empirical analysis are described. Additional data at the level of neighbourhoods and regional housing markets that supplement the individual- and household-level data are introduced. Then the operationalisation of all variables is described and the empirical methods are explicated. Most of the data analysis is conducted using panel regression methods.

The English population is more mobile on average than the German population (Bonin et al. 2008: 36, table 5). Chapter 5 deals with the influence of life course stages and transitions as well as individual resources and structural conditions on the probability to relocate in both countries. The results show which individuals are likely to relocate and whether differences in the determinants of relocations

**Chapters:**



**Fig. 1.1** Roadmap of analysis

exist between England and Germany. In light of these findings, the results from subsequent chapters regarding the outcomes of relocations can be better interpreted.

The next three chapters form the core of my empirical work. In these chapters, the theoretical framework is tested regarding the conditions that shape outcomes of relocations. In Chapter 6, changes in room stress are analysed. First, aggregated changes over time in both countries are described and differences across groups in average room stress are tested. In the multivariate analysis, the hypotheses derived earlier are formally tested using fixed-effects panel regression and multi-level regression models. I especially focus on the effects of residential relocations and various life course conditions in this chapter, but also test for variation in room stress after relocations due to economic resources and housing tenure, involuntary relocations and distance of relocations, immigrant status, and regional conditions in the housing market.

In Chapter 7, changes in neighbourhood quality due to residential relocations are scrutinised. The panel data used in the previous chapters is supplemented with data on the direct neighbourhoods of individuals. Neighbourhood data for England is drawn from the Indices of Multiple Deprivation. For Germany, a composite neighbourhood quality indicator is constructed based on the Microm data set. Again, I test my hypotheses using fixed-effects panel regression and multi-level regression models. The effects of individual life course conditions, economic resources and housing tenure, involuntary relocations and distance of relocations, immigrant status, and conditions in the housing market are examined.

The last empirical chapter deals with the impact of long-distance relocations on employment in dual-earner couples to examine whether both partners are equally likely to leave employment after relocations on average (Chapter 8). In contrast to the two previous chapters, the focus in this chapter is on inter-individual differences between female and male partners, which allows the analysis of intra-household variation in outcomes. I also present findings on the nonindependence of changes of both partners within couples.

Throughout the empirical chapters, conditions of relocations in England and Germany are analysed. In Chapter 9, I summarise cross-national similarities and dissimilarities in my findings for changes in room stress, neighbourhood quality and careers of dual-earner couples. Cross-national similarities are used to describe regularities in relocation outcomes across distinct institutional contexts. Then, I attempt to explain cross-national divergence in the determinants of outcomes after relocations by referring to particular institutional differences in the national housing markets, labour markets and welfare states, and gender relations in both countries. As only two country cases are analysed and institutional differences between these countries are ample, this part of the analysis is exploratory.

In Chapter 10, the main insights from the analysis are highlighted and the hypotheses are assessed in light of the presented empirical evidence. Shortcomings of the present analysis are pointed out and open questions are formulated. Next, policy implications are elaborated by drawing on the findings.



## Chapter 2

# Theorising Residential Relocations and Their Outcomes

When relocating, individuals shift the centre of their action spaces to a new residential location for a considerable duration of time (Boyle, Halfacree and Robinson 1998: 34). Primarily, this raises two questions. *Why do individuals relocate? What are the outcomes of these relocations?* Outcomes of relocations are changes in the quality of the present compared to the last residential location. I define the quality of a location as the degree to which the location improves the chances for an individual to achieve physical wellbeing and social approval. Individuals living in low-quality locations will fare worse regarding these goals compared to individuals in high-quality locations on average, because they live in too small and unhealthy dwellings, in unsafe and polluted neighbourhoods and in economically stagnating regions. The quality of a location depends on its features. I use ‘features’ to refer to objectively observable characteristics of a location, e.g. the density of buildings in a neighbourhood. Features and quality of a location are closely associated and some features will result in better quality than others. I assume that individuals are not always fully aware of the quality of a location, while they may be aware of its features. Individuals are often part of relocating households containing two or more persons with interdependent decisions and outcomes; however households are not constant over time. Therefore, I conceive of and measure residential relocations from an individual perspective.

The first question on the reasons for relocations has received considerable attention for more than a century now. The second question has received less attention explicitly – and is the focus of this analysis. Some expectations can be derived from past theoretical approaches, but there is no coherent theoretical framework explaining variation in outcomes of relocations. The innovative contribution of the present chapter is to draw insights from different theories to develop a framework that treats relocations as genuinely *ambiguous and contingent life course events*. Conditions are derived that determine to which degree relocations improve the chances for an individual to achieve greater physical wellbeing and social approval. The combined

theoretical framework is mainly based on the life course perspective, but also integrates elements from other approaches that draw from work in the fields of demography, economics, geography, (social) psychology and sociology (Section 2.1). The combined framework is presented with regard to the occurrence (Section 2.2) and outcomes of relocations (Section 2.3). I also develop hypotheses to test my theoretical framework empirically.

## 2.1 Theoretical Approaches Towards Residential Relocations

*Early theories of residential relocations* mainly explain relocations at the macro level (Section 2.1.1). Macro approaches to the explanation of residential relocations link aggregated relocation behaviour to certain aggregated characteristics of populations and environments. The aim is to explain aggregated relocation flows between origin and destination regions. The *institutional approach* also follows in this tradition, but acknowledges that individuals act within institutional settings and these settings themselves are subject to individual behaviour (Section 2.1.2). In the second half of the 20<sup>th</sup> century, micro approaches were developed in contrast to the earlier macro approaches. Micro approaches to residential relocations try to explain individual relocation behaviour (Golledge and Stimson 1997: 426). In the *rational choice approach*, residential relocations are analysed as a function of the returns and costs of relocating (Section 2.1.3). The *behavioural approach* builds on rational choice theory. The approach explains relocations on the basis of individual decision making following the idea of bounded rationality and emphasising the importance of individual perception of reality (Section 2.1.4). The *life course perspective* highlights the importance of interdependencies in the life course for residential relocations and is the most influential approach for the theoretical considerations (Section 2.1.5).

### 2.1.1 Early Theories of Residential Relocations

Common to all historical approaches is the explanation of residential relocations at the macro level, without explicitly considering individual behaviour. Following from this, the approaches reach conclusions that are very limited in their explanatory power for individual behaviour, and are more descriptive than later micro-level theoretical approaches (Kalter 2000: 460). The causes of relocations are superficially covered and expectations about outcomes of relocations can hardly be derived. Therefore, the theories are too limited to be applied in the present analysis. Nonetheless, their presentation helps to understand the development of later theories, and at the same time offers a benchmark to evaluate these approaches.

In three papers in the late 19<sup>th</sup> century, Ernest Ravenstein developed the first general assumptions about migration and relocation behaviour at an aggregated level (Ravenstein 1876, 1885, 1889). Ravenstein formulated eleven ‘*laws of migration*’ that he mainly derived from analysing data on relocation behaviour in the UK, but supplemented with other international data. He found the following regularities (the list follows Grigg (1977: 42ff): 1) Most movers only relocate a short distance. 2) Relocations proceed step by step. 3) Long distance relocations are mainly aimed at industrial and commercial centres. 4) Relocation streams in one direction generate a counter-stream in the opposite direction. 5) Rural dwellers are less mobile than urban dwellers. 6) Women are more mobile than men. 7) Most movers are adults. 8) Large cities grow mainly through inward-relocations. 9) Relocations increase in numbers as industries and commerce develop and transport improves. 10) The main direction of relocations is from rural areas to industrial and commercial centres. 11) The major causes for relocations are economic. Seeing that these are observations about relocations rather than laws, most of the above regularities stood the empirical test in the 19<sup>th</sup> century and continue to do so today (Lee 1966; Boyle, Halfacree and Robinson 1998: 60). Basic insights formulated by Ravenstein have been reconsidered by other scholars, e.g. in gravity models, the mobility transition and the neoclassical economics approach.

Building on Isaac Newton’s law of gravity, *gravity models* of social action were formulated. Zipf (1946) formulated an application to relocations:

$$\widehat{M}_{ij} = \frac{P_i P_j}{D_{ij}}, \quad (2.1)$$

where  $\widehat{M}_{ij}$  is the estimated number of relocations between regions  $i$  and  $j$ ,  $P_i$  and  $P_j$  are the population sizes in the regions  $i$  and  $j$ , and  $D_{ij}$  is the distance between these regions. The distance may be discounted by an exponent  $b$ , which can be understood as a “*distance decay* parameter” (Boyle, Halfacree and Robinson 1998: 46, emphasis in original). Theoretically, the measure of distance is used as a proxy for a number of factors, e.g. potential knowledge about the destination and the cost of relocation (ibid.: 46). From this model follows that relocations are rather short than long distance and involve at least one highly populated region, i.e. an urban area. The gravity model mainly rephrases the first, eighth and tenth law of migration formulated by Ravenstein.

The *mobility transition approach* postulates that residential relocations are fundamentally caused by the modernisation of society, which is also stated by the ninth law of migration (ibid.: 60). Similar to the demographic transition that societies go through, a mobility transition can be observed that is deterministic and irreversible. Societies mainly differ in the onset of certain phases in the transition, but all societies are subject to this transition sooner or later. Zelinsky (1971) differentiates five phases where each phase can be characterised by the overall magnitude of mobility, the direction of relocations (urban vs. rural; international vs. internal), the recur-

rence of mobility (recurrent vs. non-recurrent) and, finally, the mode of mobility (communication vs. transportation).

The *neoclassical economics* perspective is part of the family of ‘push-pull’ theories, “because they perceive the causes of migration to lie in a combination of ‘push factors’, impelling people to leave the areas of origin, and ‘pull factors’, attracting them to certain” (Castles and Miller 2003: 22) locations. In neoclassical economics, residential relocations are explained by factor mobility. The factors of production are land, labour and capital, which are sold by individuals and used by firms to produce goods. Factor markets are regionally bounded. As firms are assumed to be rather immobile, individuals become mobile if they can maximise their utility from selling labour on another regional factor market. Relocations are driven by wage differentials. Relocations stop if an optimal allocation of labour has been reached and the wage level is equal across all regional markets. The higher the wage differential between two regional factor markets, the higher the labour mobility between these markets. Thus, the demand of labour and the expected wages are considered the most important push and pull factors (Boyle, Halfacree and Robinson 1998: 61). The approach builds on the eleventh law of migration.

### ***2.1.2 Institutional Approach***

The institutional approach also explains relocations through macro level factors, but at the same time acknowledges that individuals act intentionally within these opportunities and constraints. Thus, the institutional approach examines the structural context influencing individual residential relocations. The structural context refers to “economic and material circumstances of a society including its political and legal framework” (Cadwallader 1992: 19). The institutional approach assumes that individuals can only act within a set of options that is created by certain institutions. Individual preferences may not be actualised due to institutional constraints (Manion and Flowerdew 1982: 11). Furthermore, institutions shape the importance of residential relocations as a behavioural option. That is to say that relocations may be a more viable behavioural option in particular institutional settings, e.g. settings with low transaction costs for changing residence. Institutions do not only constrain options, but also facilitate certain behaviour and are understood as being partly shaped by decision makers. Institutions develop over time, and they can be affected by private and public organisations (Cadwallader 1992: 15f). Not all individuals are affected by institutions in the same way, e.g. high-income individuals may profit more from tax-benefits for home ownership than low-income individuals, and institutions differ between nations, but also at a regional level (Manion and Flowerdew 1982: 24).

A wide range of institutions can be hypothesised as influencing residential relocations. Here, the focus is on the institutions of the housing market, since they are

assumed to be especially relevant (Flowerdew 1982). The housing market affects the location of dwellings, the features of these dwellings and the conditions for relocating between dwellings. The most important dimension of the housing market is the tenure structure. Rental tenure facilitates relocations, but has certain downsides regarding the features of the dwelling, e.g. on average it offers less space. Owner tenure impedes relocations, but has certain other favourable features, e.g. it is more easily adjusted to individual needs (e.g. Megbolugbe and Linneman 1993). In addition, the overall supply of housing affects the behaviour of individuals. A higher and more diverse supply relative to the demand increases the behavioural options of individuals. Housing markets are structured to a very small-scale spatial level (Simmons 1968; Flowerdew 1982: 221). They differ between nation states and are shaped, among others things, by national housing policies. In this regard, social housing and its role in the market is especially affected by policies. However, not only public agents shape the housing market, private agents such as property developers, real estate managers, banks and consumers themselves also affect this institution (Cadwallader 1992: 16).

The following can be theoretically expected regarding relocations according to the institutional approach. At the aggregated level, a high share of rental accommodation in the housing market relative to owner-occupied accommodations increases residential relocations. A high overall supply of dwellings relative to the demand increases the frequency of relocations as well. Concerning the outcomes of residential relocations, the institutional approach does not inform expectations right away. Although, particular institutional characteristics can be assumed to increase the likelihood of positive relocation outcomes. Individuals are more likely to improve their locations if a housing market is characterised by high overall quality, e.g. due to investment in high-quality social housing or a higher share of home ownership. Relocations are likely to improve locations more, if location choices are less restricted by economic resources, e.g. due to overall lower housing prices. To examine these institutional conditions, different institutional contexts at the regional, but also at the national level should be compared.

The institutional approach is less a theory, but more an analytic perspective that emphasises a certain category of determinants of residential relocations. The institutional approach is an extension of other theoretical frameworks to highlight the importance of institutional context effects. To this end, elements of the institutional approach are used in the theoretical synthesis to grasp the institutional differences between different national settings and a cross-national comparative perspective using data from England and Germany is included. However, the institutional framework does not allow for generalisation outside of each institutional context and brings the danger of *ad hoc* explanations (Flowerdew 1982: 222). The approach overstates external constraints for individual behaviour, while underestimating individual decision processes. The framework does not explain individual choices that are made, but only the choice sets available to individuals can be described. Finally, interaction effects of individual characteristics and institutional environments are

not considered. All in all, the approach is helpful when extended by other theoretical approaches to explain individual behaviour. These approaches are described in the subsequent sections.

### 2.1.3 Rational Choice Approach

Moving from the macro to the micro level of analysis, rational choice theory explains residential relocations as a function of returns and costs. Individuals relocate, if they are better off by relocating than by staying (Sjaastad 1962). Rational choice theory assumes that individuals rationally maximise utility and intentionally decide to relocate (Jong and Gardner 1981: 5). In the basic models, individuals have to choose between finite sets of behaviour options including staying or relocating to different locations. Each option generates a certain utility depending on individuals' preferences, which are constant across the population, i.e. a certain behaviour option is preferred by all individuals in the population. Individuals are fully informed about the consequences of their choices and can rank the choice options according to the utility they will generate. The option with the highest utility will be chosen. The choice is restricted by limited resources (Simon 1957: 241). This basic rational choice model has been extended as is shown in the second half of this subsection.

Becker (1995: 53) conceptualises mobility as an investment in human capital, because the resources spent on relocating are an investment in the career and return higher earnings (cf. also Sjaastad 1962).<sup>1</sup> Todaro (1969: 140) emphasises that instead of momentary wage differentials, the expected lifetime utility after relocation is driving a mover's decision. Therefore, an individual relocates, if

$$U_{ri} = R_{ri} - C_{ri} > U_{si}, \quad (2.2)$$

where  $U_{ri}$  is some individual lifetime utility from relocation,  $R_{ri}$  are individual returns, i.e. income gains,  $C_{ri}$  are individual costs of relocating and  $U_{si}$  denotes the lifetime utility of staying at the present location. If there are several potential destinations, a location is chosen that maximises  $U_{ri}$ . Individuals are assumed to continually assess alternative locations and compare them to their present location (DaVanzo 1981: 124, endnote 12). Relocation decisions are restricted by  $C_{ri}$  and by the investment the individual can afford. Costs are not only material, i.e. the actual cost of making the relocation trip and search costs, but also cover psychological and opportunity costs (Sjaastad 1962). More generally, utility from relocations may not be limited to earning gains, but can rather be understood as an overall place utility. The

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<sup>1</sup> That is why the approach is also referred to as the human capital approach.

concept of place utility “refers to the net composite of utilities which are derived from the individual’s integration at some position in space” (Wolpert 1965: 162).<sup>2,3</sup>

Place utility can be expected to increase over time spent at a certain location, as the integration at this place grows stronger, more local ties exist and local resources are accumulated. This may also result from active investment of individuals in their residential location. Everything else equal, increasing place utility may result in a decreasing chance of relocation over time. In the literature, this phenomenon has been referred to as the cumulative inertia axiom (Clark 1981: 190). This axiom states that the likelihood of relocating decreases with the time spent in the present location. The axiom has been repeatedly supported by empirical evidence (e.g. Fischer and Malmberg 2001). It is one example of path dependencies over the life course that are further described in Section 2.1.5. The cumulative inertia axiom offers an explanation for why individuals are mostly rather immobile and become more immobile the less mobile they have been in the past.

According to the rational choice approach, individuals relocate if the resulting returns exceed costs and lifetime utility can be expected to be higher at the new location. Therefore, younger individuals are more likely to relocate, because they gain from relocations for a longer time. Returns are also likely to be higher for individuals with more human capital. On the other hand, higher costs will reduce the likelihood of residential relocations. Higher costs can be expected, if somebody has strong local ties. Local ties may be social, e.g. family and friends living close by, material, e.g. home ownership, and psychological, e.g. being emotionally attached to a certain location. Higher costs also arise for longer distances of relocation. By definition, the basic rational choice model can only explain positive relocation outcomes. However, the rational choice approach has been extended to account for collective household decision, incomplete information, and limited search behaviour. These extensions help to explain negative relocation outcomes and are presented now.

Mincer (1978) extends the rational choice explanations of relocations to the household context, especially regarding heterosexual couples (cf. also DaVanzo 1981: 112). Instead of analysing individual gains and costs from residential relocations, the aggregated gains and costs for the household are considered. A household relocates, if

$$U_{rh} = \sum U_{ri} = \sum R_{ri} - \sum C_{ri} > U_{sh}, \quad (2.3)$$

where the subscript  $h$  indicates the household, which is an aggregate of  $i$  individuals. Mincer also raises the point that individual household members may be adversely affected by relocations, but relocate with the other members as tied movers. Household members may also benefit from a relocation, but do not relocate, as the household stays put (tied stayer). Tied moving or tied staying occurs, if  $U_{ri}$  for household members differ and “the tied partner is one whose absolute loss (gain) is less than

<sup>2</sup> See Section 2.1.4 for more details on Wolpert (1965) and the behavioural approach.

<sup>3</sup> The concept of place utility is similar to what I have defined as the quality of a location.

the absolute value of gain (loss) of the other partner” (Mincer 1978: 751). In general, costs of relocations increase in higher rates than gains with growing household size. With several potential destinations, it is likely that all members of the household fare worse by relocating collectively than by relocating individually. Female partners in heterosexual couples are assumed to be more likely to be negatively affected by household relocations, on the grounds that male partners are assumed to have more human capital on average and, thus, relocations are mainly undertaken for male partners’ careers (*ibid.*).

Mincer does not further elaborate the adverse effects of relocations for tied movers and stayers as long as the collective utility function is maximised (Abraham, Auspurg and Hinz 2010). Game theoretic bargaining models have been applied by family economists and sociologists to analyse these conflicts of individual interests. Fundamental to this approach is the rejection of the ideas of a unitary utility function and pooled income for the whole family (Thomas 1990; Beblo 2001: 12ff). At the same time, the approach assumes that “cooperative behavior enables an increased welfare production” (Ott 1992: 19) in the family. Thus, individuals prefer to cooperate. Bargaining models assume that family members consider their utility in alternative situations to evaluate their present situation within the family. Thus, individuals prefer cooperation in the present family context, but only as long as they do not have a more rewarding alternative. An example for a bargaining model is the divorce-threat model, in which spouses determine their utility outside of their marriages, i.e. their threat points. If their utility within the marriage falls below this threat point, they would divorce. They can use their threat points in bargaining with their partners to assert their interests. It can also be assumed that individuals consider potential changes in their power when making decisions (Lundberg and Pollak 2003).<sup>4,5</sup>

Further extensions of the classic rational choice approach highlight the importance of information gathering for residential relocations, which formerly was only an implicit part of this approach. The information that is necessary for residential relocation decisions is extensive and includes knowledge of “future preferences [...]; future outcomes at the present and alternative locations [...]; the range of alternative locations available [...]; and the specific characteristics of alternative destinations” (Goodman 1981: 136). The basic rational choice model assumes that individuals have all this information. However, information gathering is costly (Simon 1957: 248). The search costs increase due to the intensity of search, the time spent on searching, the geographic area covered and the number of locations considered. At the same time, these factors determine the completeness of information for the re-

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<sup>4</sup> The most popular solution for these bargaining models has been formulated by Nash (1953). The Nash solution is characterised by “1) Pareto efficiency, 2) symmetry, 3) invariance with regard to linear transformations and 4) independence from irrelevant alternatives” (Beblo 2001: 16, footnote 10).

<sup>5</sup> Bargaining and gender differences within the household are further addressed in Section 2.3.5.



location decision. Individuals will only continue their search as long as they expect the gain from the search to be higher than the costs. It can be assumed that location search has increasing marginal costs, but only decreasing marginal returns. Thus, it is irrational for individuals to gather complete information. It follows that most potential movers consider only a few destinations before making a decision and most of these will be close to the present location (Goodman 1981: 138ff). Thus, residential relocations are decisions under uncertainty. As the individual makes a decision without being fully informed about the consequences and all alternatives, unintended and adverse consequences may occur (DaVanzo 1981: 95).

Following extended rational choice models, relocations occur since individuals expect to increase their life time utility at an alternative location. Variation in relocation outcomes may follow from limited information of movers and their limited capacities to process this information. Movers may end up in worse locations than other individuals, because they were not completely informed about all features of new locations. Even if they were informed about all features, they may not have correctly inferred the quality of the location from this information. In addition, variation in outcomes may result from restricted resources of individuals. As individuals can only relocate to locations that they can afford, these relocations may increase the quality of location less than for individuals with more resources. The concepts of limited information and restricted resources may be important to explain variance in relocation outcomes and are linked with the life course perspective in my combined theoretical framework.

Many scholars have criticised the assumptions of rational choice theory — especially concerning the homunculus deployed (Lindenberg 1983: 10). The focus on intentionally and goal-oriented acting individuals offers simple explanations for individual behaviour, but with the risk of being too simplistic. Extensions of the rational choice framework already recognise many of these critical points that are raised: satisfying instead of maximising behaviour, limited cognitive capabilities of individuals, limited information, divergence between objective and subjective expected utility, heterogeneity of preferences across the population and regional bounded markets. However, the ever growing extensions of the basic rational choice model result in a theoretical framework that loses much of its original rigour. Two major extensions, bounded rationality and satisfying behaviour, are described in more details in the next section.

### ***2.1.4 Behavioural Approach***

The behavioural approach explains relocations on the basis of individual choice and decision making of agents. The approach highlights the idea of bounded rationality and emphasises individual perception of reality grounded in the work of Simon (1957: 256) who introduced the idea of “limited knowledge and ability” of the de-

cision making individual (Manion and Flowerdew 1982: 10). The approach was stimulated by the rational choice framework and shifts the focus from the analysis of optimal to actual behaviour (Simon 1957: 241; Cadwallader 1992: 12). While the approach still assumes that individuals act purposefully and with self-interest “to improve or maintain their quality of life” (Lu 1998: 1474), individuals make decisions under uncertainty and imperfect information. Their decisions may be objectively irrational for the reason that they follow an individually bounded rationality. Rationality is bounded, as the human capability to process information is limited and subjective perceptions of objective environments differ. Individuals are also assumed to be satisfied with less than optimal outcomes. Instead of maximising their utility, individuals satisfy particular situation-specific needs (Wolpert 1965; Golledge and Stimson 1997: 8).

The behavioural approach gives more importance to modelling the information processing and actual decision making before relocation than the rational choice approach. The decision process can be split up into the “migration decision, the location search and the choice process” (Golledge and Stimson 1997: 427). Some incongruence between aspirations and achievements in locations triggers the consideration to relocate. The incongruence is caused by events, e.g. childbirth or loss of job. In migration decisions after such events individuals have three choices. First, aspirations may be adjusted. Second, achievements are modified in the present dwelling, i.e. “in situ adjustment” (Jong and Fawcett 1981: 56). Third, individuals improve their achievements through relocation to re-establish equilibrium between aspirations and achievements (Brown and Moore 1970).<sup>6</sup> If a relocation is decided for, the search process begins. Information about alternative locations is gathered and processed. The information is added to a cognitive map which is constantly constructed by individuals. In cognitive mapping, cognitive representations of places in geographic realities are created to which value judgements are attached (Downs 1981: 109). These cognitive maps guide spatial decision making. Cognitive maps also determine the awareness space of individuals, i.e. the geographic space known to the individual. The extension of this space is shaped by “the effects of race, family income, education, and occupation” (Wolpert 1965: 165). Relevant considerations of location choices are limited to selections from the cognitive map. Finally, a location is chosen that meets some minimal gain in achievement set by the searcher. The outcome of the decision may be re-evaluated and further spatial behaviour triggered (Golledge and Stimson 1997: 473ff).

Wolpert (1965) introduces the concept of residential stress to describe the “‘mismatch’ [...] between a household’s residential needs and preferences and the characteristics of its current housing and neighborhood” (Lu 1998: 1474).<sup>7</sup> The concept of stress is important for the behavioural approach and indicates its affinity with

<sup>6</sup> In situ adjustment may also include buying or selling the present dwelling (Mandić 2001).

<sup>7</sup> Quigley and Weinberg (1977: 57) suggest to operationalise residential stress as the “the amount of money required at the current residential location and quantity of housing consumed required to

psychology: Residential stress can be understood as a form of cognitive dissonance (Festinger 2001 [1957]; Deane 1990). Mismatches are caused by changes in the needs of individuals, e.g. transitions in the family trajectory of the life course, and external changes in the dwelling and neighbourhood, e.g. decay of buildings (Lu 1998: 1474). Furthermore, the normative standards of individuals regarding quality of locations may change and cause stress (Speare 1974: 175). However, residential stress does not directly cause residential relocations, because the satisficer only reacts to stress if it reaches a certain threshold level (Boyle, Halfacree and Robinson 1998: 64). In addition, residential relocations are not the only way to reduce stress. Stress may also be alleviated in situ (Brown and Moore 1970). The likelihood for individuals to relocate depends on the levels of satisfaction relative to the levels of stress that they experience and the “capacity to find and obtain access to more satisfactory housing” (Lu 1998: 1474).

The behavioural model predicts that individuals will relocate if they face an increase in residential stress above a certain threshold and have a low overall satisfaction with their residential locations. It can be assumed that individuals with larger awareness spaces are more likely to consider a relocation than individuals with smaller awareness spaces. Again, outcomes of relocations will be a matter of the information gathered by individuals. Individuals can make better informed choices regarding relocations, if they gather more information about potential locations and process this information correctly. If individuals make well informed choices, they are more likely to relocate to better locations, as they are aware of differences in the quality of various locations. Variation in relocation outcomes may also occur due to restricted awareness spaces, as locations in the awareness space of individuals may be worse than outside of the awareness space. In addition, particular dimensions of the quality of locations may compete. That is to say, that individuals may decide to improve one dimension of their location and accept negative outcomes in another dimension as a result (Wolpert 1965).

The behavioural approach offers a helpful extension of earlier rational choice models by highlighting the ideas of bounded rationality and satisfying behaviour. The approach is useful for my theoretical synthesis as the ideas of subjective preferences, limited information and bounded rationality provides appealing explanations for variance in relocation outcomes. However, the approach has certain shortcomings. The empirical operationalisation of the behavioural approach tends to be problematic, as subjective perceptions of reality are difficult to measure (Clark 1981: 194). In addition, the model overstates the decision of the mover and underestimates the conditions set by external forces, which may affect individual choices considerably (ibid.: 193). The theoretical framework considers structural constraints of information gathering and processing, but not further limitations of individual behaviour (Golledge and Stimson 1997: 485). The approach assumes that “migration

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make the household as well off as it would be if it were currently consuming its preferred quantity of housing services at the optimal location”.

is something that is always there and is a ‘good thing’ because it leads to better living conditions, higher wages and more pleasant residential environments” (Boyle, Halfacree and Robinson 1998: 65). Furthermore, the cornerstone of the behavioural approach is the “*decision-making unit*” (Golledge and Stimson 1997: 33, emphasis in original). For multi-persons households, the behavioural approach ignores the internal power structures of these decision-making units.

Wolpert (1965) linked the behavioural approach to a life cycle model by relating levels of residential stress to certain life cycle stages. The life cycle approach sees the family trajectory as following a set sequence of stages, i.e. marrying, bearing children and an empty nest phase with the same partner, and is rather static in its analysis. At the end of the 1980s and the beginning of the 1990s, the life cycle approach was extended to the life course perspective. This perspective is more dynamic than the life cycle approach and allows for variation in the sequence of events in the family trajectory and places trajectories in their historical times (Elder 1977; Morrow-Jones and Wenning 2005; Geist and McManus 2008). The life course approach is described in more details now.

### 2.1.5 *Life Course Perspective*

The life course perspective highlights the links between different life domains of individuals and interdependencies with other individuals. Central to the approach is the time dimension of these interdependencies over the span of individuals’ lives (Mayer 2004: 163). One domain of the life course is the residential trajectory. A trajectory is a sequence of states that are linked through transition events (Elder 1985: 31f). Residential locations are states and relocations are transitions in this trajectory. The life course perspective has been joined with aspects of the institutional, rational choice and behavioural approaches in research on residential relocations (Mulder and Hooimeijer 1999: 169). Courgeau (1995: 22) summarises this comprehensive framework: “Individual migratory behaviour [...] develops over time, yet is situated within given historical, geographical, economic and social conditions [...] [and] placed in the time and space of an individual’s life”. Mayer (2004: 166) stresses four pillars of the life course perspective:

- 1) *Embeddedness and interdependence*: Life courses are institutionally, historically and spatially embedded. Especially the institutional embeddedness in the context of particular welfare states has been emphasised by European life course researchers (Settersen and Gannon 2009: 456). “It was and still is the modern nation-state which lays the foundation for biographical decision-making and life course policy, with the consequence of national path dependence” (Heinz et al. 2009: 20) and, thus, the need for comparative cross-national research (Mayer and Schoepflin 1989). Furthermore, life courses are embedded in certain local spaces

and periods (Elder and Rockwell 1979). Life courses of individuals are interdependent (Elder 1977). “Individual lives are always linked lives [...]; one person’s resources, resource deficits, successes, failures, chronic strains, and (expected and unexpected) transitions can become focal conditions, even turning points, in the lives of others” (Moen and Hernandez 2009: 259) and individuals are mostly situated in multi-person households that move as social convoys through time.

- 2) *Multidimensionality*: Different life course trajectories are closely linked and interrelated. The residential trajectory is intertwined with other life course trajectories — foremost the job and family trajectory (Heinz et al. 2009: 25). The job trajectory has a fundamental influence on the structure of life courses. The job trajectory divides life courses in a pre-work phase of education, a work phase and a post-work phase in late life (Kohli 2009: 67). In addition, wages are major sources of income for most households. The place of work also restricts the potential places of residence depending on how much commuting an individual accepts. The family trajectory links together life courses of different individuals and influences their behaviour, e.g. due to child care responsibilities.
- 3) *Self-referential process*: Past developments in trajectories influence future transitions (Elder 1985: 31). Individuals act “on the basis of prior experiences and resources” (Mayer 2004: 166). For example, regarding residential relocations, past research shows that the probability of a relocation decreases with the time spent at a location.<sup>8</sup> This may be caused by the accumulation of resources over time that can not be transferred to other locations, but also by the experiences gained at the present location.
- 4) *Individual agency*: Individuals creatively shape their life courses. That is to say that they *ex ante* act purposefully and intentionally to follow certain goals. At the same time they contribute to the reproduction and change of social structures they are embedded in. Thus, on the one hand, individuals are subject to the social structures that they have internalised and are simultaneously enabled and constrained in their actions by them. On the other hand, social structures are also shaped by actions of individuals (Settersen and Gannon 2009: 458).

As relocating is costly in various ways, individuals will not relocate without significant trigger events, i.e. substantial changes in their lives (Quigley and Weinberg 1977). Triggers are mostly important transitions in other life courses trajectories which induce new needs and preferences regarding residential locations (Myers 1999: 873). Dieleman (2001: 253) lists the following triggers: partnering, birth, union dissolution, death of a partner, entering or finishing stages in one’s education and job changes that induce income changes or changes in commuting distance. The residential trajectory is instrumental and subordinated to other trajectories in the life course (Mulder 1993: 23). Different events can trigger distinct forms of residential relocations concerning the destination, e.g. housing adjustments after childbirth are assumed to trigger mainly short distance relocations (Courgeau 1985).

<sup>8</sup> See cumulative inertia axiom in Section 2.1.3.

A trigger alone is not sufficient to explain residential relocations. Mulder and Hooimeijer (1999: 163) direct attention to the situation in which an individual is confronted with a trigger event. This situation is defined by the resources (enabling conditions at the micro level, e.g. material resources), opportunities (enabling conditions on the macro level, e.g. available housing), restrictions (limiting conditions at the micro level, e.g. interdependence with other individuals) and constraints (limiting conditions on the macro level, e.g. discrimination on the housing market). The situational conditions determine whether individuals relocate in response to trigger events. The final decision to relocate is modelled using approaches similar to the rational choice (cf. Section 2.1.3) or behavioural approach (cf. Section 2.1.4).

Regarding restrictions of the relocation decision, the family trajectory is very influential. The lives of individuals in a household are linked through events in the family trajectory. The presence of a partner or child (-ren) in the household as well as their characteristics significantly influence the decisions of individuals to relocate. Especially important in shaping relocation decisions for couples is the employment status of the partner. Household members must negotiate a mutual agreement concerning relocations or split — at least temporarily (Mincer 1978; Nivalainen 2004).<sup>9</sup> The past residential trajectory can provide resources as well as restrictions for relocating. Resources may result from past experiences with relocations. For example, the mobility socialisation in childhood years affects later life relocations (Courgeau 1985; Myers 1999). The likelihood of relocations increase with the number of past relocations (Clark and Huang 2004). Local social networks and other links to a location that grow over time may restrict relocations. The experience with particular locations in the past shapes the pool of potential future locations (Roseman 1983; McHugh, Hogan and Happel 1995). More generally, the past life course affects the present resources and restrictions of individuals. For example, an individual's economic capital is affected by the past job trajectory. These dynamics of social inequality have been an important theme in life course research as is shown below. Finally, opportunities and constraints of relocations in the life course perspective are similar to what has been described in the institutional approach (cf. Section 2.1.2).

In recent years, the life course perspective has increasingly been linked to sociological theories of social stratification (e.g. Dannefer 2003; Pallas and Jennings 2009; Diewald and Mayer 2009). This is especially promising for the present analysis, in which the dynamics of social inequality due to residential relocations are examined. Inequalities *of* the life course and inequalities *over* the life course can be differentiated.

“The former concerns the manner in which the relationships between the state, the market and the family generate social differentiation and social inequality between different population groups on the basis of various criteria, such as age [...] and gender. The latter refers to processes of differentiation or heterogeneity that unfold during the life course“ (Dewilde 2003: 122).<sup>10</sup>

<sup>9</sup> See also description of bargaining models in Section 2.1.3.

Regarding inequalities *over* the life course, relocations may be turning points in individuals residential trajectories that substantially affect the stratification of the quality of location. Turning points are “events or milestones that substantially alter the direction and/or slope of a trajectory” (George 2009: 169). Thus, turning points delineate distinct and discontinuous phases in trajectories. A turning point indicates an abrupt change between these two phases (Abbott 1997: 92). Turning points “may be crucial opportunities in which an accumulation of resources, for some, and a plateau or a decrease of resources, for others, may eventually create great inequalities between individuals of a single cohort” (Burton-Jeangros and Widmer 2009: 184). The effects of these turning points depend on the resources of individuals, e.g. income, on the social position in various life domains, e.g. the family status, and the general life stage as well as the past experience of individuals (Dewilde 2003; Elder and O’Rand 2009: 440). Some relocations that change relevant characteristics of the residential location are likely to be turning points in residential trajectories, e.g. from rental accommodation into ownership or relocations over long distances. The outcomes of these relocations are undetermined and contingent as such. Only the conditions of these relocations determine the direction that the residential trajectory takes after the event, i.e. the nature of the turning point. The within-changes in quality of locations also implies inequalities between different points in time for the same individual.

Regarding inequalities *of* the life course, residential trajectories of groups within one country may diverge. For example, the residential trajectories of different social classes may follow divergent shapes over the whole life course irrespective of single relocation events. Inequalities of the life course may also occur across nations due to divergent institutional contexts. For example, the role of home ownership in a national housing market will co-determine the age at which individuals seek to buy their first home and may have distinct effects on the overall shape of the residential trajectory. To uncover these cross-national differences, life courses from different countries must be compared.

Following the life course approach, residential relocations will be more frequent in life course stages with many transitions in other life course trajectories (Courgeau 1985; Mulder 1993: 25). For example, the stages between leaving the parental home until establishing a family and leaving school until starting the first job will probably have the highest number of residential relocations. It can also be expected that residential relocations are impeded, if different life courses are intertwined, e.g. in multi-person households. The life course approach does not explain relocation outcomes *per se*. However, it can be assumed that disruptive life course events, e.g. union dissolutions, trigger urgent relocation responses. These relocations may be less beneficial than relocations with longer prior search periods. Individuals may not compare several potential locations and decide for the best ones, but just relocate as

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<sup>10</sup> Inequalities *of* the life course would rather motivate cross-national research, while inequalities *over* the life course motivates longitudinal research (Dewilde 2003).

quickly as possible to the first available location (Dieleman 2001: 256). In addition, the interdependence of life courses in a household makes variance in relocation outcomes more likely, since a new location will only rarely meet the preferences of all household members at the same time (Mincer 1978). Particular life course stages such as the growing family phase may be associated with better relocation outcomes than other stages due to stronger preferences for good locations of parents with children and the willingness to make long-term investments in housing. The research on social inequalities and turning points also shows that outcomes of relocations are likely to depend on individuals' resources, e.g. income, their social positions, e.g. life course stage, and their past biographical experiences. Finally, variance in relocation outcomes may result from the institutional context in which relocations take place. To analyse this variance, cross-national research must be conducted to disentangle institutional context effects from other explanatory variables.

The life course approach is a perspective rather than a fully developed theoretical framework (Mayer 2009), but it is a perspective that is hardly contested in contemporary research on residential relocations. It has — more or less explicitly — become a dominant theoretical instrument to explain residential relocations (Kley and Mulder 2010). The approach is popular, as it offers a comprehensive explanation for the occurrence and non-occurrence of residential relocations. The life course perspective's attractiveness is also grounded in its flexibility and compatibility with other approaches. The life course framework improves on the other presented approaches in a number of ways: 1) Biographical dependencies within individual life courses are taken into account. 2) The timing of relocation events in certain life stages and in relation to particular life events is taken into consideration. 3) The life course perspective has been used to analyse social stratification over time. 4) Also, the life course perspective is based on the concept of individual agency, but at the same time acknowledges embeddedness in particular places, times and societies. Due to these strengths, the life course perspective is better suited to explain variance in relocation outcomes than the other approaches alone.

To recapitulate, the institutional approach is neglecting individual agency. The rational choice approach does not sufficiently account for contextual conditions and is too much focussed on individuals' utility maximising. The behavioural approach already provides a more appropriate explanation for relocation behaviour than the rational choice approach, but still does not sufficiently account for contextual factors, the biographical dependencies in individual life courses or the links between individuals in social convoys. The life course perspective combined with elements from the other approaches overcomes these shortcomings.

However, the shortcomings of the life course perspective itself should be considered as well. The flexibility of the approach is a strength, but may also turn into a problem, since the life course approach offers loosely linked theoretical concepts rather than a coherent and rigorous theoretical framework. Due to its vagueness, the framework is problematic to falsify. The approach's possibility to explain residential relocations may therefore result in a rather shallow account, without describing any



one explanatory factor in depth. In addition, the life course approach presents empirical challenges because it calls for very comprehensive and complex life history data to do justice to the concept of biographical dependencies.

### ***2.1.6 Conclusion***

The presented theoretical approaches are very elaborate with regard to the causes of residential relocations. A main shortcoming of the presented approaches is that they mostly do not explicitly consider the outcomes of relocations. Most approaches that were presented subscribe to the implicit assumption that voluntary relocations are life course events that yield some kind of positive return for the movers. Instead, I argue that relocations are contingent events in individuals' life courses. Whether relocations become positive or negative turning points with regard to the quality of locations or have no substantive effect at all depends on several conditions. It is important to acknowledge this ambiguous nature of relocation events. Only then is it possible to fully understand the effect that relocations may have on individuals' lives. To this end, I combine elements of the just described theories to develop a combined theoretical framework in the remainder of this chapter. The framework draws mainly from the life course perspective, but incorporates elements from the rational choice, the behavioural and the institutional approaches.

The framework is based on the following basic assumptions about individuals' behaviour. I assume that individuals' behaviour is situated in the flow of time of the life course and always relates to not only the past, but the present situational context and potential futures. Individuals shape their lives by actively and creatively navigating through their life courses to pursue physical wellbeing and social approval (Lindenberg 1996: 169; Emirbayer and Mische 1998; Heinz et al. 2009). However, life courses are only partly "the result of active and free choices, partly created within a fixed set of possibilities and partly imposed from outside" (Settersen and Gannon 2009: 471). As individual behaviour is multi-conditioned, "decision-making becomes indeterminate and must be understood from the point of view of situational options, biographical experiences and individual life course expectations" (Heinz 2009: 477, emphasis in original). The situational options are defined by individuals' resources and restrictions as well as constraints and opportunities at the macro level, i.e. regional and national contextual factors (Mulder 1993: 20f). I now describe the determinants of residential relocations (Section 2.2), before turning to the explanation of variation in relocation outcomes (Section 2.3). Whether my theoretical framework is able to contribute to the explanation of variation in the outcomes of relocations is tested in the subsequent empirical chapters.

## 2.2 Explaining Residential Relocations

Individuals have preferences regarding their locations shaped by biographical experiences and develop in relation to the housing situations of others. Therefore, preferences are conditional on the historical and social context. Housing situations that are considered appropriate may be very different across different societies and historical times (Mulder and Wagner 1998; Rowlands and Gurney 2000). Preferences are dynamic and change over the life course as individuals grow older and their families, job situations and social statuses change. Locations may also change their characteristics over time as dwellings deteriorate, new neighbours move in or regional labour markets change. If individuals live at locations that do not meet their preferences, they experience stress which they want to alleviate if it reaches a certain threshold. To alleviate stress, individuals may relocate to locations that offer better fits with their preferences (Sirgy, Grzeskowiak and Su 2005). These voluntary relocations occur after intentional decision processes. In contrast, involuntary relocations occur, if movers do not have a choice to relocate, e.g. if they receive a notice by their landlord or are evicted. Even in the latter cases, I assume that individuals in European societies can intentionally decide where to relocate to within social, economic, geographical and practical limits.<sup>11</sup>

Not every mismatch between preferences and actual location will trigger a voluntary relocation. First, stress must reach a certain level before it becomes relevant for the individual. Second, choices regarding relocations are costly and consequential and, thus, individuals will take this into account when considering to relocate. Costs are monetary and non-monetary and arise from one-time costs of relocating, localised capital that cannot be transferred to new residential locations and the risk and uncertainty attached to relocations (Goodman 1981: 138; DaVanzo 1981: 116; Lu 1998: 1476). Thus, individuals only relocate, if they have the necessary resources to meet the costs and they expect that the benefits from relocating will outweigh the associated costs. Individuals' expectations about benefits and costs are confounded by their intellectual capacities, incomplete information and habitual dispositions. Relocations can bring about fundamental changes in the living situations of individuals. Therefore, individuals are likely to weigh the pros and cons of their choices in some ways and make strategic calculations within the limits of their incomplete information and intellectual capacities.<sup>12</sup> The options of individuals are constrained by institutional conditions, e.g. the availability of suitable dwellings.

In their decisions about relocation, individuals also consider the alternative of in situ adjustment (cf. Section 2.1.4). When adjusting in situ individuals stay put, but

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<sup>11</sup> However, certain subpopulations are deprived of their freedom of movement in European societies, e.g. illegalised immigrants or institutionalised individuals. This highly important issue is not considered in the present analysis.

<sup>12</sup> Jong and Fawcett (1981: 46) argue that residential relocations are more "amenable to a decision-making analysis than almost any other demographic behavior".

alter the residential location in some way to reduce discrepancies, e.g. by renovating the dwelling. This alternative will be more likely for individuals that would bear high costs in case of relocation, e.g. owners, or individuals that have strong habitual links to their location. Finally, individuals may adapt their subjective preferences to reduce stress. However, I assume that this alternative is chosen less frequent than the others, because of the habitually anchored preferences. Only if individuals have no other option, they will try to adapt their preferences. This is also done by legitimising their present situation to others and themselves. The habitual dispositions of individuals codetermine to what extent relocations are considered a viable behaviour at all (Myers 1999). For some, relocations is a goal in itself that is associated with new experiences and a desirable 'mobile' life style. For others relocations may be ruptures in their life courses that are avoided as much as possible.

In most cases, individuals are members of multi-person households living together with their partners, children, relatives or other individuals. Then, the relocation decision is made in the 'social convoy' of these households (Moen and Hernandez 2009). Thus, individuals must coordinate their behaviour if they want to stay together. They have to decide whether they want to relocate at all and where they want to relocate to. Finally, whether individuals relocate depends on the conditions on the housing market. Individuals can only relocate if sufficient numbers of locations are available and they only want to relocate if these locations meet their preferences. The characteristics of the housing market also determine the conditions under which individuals can relocate. For example, if transaction costs for buying property are low and only small down payments are necessary, home owners may be more likely to relocate than in housing markets in which transaction costs and downpayments are high. Finally, certain individuals may be discriminated in the housing market, e.g. migrants, and their relocations may be deterred.

## 2.3 Explaining Variation in Relocation Outcomes

Relocations are ambiguous and contingent life course events, i.e. there is strong variation in the outcomes of relocations.<sup>13</sup> Following from the discussed theoretical approaches, five sets of conditions are identified that may explain the variation in outcomes after relocations: 1) *individual life course conditions*; 2) *economic resources*; 3) *situational conditions of decision making*; 4) *structural conditions in housing markets*; and 5) *gendered roles in couples*. Each set of conditions is de-

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<sup>13</sup> From a utility maximising perspective it could be argued that an optimal location exists for each individual. Under this assumption, any relocation to somewhere other than the optimal location would have a negative outcome, because the individual gained less than would have been possible. However, due to restrictions and constraints the optimal location is generally out of reach for individuals and the optimal location is merely of theoretical importance. Here the interest is in identifying conditions that cause individuals to relocate to more or less suboptimal locations.

scribed in the following subsections where hypotheses about the effects of these conditions on outcomes of relocations are derived. The set of conditions are not exclusive and overlap partly. This also implies that some of the processes behind these hypotheses are difficult to disentangle in the empirical analysis. Some hypotheses explicitly refer to the effects of relocations. Other hypotheses refer to general divergence in the quality of locations, but make implicit claims about relocations that lead to this divergence in quality. Hypotheses that refer to cross-national divergence anticipate the description of institutional differences given in Section 4.1. Thus, only important institutional differences are mentioned here.

### 2.3.1 *Individual Life Course Conditions*

At the micro level, individual behaviours are shaped by their “*individual life course expectations*” (Heinz 2009: 477, emphasis in original), resources and restrictions. *Expectations* or preferences mainly follow from habitual dispositions, period- and society-specific social norms and social comparisons with others (Morris, Crull and Winter 1976). *Resources* are material and non-material objects that are of societal importance and can be used to reach subjective goals. Resources are mainly economic, cultural, social and symbolic forms of capital (Bourdieu and Wacquant 1992: 119).<sup>14</sup> Resources depend on past biographical experiences (Elder 1985). *Restrictions* are individual conditions that hinder the actualisation of subjective goals. Restrictions may result from a lack of resources and from life course interdependencies. The latter follows from two processes. First, biographical dependencies within individual life courses restrict present behaviour. Past choices restrict the potential present choices and past choices make particular present choices more likely. Second, inter-individual relations within and beyond the household restrict behaviour, because individuals have to coordinate their behaviour with others. While individuals are in pursuit of their own goals, they also cooperate with other individuals and their life course are linked to others. This link is especially strong within couples living together and individual behaviour cannot be understood without considering these interdependencies.

Preferences regarding locations differ strongly by life course stage (Lindberg et al. 1992; Jansen 2012). On average, couples have preferences for better locations than singles for several reasons. First, the location is an important component of settling down together as a couple and ‘building a nest’ (Rossi 1955: 178; Rowlands

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<sup>14</sup> Economic capital has the form of material assets and income. Cultural capital can be incorporated, i.e. in the form of dispositions, taste and the knowledge of how to act appropriately in a given situation, objectified, i.e. in the form of books or art works, and institutionalised, i.e. in the form of educational degrees. Social capital refers to the social networks of individuals and the resources they can access through these networks. Symbolic capital “is the form that the various species of capital assume when they are perceived and recognized as legitimate” (Bourdieu 1989: 17).

and Gurney 2000; Kearns et al. 2000). Second, couples put more weight on the quality of their residential locations, as they are less mobile than singles. If they relocate they will try to improve their locations more than singles who may anticipate to relocate again soon. Couples may be more willing to invest into their locations, since they are likely to live there for longer than singles. This may be even more so for married couples, on the grounds that they may expect to stay together for longer than cohabiting couples (Mulder and Wagner 1998; Holland 2012). Third, couples are able to pool their resources and are more likely to afford to relocate to more expensive high quality locations than singles (DeLeire and Kalil 2005). Children may have an additional effect on preferences of parents regarding the quality of locations. Parents will strive to provide good quality locations for their children, e.g. in safe neighbourhoods (Brun and Fagnani 1994). However, children also put financial stress on families. After childbearing, families may not be able to afford good locations or they have to relocate to less expensive areas, e.g. suburban areas. This will be the case foremost for low income families. I formulate the following hypotheses, which should be true on average.

**H 1.1.** *Relocations of singles to form a couple household and relocations of couples improve the quality of locations more than relocations of singles.*

**H 1.2.** *Partners live in better locations if they are married than before and after being married.*

**H 1.3.** *a) Individuals improve the quality of their location if they have children and b) the positive effect of children on quality of location will increase with income.*

Individuals will live in worse locations after union dissolution, since, first, they do not pool their economic resources any longer and the dissolution may have decreased the individual economic resources due to foregone economies of scale. Second, individuals decide about relocations under stronger uncertainty about their future family trajectory than while being in stable relationships. Third, for childless ex-partners, different preferences about locations may apply that put less weight on particular features of locations such as safe neighbourhoods. Finally, individuals that dissolved their unions have to relocate quickly and do not have time for a thorough strategical calculation of the benefits and costs of various residential locations. It may be expected that union dissolutions have a lasting effect on the quality of locations. Economic resources may be reduced permanently, ex-partners may be less likely to form a new union and they may be less inclined to invest again in building a ‘nest’ if they already lost one. These processes may differ by gender, because typical life courses of men and women differ. Traditionally, women in couples with children are more engaged in household work and child care than in paid work on the labour market (Bussemaker and Kersbergen 1999: 18). In case of union dissolution, women are often left with less financial resources than the male partner — also in childless couples (Christopher et al. 2002). Due to child care responsibilities that are mainly left with the mother after dissolution, engaging in paid work is

more difficult for women in the post-dissolution phase. Women are less likely to re-partner after dissolutions than men with increasing age (Jaschinski 2011). All these factors may cause relocations in association with union dissolutions to have stronger negative effects on women than on men.

**H 1.4.** *a) Individuals reduce the quality of their locations, if their relocations are associated with a union dissolution. b) This effect is stronger for women than for men, and c) is persisting over the life course.*

Important events in the work trajectory can cause relocations to become turning points in the residential trajectory (Feijten and Mulder 2005). Becoming unemployed may cause a relocation to be a negative turning point, due to the loss of income, income security and status. Upward or downward job mobility may change the income and, thereby, the economic resources that can be used for relocations. Job mobility may also affect the preferences regarding locations. After significant promotions, individuals may want to represent their new social positions by relocating into better residential locations (Rossi 1955: 179). Personal characteristics of individuals may be related to changes in the job trajectory and relocations at the same time. For example, individuals may strive for high incomes and high quality locations simultaneously as a result of their competitive and ambitious character. Income losses in case of unemployment may be cushioned by the welfare state through wage replacement. If the wage replacement is high and close to the former labour income, individuals that become unemployed are more likely to stay in their location. If the wage replacement is low, individuals are more likely to relocate to reduce housing costs. In the latter cases, individuals are likely to reduce the quality of their location.

**H 1.5.** *Transitions into unemployment and demotions reduce the quality of locations on average, while individuals that become employed or experience a promotion in their job are more likely to improve the quality of their locations than individuals that do not experience the respective job mobility.*

Life courses in England are less stable and homogeneous than in Germany on average, i.e. individuals experience more heterogeneous transitions and changes in their life courses in England than in Germany. Individuals are more likely to experience transitions in their family trajectories, i.e. union forming and dissolution as well as childbearing, in England than in Germany (cf. Section 4.1.3). Thus, changes in their room needs and general residential preferences are more likely for individuals in England than in Germany. English individuals are more at risk to experience downward social mobility than German individuals on average due to weaker job security and social protection in England (cf. Section 4.1.3). English individuals are also more likely to experience disruptive family events on average. Therefore, it may be expected that English individuals are also more likely to experience downward residential relocations that reduce the quality of locations. It follows that the quality

of locations for English individuals may be more volatile over the life course than for Germans. This cross-national divergence will be especially strong in mid- and late-life, when German individuals experience even fewer changes in their preferences and needs compared to English individuals due to their more stable life courses. In the early life course, the divergence will not be as strong, because Germans also experience frequent transitions in their family trajectories.

**H 1.6.** *The quality of locations is more stable over the life course in Germany than in England on average, especially in mid- and late-life.*

The quality of locations is closely associated with housing tenure. Ownership is associated with better quality of locations on average compared to social housing and privately rented tenure (cf. below). In England, individuals are more likely to buy property earlier in the life course than in Germany and in England individuals are also more likely to relocate to more than one owned home over the life course than in Germany (Voigtländer 2009: 366ff). In England, home ownership is not as directly linked to marriage and family formation as in Germany (Mulder and Wagner 1998: 707).<sup>15</sup> Thus, it can be expected that English individuals are likely to increase the quality of locations earlier in their lives and regardless of their family status, while German individuals relocate to better locations later in life and are likely to relocate to better locations especially if they are married or form a family.

**H 1.7.** *Changes in quality of locations over the life course follow distinct patterns in England and Germany: a) on average improvements in the quality of locations through relocations are more likely for young singles and childless individuals in England than in Germany; b) improvements in the quality of location through relocations are more likely in the growing-family phase in Germany than in England; and c) downward relocations are more likely in England than in Germany.*

### **2.3.2 Economic Resources**

To reach their goals of physical wellbeing and social approval, individuals constantly compete for scarce material and symbolic objects. Since these objects are rare, only some individuals can use them to meet their goals. As a result, life courses of individuals are unequal in the sense that the degree of goal attainment varies between individuals and for individuals over time. Individuals compete for high quality residential locations in housing markets. The supply of locations is limited and, in general, the scarcity of locations increases with higher quality. Thus, only a limited number of individuals will be able to relocate to high quality locations. In most European countries, housing markets are mainly characterised by free market

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<sup>15</sup> Also cf. Section 4.1.1.

exchange. Thus, access to scarce locations is mainly limited through the price of locations. The better a location, the higher its price will be everything else equal. The price of a location is either the rent in rental tenure or the house price respectively land price and construction costs in the owned tenure. Individuals that can afford to pay high prices can relocate to high quality locations. Thus, if individuals have more economic resources, they are more likely to improve the quality of their location on average to increase their degree of goal attainment and relocations will have better outcomes than for individuals with less economic resources.

**H 2.1.** *a) Individuals that increase their incomes improve the quality of their location through relocations; b) relocations have an increasingly positive effect on the quality of locations with higher incomes.*

The access to different housing tenures depends highly on current and potential income (Kendig 1984; Buck 2000a).<sup>16</sup> On average, quality of location is strongly correlated with housing tenure. Owned dwellings offer the best quality, dwellings rented privately offer less quality and social housing offers the least quality (Easterlow, Smith and Mallinson 2000; Mulder 2006). Owners can better adapt their dwellings to their needs and for many owners home ownership offers a feeling of security (Megbolugbe and Linneman 1993). The reason for these differences are manifold. First, since owners commit for a longer time than tenants to their dwelling, they invest more economic capital. Second, because of lower land prices owned houses are more likely to be situated in less densely populated areas, which offer better neighbourhood quality. Social housing is often associated with the worst locations, as the investment in the dwellings is relatively low as only small returns can be expected.

**H 2.2.** *Individuals that relocate into social housing will improve the quality of their locations the least, individuals relocating into dwellings rented privately will improve the quality moderately and individuals that relocate into ownership with or without mortgage will improve the quality the strongest.*

Within each housing tenure there may be high variation in quality — especially across countries. If a housing tenure has a high share in the housing market, it is likely that dwellings in this tenure are more heterogeneous to cater for a wider group of the population. For example, the high share of owner occupied dwellings in England implies that there are more own homes with relatively low quality compared to the owner sector in Germany (cf. Section 4.1.1). To the contrary, the high share of rented dwellings in Germany implies that there are more high-quality rented dwellings in Germany than in England. Thus, Germans that relocate between two rented accommodations may be more likely to improve the quality of their locations than similar movers in England. At the same time, English movers that live

<sup>16</sup> Wealth is an important type of economic resources that may improve outcomes after residential locations (Di Salvo and Ermisch 1997; Mulder and Wagner 1998). Due to problems of measuring wealth over time with the data used in the present analysis, no hypotheses regarding wealth are formulated.



in their own homes before and after a relocation may be more likely to improve the quality of their locations with these relocations. Germans are likely to relocate only once to ownership over their life course, while individuals are more likely to relocate between own homes in England. For Germans, it may be expected that this rare event is thoroughly planned and utilised to increase the quality of location more strongly than for individuals in England.

**H 2.3.** *a) Transitions from rented dwellings to home ownership, and b) relocations between privately rented dwellings improve quality of locations stronger in Germany than in England. c) Relocations between own houses improve quality stronger in England than in Germany.*

### 2.3.3 Situational Conditions of Decision Making

Information about potential locations is essential in making a relocation decision, but individuals are not fully informed about all alternatives and consequences in their decision making. This is a matter of the costs of searching and the available time for searching. Costs of information increase with the distance between the present and the potential locations that information is acquired for. The information about distant locations will be limited considerably, but particular forms of information about locations is easier to obtain than others. For example, information on the available rooms of a dwelling is easier to acquire than information on features of the neighbourhood.

**H 3.1.** *a) Individuals that relocate farther away improve the quality of their locations less than individuals relocating short distances and b) this effect is stronger for changes in neighbourhood quality than for changes in room stress.*

My discussion so far has mainly focussed on voluntary relocations. Involuntary relocations occur, if movers do not have a choice to relocate, e.g. if they receive a notice by their landlord or are evicted.<sup>17</sup> It can be expected that these events have strong negative effects on individuals, since individuals have to relocate without being able to plan the relocation thoroughly. They cannot evaluate different potential locations, but have to relocate somewhere quickly. Thus, the outcome may be more negative than if they would have controlled the situation and would have made a deliberate decision about relocating. In addition, involuntary relocations may be more

<sup>17</sup> At this point, it has to be noted that structurally triggered involuntary relocations, e.g. social and ethnic invasion-succession processes in neighbourhoods, are not explicitly accounted for in the present analysis. In recent years, the gentrification debate has highlighted the consequences of such processes (e.g. Millard-Ball 2002). For example, low-income renters may be driven out from neighbourhoods that are subject to gentrification processes and may have to relocate to lower quality neighbourhoods. I do not explicitly analyse these processes because of problems with measuring neighbourhood-level change in my data.

likely for specific groups of the population, which are more prone to deteriorate the quality of their location through relocating. For example, evictions and resulting involuntary relocations may be more likely for individuals that could not pay their rent and these individuals may also be discriminated against by potential landlords who do not want to rent to individuals associated with the risk of not paying rent.

**H 3.2.** *Individuals improve the quality of their location less on average, if they relocate involuntarily compared to relocating voluntary.*

### **2.3.4 Structural Conditions in the Housing Market**

Similar to the institutional approach, I assume that individual behaviour over the life course is also shaped by the institutional context (Mayer and Schoepflin 1989). “Institutionalization of life courses refers to the process by which normative, legal or organizational rules define the social and temporal organization of human lives” (Brückner and Mayer 2005: 32). These rules may hinder the actualisation of subjective goals and constitute constraints. Rules may also facilitate goal attainment and offer opportunities to reach subjective goals. Institutions may affect individuals’ life courses differently. For example, the institutional context in the labour market and the welfare system facilitate the genderisation of women’s and men’s typical life courses (Krüger and Baldus 1999).

In general, the quantity and characteristics of locations available in the housing market will determine the opportunities that individuals have to relocate to better locations. The more high quality locations are available in a housing market, the better are the chances that an individual may relocate to one of these high quality locations, as they are not scarce and thus their price will be modest compared to housing markets in which high quality locations are scarcer. This reflects a fundamental axiom in life course research: “the structural availability of open positions is simply the precondition to participate: without vacant positions there is no career mobility” (Diewald and Mayer 2009: 7). Besides supply, the demand in the housing market is important. Tight housing markets due to high demand of housing will offer less opportunities for individuals, since the competition for high quality locations is strong. If the competition is strong, prices will rise for vacant dwellings and fewer individuals will be able to afford relocating to these locations. Less tight housing markets, on the other hand, will offer more opportunities, because prices for dwellings decrease.

**H 4.1.** *Relocating to housing markets with high demand for housing reduces the chances for individuals to improve the quality of their locations, while relocating to housing markets with high supply of housing increases the chances for individuals to improve the quality of their locations.*

**H 4.2.** *Individuals will improve the quality of their location more on average, if they relocate in a housing market with many high quality locations compared to a housing market with few high quality locations.*

Housing markets are examples for very imperfect markets.<sup>18</sup> Welfare states heavily intervene in housing markets, due to these limitations of the market and the political goal to provide everybody with adequate housing (Buck 2000a: 135). Housing policies influence the supply, prices and quality of locations and thereby distort the potential direct link between individuals' incomes and their quality of locations.<sup>19</sup> The intervention of the welfare state in housing markets aims at reducing disparities in the quality of locations for individuals. Welfare states differ in the extent to which they intervene on the housing market and, thus, in the extent to which they distort the income-quality link (MacGuire 1981: 115; Balchin 1996a: 9ff; Oxley and Smith 1996: 25ff; Lampert and Althammer 2004: 337). More regulation will result in a weaker effect of income on the quality of the location. In Section 4.1.1, I show that the housing market in Germany is slightly more regulated and the income-quality link is weaker than in England. With regard to other aspects of the welfare state, England can also be characterised as being less decommodified, e.g. with regard to unemployment protection (cf. Section 4.1.3).<sup>20</sup>

**H 4.3.** *Changes in the quality of locations through relocations will depend more on changes in income in England than in Germany.*

Ascribed statuses such as ethnicity of immigrants can be associated with discrimination in the housing market and may constitute a strong constraint for individual relocation behaviour (Flowerdew 1976: 56). On average, ethnic minorities live in lower quality locations than the native population (e.g. Özüekren and Kempen 2002; Drever and Clark 2002). There are three main causes for these disparities.

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<sup>18</sup> First, housing markets are characterised by price inelasticity of supply. Second, due to the fragmented character of housing markets, the high number of sellers and buyers and the high diversity of dwellings, the housing market only has a low market transparency. Housing markets are also regionally fragmented and conditions for relocations will be very different across regional borders of housing markets. Third, consumers in the housing market are mostly limited in their geographic mobility. Thus, their search is locally bounded and only covers a small fraction of the overall market. Fourth, most locations are not substitutable (Herlyn and Herlyn 1983: 127ff; Mayer 1998: 37).

<sup>19</sup> First, welfare states define legal standards of housing that are supposed to guarantee a minimum quality of dwellings. Second, welfare states provide subsidies and tax benefits for home owners, and pay housing assistance to renters. Thereby, individuals are enabled to improve their locations beyond their individual labour market income and assets. Third, private providers of dwellings are supported financially through subsidies and tax benefits. Fourth, welfare states engage in urban and regional planning. Fifth, states regulate the market exchange between consumers and providers, e.g. by introducing rent regulation and legal protection of renters.

<sup>20</sup> Decommodification describes the degree to which life chances of individuals are independent from market forces.

1) Preferences of ethnic minorities regarding features of locations may be different from natives. For example, ethnic minorities may prefer ethnic enclaves. While ethnic concentration in a neighbourhood is not a criterion of neighbourhood quality in itself, it may be a feature associated with low neighbourhood quality on other dimensions (Harris 1999). In the present analysis, I assume that immigrants and natives share similar preferences for residential locations.<sup>21</sup> This is a strong assumption that should be further validated in future research, but past research supports the credibility of this assumption (e.g. Bolt and Kempen 2002; Wiesemann 2008).

2) Immigrants may be constrained in the actualisation of their preferences, because immigrants on average have less economic capital. 3) Actualisation of preferences may also be impeded through discrimination on the housing market. In this case, gatekeepers such as landlords or real estate agents prefer natives over immigrants. The latter can only relocate to locations that are not preferred by natives (South and Crowder 1998a; Quillian 2003; Schaake, Burgers and Mulder 2010). Discrimination is likely to affect all individuals that live together with an immigrant in the same household, even if they are natives themselves. Even if immigrants relocate to better residential locations, the relative difference to the residential quality of the native population may not change as long as natives improve their locations to a similar or even greater degree. Immigrants may also, on average, fare worse concerning their location outcomes, because of structural inequalities in access to resources. Spatial assimilation, i.e. reaching the same quality of location as natives, is a function of the time that an immigrant has lived in a country and the degree of assimilation into the mainstream society (Bolt, Kempen and Ham 2008). Therefore, it can be expected that first generation immigrants differ stronger from natives than second generation immigrants.

**H 4.4.** *a) Individuals in immigrant households improve the quality of their locations less than natives through relocations. b) The difference to natives is stronger for individuals in first than for individuals in second generation immigrant households.*

### ***2.3.5 Gendered Norms of Behaviour***

Individuals in dual-earner couples are constrained in their residential relocations, as their life courses are linked and both careers have to be considered in the decision whether and where to relocate (for linked lives cf. Elder 1998). Since job opportunities are dispersed in geographical space and job offers emerge at relatively random times, it is unlikely that both partners will receive equally good job offers at a new location at the same time (Mincer 1978). Therefore, long-distance relocations can

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<sup>21</sup> I make this assumption, because my data does not allow to measure locational preferences.

be expected to have divergent effects on labour market outcomes of both partners. Long-distance relocations can be assumed to have a stronger effect on labour market outcomes than short-distance relocations, on the grounds that after long-distance relocations the distance to the old place of work will increase substantially in most cases and as individuals usually prefer to limit their commuting they are more likely to change their jobs after long-distance relocations (Mincer 1978; Smits 1999).

Gender is an institution which structures social life (Lorber 1994: 6). Individuals are categorised as women or men and faced with societal norms about gender-appropriate behaviour and (re-) produce their gender identities in daily interactions with others. Thus, individuals do their gender in a constant process and gender is not a static feature of individuals (West and Zimmerman 1987; Gildemeister 2008). Traditional gender norms of male breadwinners and female family caretakers are still highly relevant in modern societies. According to these norms, women are more engaged in family work than in paid work on the labour market and even in childless couples men's careers are mostly prioritised (Hochschild 1989; Bussemaker and Kersbergen 1999). In their everyday behaviour, women and men are affected by these norms. Even couples in which partners have non-traditional gender role attitudes live in a gendered social structure and a social environment that mostly follows these gender norms. Thus, even the behaviour of partners with non-traditional gender role attitudes is constrained, e.g. due to better average labour market conditions for men (Risman 2004). Following this perspective, decisions to relocate are not rationally maximising the economic returns for the couple as predicted by the rational choice approach, in which the partner with more human capital is assumed to dominate the relocation decision (cf. Section 2.1.3). Relocation decisions are also not the result of explicit bargaining between partners as predicted by the bargaining models, which assume that partners with more relative power will assert their interests (cf. Section 2.1.3). Instead, the priority of men's careers in relocation decisions is subtle and based on implicit gender norms (Bielby and Bielby 1992; Cooke 2008b; Abraham, Auspurg and Hinz 2010). Women's potential losses after relocations are considered to be less important than men's gains and his career will often be prioritised in the decision to relocate.

Following this argument, 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 relocations of dual-earner couples benefit men's careers more than women's careers. In addition, I expect women to be tied movers on average. That is to say that their individual careers are adversely affected by the relocation compared to staying put. I derive the following hypotheses.

**H 5.1.** *Partnered women that relocate are negatively affected in their careers compared to women staying put.*

**H 5.2.** *In couples, men will profit more from long-distance relocations than women with regard to their careers — even controlling for both partners' human capital and past work history.*

Gender as a social institution varies between countries and as a result conditions for female labour participation diverge (cf. Section 4.1.4 for a detailed description of these conditions). Thus, one can expect the effect of long-distance relocations on women's careers to vary by country. Tax, welfare and family policies do not hinder women's continuous labour force participation in England. Nonetheless, women are mainly supplementary contributors to the family income and the labour division in the household is more traditional than for example in the Scandinavian countries (Kilkey and Bradshaw 1999: 149; Sainsbury 1999: 250; Crompton and Lyonette 2006; Cooke 2011: 31ff). In Germany, tax policies, extensive family policies and welfare policies that focus on single breadwinners in the family hinder women's continuous employment. Women are pushed into the role of family caretakers and the division of labour in German families follows the male-breadwinner model on average (Bussemaker and Kersbergen 1999: 18; Sainsbury 1999: 247; Blossfeld and Drobníč 2001: 40; Apps and Rees 2005). Societal norms about gender roles differ between England and Germany, but also within Germany. Treas and Widmer (2000: 1421) categorise East Germany as having "work oriented" gender norms, where attitudes are more favourable for working mothers than in other countries. West Germany and England belong to the cluster of countries with "family accommodating" (ibid.: 1422) 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.

The two countries are also highly divergent cases in respect to their labour markets (cf. Section 4.1.2). Germany is a coordinated market economy, while England is a liberal market economy (Hall and Soskice 2001: 8ff). As a result, one can observe higher job mobility in England compared to Germany. Due to the higher overall job mobility and better opportunities for taking up new jobs, relocations may be less disruptive for careers in England than in Germany. As a result of the slightly higher labour market involvement of women in England, more egalitarian gender role norms and the slightly less gendered family policy, I expect long-distance relocations in England to affect women's careers less adversely than in Germany. I also expect West German women to be stronger adversely affected by relocations than East German women, because of the differences in gender norms between East and West Germany. These expectations lead to the following hypothesis:

**H 5.3.** *Gender inequality in effects of long-distance relocations on careers will be weakest in England, modest in East Germany, and strongest in West Germany on average.*

## 2.4 Summary

The presented combined theoretical framework extends previous theoretical approaches by treating relocations as ambiguous and contingent life course events. The occurrence of relocations has been thoroughly theorised in the past, but the variation in relocation outcomes has been mostly neglected. My theoretical framework explicitly aims at explaining this variation. It mainly draws from the life course perspective to explain the occurrence and outcomes of relocations, but also incorporates elements from the institutional approach, the rational choice approach and the behavioural approach. I follow the life course approach in the assumption that individuals actively navigate through their life courses to reach certain goals. I also use the concept of an embedded and self-referential life course that consists of several interdependent trajectories and which is linked to other life courses. Life courses are embedded in institutional contexts at the regional and national level that shape the occurrence and the outcomes of relocations as described in the institutional approach. Following the behavioural approach, it is assumed that individuals have preferences regarding their locations and that they want to alleviate stress that results from incongruity of their preferences and actual location by relocating. It is assumed that individuals make intentional decisions about their relocations by weighing costs and benefits of a relocation, but individuals only have limited information for their choices and restricted resources to relocate as shown in the rational choice approach.

Regarding the occurrence of relocations, it is assumed that individuals consider a voluntary residential relocation, as their present locations do not meet their preferences any longer. Mostly, this happens after individuals have experienced transitions in their family and job trajectories. Individuals can decide to relocate to another location, adjust their present location or adjust their preferences. Individuals strategically calculate the pros and cons of this decision in the limits of the available information and their intellectual capacities. The decision is further shaped by individuals' habitus, resources, and restrictions as well as opportunities and constraints at the contextual level. The decision is embedded in the flow of time over the life course. Individuals in multi-person households must coordinate their relocation behaviour in some way, or split.

Relocations may impact individuals' life chances very differently depending on the conditions of these relocations. Five sets of conditions are identified that may affect this variation in outcomes. To recapitulate, these sets of conditions are:

1. Individual life course conditions: The residential trajectory is instrumental and depends on transitions in other life course trajectories, e.g. the family trajectory. These instrumental relocations will be shaped by triggering transitions. Especially important are turning points, such as union dissolution, which may have adverse effects on relocation outcomes. Further, life courses of individuals are linked to other individuals and these interdependencies may affect variation in relocation outcomes.

2. Economic resources: Housing is a good traded in a market and, therefore, outcomes will be strongly determined by the price that individuals can pay in this market. Individuals may use their current incomes or take on mortgages to relocate to better locations. Depending on which housing tenure they relocate into, the quality of location will differ with home ownership offering the best locations.
3. Structural conditions in the housing market: Some individuals are discriminated against in the housing market, e.g. because of their ethnicity. Furthermore, the outcomes of relocations are shaped by the quantity and quality of the supply in the housing market as well as the demand.
4. Situational conditions of decision making: The information about potential locations are limited and the processing of this information may be impeded by individuals' capacities.
5. Gendered roles in couples: Due to traditional gender norms, men's careers are likely to be prioritised if couples consider long-distance relocations. Therefore, men are likely to benefit more from long-distance relocations than women. Women may also be adversely affected by long distance relocations in their careers compared to stayers.



# Chapter 3

## Review of Past Literature

In this chapter, past literature on determinants and outcomes of residential relocations in the areas of housing, neighbourhood and labour market are reviewed. By providing an overview of past research, the theoretical argumentation and empirical analysis is contextualised. The literature review also helps to identify specific short-comings in past research that are tackled in the present analysis.

First, I present research on the determinants of residential relocations (Section 3.1). The literature on the causes of residential relocations is abundant and at this point only main findings are reported and recent innovations highlighted. In Section 3.2, literature on residential relocations and changes in room stress is reviewed. Section 3.3 is concerned with the effect of relocations on neighbourhood quality and Section 3.4 deals with literature on labour market outcomes of long-distance relocations for dual-earner couples. In the latter three sections, I briefly discuss the relevance of these outcome areas and then review the literature on the determinants of variation in relocation outcomes in each respective area. Regarding the literature on neighbourhood quality changes, I also briefly review findings on neighbourhood effects and issues in the measurement of neighbourhood quality (Section 3.3.2 and Section 3.3.3).

### 3.1 Determinants of residential relocations

Derived from my theoretical reflections, individuals are expected to consider a voluntary residential relocation, if their present locations do not meet their preferences any longer (cf. Section 2.2). Mostly, preferences and present locations are not congruent, if major transitions in the family and job trajectories occurred. Past research shows that transitions in the family and job trajectories increase the probability of

residential relocations (e.g. Mulder 1993: 95ff; Myers 1999; Li 2004).<sup>1,2</sup> Regarding the family trajectory, the probability of relocation increases strongly after the first conception, but falls again before the birth and is back to normal shortly after the birth. Thus, individuals relocate anticipating events in their family trajectory. Subsequent fertility events do not affect the probability to relocate to the same degree (Kulu 2008; Michielin and Mulder 2008). Changes in partner status are important triggers for relocations (e.g. Clark and Huang 2004; Aarland and Nordvik 2009). Union formation and especially marriage is often followed by a relocation (Wagner 1989: 143ff; Mulder 1993: 183), or a relocation is undertaken in anticipation of such an event (Feijten and Mulder 2002). Union dissolutions trigger relocations of at least one of the partners in almost all cases.<sup>3</sup>

It is shown that changes in job status may cause relocations (Böheim and Taylor 2002; Clark and Huang 2004). Triggers from the job trajectory are more likely to cause relocations in early stages of the career (Wagner 1989: 188). Vlist et al. (2002) find job changes to be less important than family changes to explain residential relocations. While the unemployed tend to be more mobile than the employed (Parkes and Kearns 2003; Kulu and Billari 2006), longer unemployment spells reduce chances of relocations (Böheim and Taylor 2002; Windzio 2004). Recent research highlights the endogeneity of the residential trajectory and other life course domains such as the job trajectory, i.e. both may be subject to linked decisions of individuals (Mok 2005). Similarly, Böheim and Taylor (2002) show that unobserved heterogeneity that affects residential relocations is correlated with unobserved heterogeneity that affects job changes.

Age is found to be an important explanatory factor in almost every empirical analysis of residential relocations and across diverse national contexts (e.g. Kearns and Parkes 2003; Clark and Huang 2004; Kulu and Billari 2006). However, it can be argued that age itself does not have a causal effect on the likelihood of relocations, but instead age is a proxy for life course stages and life course transitions (Morrow-Jones and Wenning 2005). Young adults from the beginning of their twenties to the middle of their thirties are found to be the most mobile age group, because of frequent transitions in their family and job trajectories. With growing age after this phase, the probability for relocations decreases due to cumulative inertia (cf. Section 2.1.3). When reaching retirement age, the probability increases again (Gobillon and

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<sup>1</sup> The education trajectory is understood as a part of the job trajectory here.

<sup>2</sup> It has been argued that transitions in the family trajectory mainly trigger short-distance relocations, while transitions in the job trajectory causes long-distance relocations. However, this differentiation seems to be too rigid, because, e.g., a considerable share of long-distance relocations are motivated by family reasons (Boyle, Feng and Gayle 2009: 111).

<sup>3</sup> See Section 5 regarding the endogeneity of residential relocations and union formation and dissolution.

Wolff 2011). Furthermore, age functions as a proxy for health and local capital as well as cohort effects.<sup>4</sup>

Life course research highlights the importance of biographical dependencies and it can be expected that present transitions in the residential trajectory are shaped by past developments. The time in residence is found to reduce the probability of residential relocation significantly (Wagner 1989: 158; Frick 1996: 183). This supports the cumulative inertia axiom (see section 2.1.3). Similar to age however, the variable time in residence is a proxy for local ties that cannot be transferred to new locations and may not have a causal effect on relocations. The probability for further residential relocations increases with the number of past relocations (Kulu 2002: e.g. Clark and Huang 2004).

In general, being in a partnership reduces the risk of relocations (Kearns and Parkes 2003; Clark and Huang 2003; Michielin and Mulder 2008). Böheim and Taylor (2002) show that especially being in a partnership with an employed partner reduces the probability of relocation in the UK. The negative effect of being in dual-earner couples is also found for Germany (Jürges 1998). Findings on the number of children are ambiguous. In Germany, the overall number of children aged 16 or younger does not have a significant influence on residential relocations (Clark, Deurloo and Dieleman 2000), but the presence of children younger than three years has a positive effect (Frick 1996: 178). It is also found that the presence of older children that can be anticipated to move out of the parental nest soon reduces the likelihood of parents to relocate (Deurloo, Dieleman and Clark 1997). In the UK, the risk of residential relocations is increased if the youngest child in the family is younger than 16 years old (Böheim and Taylor 2002). More generally, the probability of residential relocation decreases with household size, because this increases the costs of relocations (Kearns and Parkes 2003).

The effects of individual resources on the probability of residential relocations are described now. Significant increases or decreases in income raise the probability of relocations (Frick 1996: 184). The overall level of income does not have a consistent effect on the probability of residential relocation (Wagner 1989: 120). Vlist et al. (2002) find a negative effect for tenants and a positive effect for owners, while other studies do not find a significant effect of income at all (Kearns and Parkes 2003; Clark and Huang 2003). For Germany, Frick (1996: 184) finds a positive and significant effect of income on the probability of residential relocation over short distances (see also Clark and Drever 2000). This is also supported by Böheim and Taylor (2002) for the UK.

Concerning education, higher qualification is found to influence the probability of residential relocations positively (Li 2004; Kulu and Billari 2006). This is

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<sup>4</sup> Morrow-Jones and Wenning (2005) raise the issue that age can be a proxy for very different background variables, which may have contrary effects on relocations. However, comparing different models with age as a proxy or certain life course variables, only small differences in model fit were found.

probably due to disperse job locations for highly-qualified jobs, the concentration of qualified jobs in metropolitan agglomerations and past experience with relocations that were motivated by attending higher education. Manual workers are found to be less mobile than other occupational groups in the UK (Böheim and Taylor 2002). However, for Germany, Wagner (1989: 194) shows that workers without any qualification are more likely to relocate over short distances than other occupational groups.

I now turn to the effect of locational characteristics on residential relocations. Locational characteristics may be indicators of the potential (mis-) match of preferences and actual locations, e.g. with regard to room stress. Certain locational characteristics such as home ownership may also reflect localised forms of capital that impede mobility. Indeed, owners are found to be much less mobile than tenants across various countries (e.g. Frick 1996: 182; Li 2004; Clark and Huang 2004). Owners with mortgages are especially immobile (Böheim and Taylor 2002). Social housing has been found to reduce the probability of relocations for the unemployed in the UK (Battu, Ma and Phimister 2008). Kearns and Parkes (2003) find social tenants in general to be more mobile than owners, but less mobile than private tenants. Also, social tenants are less mobile than private tenants and owners in Germany (Frick 1996: 24).

The literature shows that the size of the dwelling is the single most important reason for relocating stated by movers (Michelson 1979: 114; Parkes and Kearns 2003). Individuals that experience room stress are much more likely to relocate than individuals without room stress (Clark and Huang 2004; Aarland and Nordvik 2009).<sup>5</sup> Room stress does not only depend on the sheer floor space of a dwelling, but more importantly on the layout and the number of separate rooms that are available to the household. Not only objective room stress, but also subjective room stress, i.e. a subjectively perceived lack of housing space, increases the probability for residential relocations (Frick 1996: 180f). Clark and Huang (2003) show that not only negative room stress, but also positive room stress triggers relocations.

Rabe and Taylor (2010) show that objectively deprived neighbourhoods increase the probability to relocate for couples, but not for singles in the UK. However, these neighbourhood characteristics explain only a small share of actual relocations. Clark and Huang (2003) find no significant effect of the perceived quality of the neighbourhood on relocations in general, but Clark and Huang (2004) find a negative effect for long-distance relocations. Kearns and Parkes (2003) find subjective satisfaction with the neighbourhood to affect the intention to relocate, but not the actualisation. Some households may prefer living in objectively worse neighbourhoods for subjective reasons (Bolt and Kempen 2010). Thus, neighbourhood quality seem to be a weak predictor of relocations.

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<sup>5</sup> The ratio of the actual housing space relative to the need in housing space is termed room stress. See Section 4.5.1.2 for a more detailed definition.

In general, the share of ethnic minorities in the neighbourhood is found to increase the probability of residential relocations from the neighbourhood for natives (Ham and Feijten 2008; Schaake, Burgers and Mulder 2010). This has been labelled ‘white flight’ in the US literature as the white population relocates away from ethnically concentrated areas. While research finds evidence for ‘white flight’, the effect is modest and depends on the ethnic heterogeneity and changes in ethnic composition in the neighbourhood as well as individual characteristics (Crowder 2000). These findings support the theoretical expectations that the neighbourhood quality affects relocations through the ‘fit’ between locations and individuals’ preferences. The inconsistencies in findings may result from the difficulties to measure households’ preferences regarding neighbourhood qualities and difficulties to measure neighbourhood quality itself.

Life courses are embedded in particular spaces and historic times and this may affect residential relocations. Past research shows that period effects shape residential relocations, i.e. historic events such as war, natural catastrophes and economic recessions affect relocation behaviour distinctively (Wagner 1989: 190). Furthermore, the time-specific conditions in the housing and labour markets influence the occurrence of residential relocations. Considering housing market indicators in Germany, Frick (1996: 188) finds a significant and negative effect for construction costs and a negative but non-significant effect for the tightness in the local housing market on the probability to relocate. For the UK, Böheim and Taylor (2002) find that higher regional housing prices and more vacant dwellings increase the probability for relocations. At the same time, high average housing prices at potential destinations deter mobility of owners (Rabe and Taylor 2012). The overall situation in the labour market also affects residential relocations. For the unemployed in Germany, the regional unemployment rate is negatively related to the probability of residential relocation (Windzio 2004). In the UK, the regional unemployment rate only has little impact on the probability to relocate (Böheim and Taylor 2002). Rabe and Taylor (2012) find that the employed are more likely to relocate to regional labour markets that offer more job stability, while the unemployed are more likely to relocate to regional labour markets that offer higher wages.

The effect of institutional contexts on residential relocations is also shown by findings on cross-national differences in relocation behaviour (Dieleman 2001). The UK has a more mobile population than Germany. According to the special Eurobarometer 64.1 survey in 2005, 65 per cent of Germans aged 15 and older moved at least twice in their lives until the interview. About 18 per cent relocated even more than four times. In the UK, about 71 per cent of those aged 15 and older moved at least twice and about 30 per cent more than four times in their lives. In Sweden 81.7 per cent of the population aged 15 or over moved at least twice, while 53.5 per cent moved five times or more, which is the highest share for the EU-25 countries. On the other extreme one can find Italy. Here, 32.3 per cent of the population aged 15 or over moved at least twice. Only 5.8 per cent moved at least four times (Bonin et al. 2008: 36, Table 5). The characteristics of relocations are also found to differ.

In Germany, a higher share of the population experiences local relocations than in the UK, i.e. relocations within the same town or region, while a lower share of the population experienced long distance relocations in Germany than in the UK, i.e. relocations across regional borders (Bonin et al. 2008: 36, Table 5).

### 3.2 Changes in Room Stress After Residential Relocations

The dwelling provides a shelter for its inhabitants and arguably “of all the necessities of life, shelter is among the most basic of our needs” (Cairney and Boyle 2004: 162). But housing is much more than just a roof. One’s dwelling provides vital resources for safety, recreation, reproduction and self-expression. Often, the home is subjectively perceived as a safe haven within an otherwise hostile world. This is not the least reflected in the proverbial ‘My home is my castle’. The dwelling also caters for the individual need of privacy. Individuals use their dwellings to create an environment not under observation by others. To create this environment, individuals spend significant amounts of time in furnishing and designing their dwellings to adapt them to their needs and preferences.

A wide range of indicators can be used to characterise dwellings: number of rooms and room stress, layout of rooms, overall floorspace, equipment of dwelling, condition of built structure, degree of privacy, tenure and type of building (Townsend 1979: 476; Herlyn and Herlyn 1983: 31; Howden-Chapman 2004). Research shows that some characteristics are more favourable than others. In this section, the importance of room stress is highlighted (Section 3.2.1) and the empirical findings on changes in these characteristics after residential relocations are reported (Section 3.2.2).

What is assumed to be ‘good’ housing is subject to social and historical changes (Townsend 1979: 476). Recent decades have seen a rapid improvement in the average housing quality in most developed countries. For example, the average floorspace per person increased in Germany from about 36 m<sup>2</sup> in 1995 to 41 m<sup>2</sup> in 2008.<sup>6</sup> As a result of increasing affluence, “housing consumption has improved and crowding has been alleviated over time because of shrinking household size, overall expansion in the housing stock, and the ‘trading up’ process” (Huang 2003: 592). Thus, understanding individuals’ housing situations necessitates comparison to period-specific standards.

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<sup>6</sup> Own calculation based on Statistisches Bundesamt (2011). Average floor space per person is calculated as housing space of all residential buildings divided by population. 1995 is the earliest date for which data on floor space is available.

### 3.2.1 *Relevance*

The high importance of a dwelling for the life of its residents can hardly be disputed. The effects of substandard housing conditions — especially high room stress — and their impact on health have already been described by Friedrich Engels at the end of the 19<sup>th</sup> century (Engels 1970 [1872]). The importance of adequate housing becomes especially apparent, if the effects of being homeless are analysed. Rough sleeping can cause devastating health outcomes, because “shelter, warmth and privacy [...] do not exist; good food may be hard to find [...]; it is almost impossible to keep clean; minor illnesses are hard to cure” (Ineichen 1993: 82). Apart from these extreme situations, other housing quality disparities have been linked to a wide range of outcomes. In Engel’s time, “acute, infectious disease, which could be transmitted by casual contact [were the main concern and] [...] it was clear that housing and sanitary conditions were instrumental in the differential distribution of health status by social status” (Dunn 2000: 360). Today the link between housing and health is more complex, because chronic illnesses are a main concern in current debates and their relationship to housing is harder to establish, as various intervening factors may play a role (Pevalin, Taylor and Todd 2008).

Since Engel’s early comment, high room stress or crowding has been a recurrent topic in the literature on housing quality. Room stress occurs if a household’s need of space is not met by the available space in the dwelling. Important is the number of separated rooms, rather than the overall floorspace of dwellings (Gove and Hughes 1983: 222). In the past, high room stress has been mainly linked to physical health problems, e.g. caused by infections. Today, problems with mental wellbeing following from high room stress are highlighted (Ineichen 1993: 45). Several activities like sleeping, cooking, eating, and relaxing need space and privacy. If this space or privacy is not available, the activities are impeded (Herlyn and Herlyn 1983: 45). The effect of room stress on wellbeing probably works through the degree of personal control that individuals have and their ability for restoration in the dwelling (Gove and Hughes 1983: 222). Room stress affects these processes negatively and causes psychological stress (Dunn 2000; Evans 2003). In an extensive study, Gove and Hughes (1983: 223) reports a number of problems resulting from high room stress for wellbeing through excess demands and lack of privacy:<sup>7</sup>

“The effects of crowding were very strongly related to a number of direct responses to crowding, ranging from physical withdrawal from the home to psychological withdrawal in the home [...], to a lack of planning, and to feeling physically and psychologically drained. Crowding was also found to be strongly related to poor mental health, to having poor social relationships in the home, to a number of aspects of poor child care, to an inability to adopt the sick role, and to being dissatisfied with one’s home. Crowding had some effects on reducing the frequency of sexual intercourse, was related to some extent to the ineffective

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<sup>7</sup> These findings remained after controlling for sex, ethnicity, marital status, education, family income and age.

use of birth control, and was probably related to having a miscarriage or abortion. Crowding was also related to poor social relationships outside the household, but here the relationship was modest.”

Stress resulting from crowding or high room stress can also result in physical health problems: “Stress can undermine the immune system and increase susceptibility to a very wide range of health problems” (Easterlow, Smith and Mallinson 2000: 369). The consequences of room stress are especially severe for children (Coggon et al. 1993; Marsh et al. 2000; Conley 2001). Reported problems for children include delays in the locomotory development, lower school attainment, increased intensity of child-parent conflicts and increase in passive behaviour. High room stress in the past has a negative effect on future health outcomes (Marsh et al. 2000). However, it is difficult to disentangle the effect of room stress from other social background variables, e.g. social status, and room stress may work as a facilitator of other problems children have (Herlyn and Herlyn 1983: 65).

### ***3.2.2 Review of Empirical Research***

For the majority of relocations in modern societies, the housing quality after relocations is at least as good as before. Households are likely to relocate to dwellings that are better suited for their needs (Clark, Deurloo and Dieleman 2000). However, the degree of improvement may vary. Some face deteriorating relocations. For example, in the US, about 10 per cent of the population did not participate in the general increase of housing consumption over the last decades and about one in four housing careers show a downward trajectory with regard to housing quality (Clark, Deurloo and Dieleman 2003). Only about one in four movers reports a reduction in room stress in the UK, while the other movers do not change or increase their room stress on average (Pevalin, Taylor and Todd 2008).

Home ownership is associated with better housing quality on average (cf. Section 2.3.2), and research shows that home ownership and room stress are especially closely linked (e.g. Clark and Drever 2000). The following reviews literature on room stress, albeit scant, in order to bring relationships into focus. Findings regarding relocation to ownership are also reported due to the close association between both qualities.

Life course stages and family events are important determinants of relocations into home ownership (Clark, Deurloo and Dieleman 1997; Mulder and Wagner 1998). In general, cohabitators are less likely to live in ownership than married couples, but more likely than singles. Smaller, unmarried households with less children are more likely to experience deteriorating relocations within the owner tenure (Morrow-Jones and Wenning 2005). Married couples and families with children are more likely to relocate into home ownership, because they are more likely to



be committed to stay together and make a long-time investment (Michelson 1979: 138ff; Deurloo, Clark and Dieleman 1994; Dieleman and Everaers 1994). The postponement of childbirth increases the resources that can be accumulated for the housing career and couples that have children later in life are more likely to end up in home ownership (Mulder 2003). Widows and divorcees are more likely to relocate to worse housing (Dieleman, Clark and Deurloo 1995; Morrow-Jones and Wenning 2005). Union dissolutions have a long lasting negative effect on ownership (Feijten and Mulder 2005; Helderma and Mulder 2007). Older home owners are more likely to relocate to worse tenures, if they relocate at all (Morrow-Jones and Wenning 2005).

Other researchers have operationalised life course stages using age groups. While on average relocations improve the housing quality in the UK, this is not the case for those above 49 years old and singles (Clark and Huang 2003). This may indicate that families and especially growing families improve their housing qualities on average, while singles and households in the post-family phases are less likely to improve their locations. One of the reasons for deteriorating housing quality in late-life may be that households reduce their use of abundant housing space after children have left the household. There is evidence for this reduction in the US and France (Clark, Deurloo and Dieleman 2006; Gobillon and Wolff 2011).

Regarding life course events in the job trajectory, current or recent unemployment affects ownership negatively. In the UK, unemployment reduces the chances to enter or to be in ownership (Di Salvo and Ermisch 1997; Ermisch and Halpin 2004). For the US, no effect of unemployment on crowding is found in Latino households (Memken and Canabal 1994). Receiving income assistance is associated with higher room stress in the US (Cook and Bruin 1994). Thus, it seems that while employment status has a substantial effect on ownership, its impact on crowding controlled for income changes is small. The number of earners in the family is found to be important in explaining home ownership. Dual-earner couples are more likely to enter home ownership and are less likely to drop out of this tenure (Deurloo, Clark and Dieleman 1994; Dieleman, Clark and Deurloo 1995).

The transition to more spacious dwellings is highly dependent on economic resources (Michelson 1979: 135; Clark, Deurloo and Dieleman 1997, 2000; Buck 2000a). In the US, low income households are more likely to relocate to worse dwellings in terms of housing prices (Morrow-Jones and Wenning 2005). Also in the US, low-income households have not benefited to the same extent from the overall increase in housing consumption like higher-income households. While the share of low-income households in room stress is not high, it remained constant over the period 1968-1992 whereas it decreased for the other income groups (Clark, Deurloo and Dieleman 2000: 61). Measuring housing quality as a combination of tenure and number of rooms in the Netherlands, Feijten and Mulder (2005) find an increase in quality with higher incomes. Changes in income are also found to be significant predictors of relocations to home ownership (Deurloo, Clark and Dieleman 1994). Decreases in income make deteriorating relocations more likely (Clark, Deurloo

and Dieleman 2003). People coming from families with high social status are more likely to end up in home ownership (Di Salvo and Ermisch 1997). Intergenerational wealth accumulation is very important for this transition (Mulder and Wagner 1998).

In the US, households with lower educated members are more likely to move to worse dwellings in terms of housing prices (Morrow-Jones and Wenning 2005). The effect of education is not straightforward, however. People in higher education are more likely to live in worse housing at the beginning of their residential career when they are still at university. Then over time their investments in education lead to higher incomes and improvements in their housing quality, and the effect is stronger than for people that did not attend higher education (Mulder 2003; Feijten and Mulder 2005). The findings are in accordance with theoretical expectations. As shown in the previous paragraphs, economic resources and education as a proxy for resources in addition to certain preferences are associated with better housing.

If information about potential locations is scarce, relocations may have less positive outcomes. This may be due to high information costs or due to limited search times. Information costs increase with the distance of relocations and it may be expected that long-distance relocations have less positive outcomes than short-distance relocations with regard to housing quality. For the UK, there is no evidence for short-distance adjustment relocations to improve housing quality after long-distance relocations (Clark and Huang 2004). This may be due to the fact that information costs do not increase prohibitively high with relocation distance. Limited search times may result from involuntary relocations after which a new place of residence must be found quickly. For the Netherlands, involuntary movers that had to relocate because of renovations of their old dwellings reported that time stress caused them to relocate to worse than their desired locations (Kleinhans 2003).

The theoretical framework assumes that immigrants are constrained in their relocation behaviour due to discrimination in the housing market. This is found to be true for Germany on average. In a qualitative study in Germany, all participating Turkish households experienced discrimination in their location searches and were restricted in their choices (Horr 2008). While members of ethnic minorities tend to improve their housing situation through residential relocations, they do not achieve the same quality level as the native population (Clark and Drever 2001). This relocation disadvantage exists when economic statuses are otherwise equal between natives and immigrants (Drever and Clark 2002). For the UK, Daley (1998) finds immigrants to be less likely to relocate to ownership. Discrimination in the UK, both expected and experienced, leads Pakistani away from certain areas with better housing qualities (Bowes, Dar and Sim 2002).

Housing market conditions, national institutional contexts and period effects shape transitions to home ownership (Dieleman and Everaers 1994; Deurloo, Clark and Dieleman 1994; Mulder and Wagner 1998). In the Netherlands, relocations increase housing quality more in local housing markets with greater availability of owned dwellings and in rural areas when compared with urban areas (Feijten and Mulder 2005). For the UK, higher regional unemployment and housing prices affect

the first time entry into home ownership and social housing negatively, “primarily by slowing departure from the parental home” (Di Salvo and Ermisch 1997: 16). In housing markets in the US with high population inflows, e.g. urban agglomerations, income is more important as a means to exchange crowded dwellings for more spacious dwellings than in less tight housing markets (Clark, Deurloo and Dieleman 2000). Also in the US, relocations to suburban neighbourhoods are more likely to result in housing improvement (Morrow-Jones and Wenning 2005). In Germany, the particularities of the housing market, i.e. a large rental sector, high prices for homes and high down-payments in purchasing property, causes the transition to home ownership to take place later in life and be less directly linked to trigger events such as childbirth (Deurloo, Dieleman and Clark 1997).<sup>8</sup>

A general lack of longitudinal and cross-national research with regard to changes in room stress is apparent from the literature review. Ultimately, we know little about changes in individuals’ life courses that determine changes in room stress. Instead, previous literature mostly uses cross-sectional methods that do not allow differentiation between intra- and inter-individual variation in room stress both over time and across socio-economic strata. This may be especially problematic, if individuals have unobserved, time-constant preferences regarding room stress that are associated with observed variables. We also know little about potential cross-national differences in the average level of room stress and changes in room stress over time. It may be expected that conditions in national housing markets affect these variables. More importantly, past research provides little insights in the effect of relocations on room stress. General determinants of room stress are analysed in past research, but it is unclear how relocations directly affect changes in room stress. This is a striking gap in the literature, because relocations are the most important life course events affecting room stress besides family events.

### **3.3 Neighbourhood Effects and Changes in Neighbourhood Quality After Relocations**

The neighbourhood provides the direct spatial environment for a household. It is a cluster of residents (social environment), buildings (built dimension) and natural conditions (environmental condition). Local neighbourhoods are complex social entities that can provide important resources and opportunities for their residents. Ideally, neighbourhoods are places of social interaction with neighbours, provide essential goods and services, as well as safe and healthy environments. Neighbourhoods are stratified by the amount of opportunities and resources that they offer and this may affect their residents’ life chances (Section 3.3.1). These neighbourhood effects are defined as “the net change in the contribution to life-chances made by

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<sup>8</sup> See also Section 4.1.1.

living in one area rather than another” (Atkinson and Kintrea 2001: 2278). Still the evidence for causal effects of neighbourhoods on residents is weak. Findings regarding neighbourhood effects also depend on the characteristic of the neighbourhood that is analysed (Section 3.3.2) and the chosen spatial delimitation of neighbourhoods (Section 3.3.3). However, if one assumes that place matters and being able to live in better neighbourhoods can improve individuals’ life chances, then it is also of high sociological interest to show whether people can relocate to better neighbourhoods. Past research indicates that this path may not be open to all (Section 3.3.4).

### ***3.3.1 Relevance***

In this section, I review the literature on neighbourhood effects to show the relevance of changes in neighbourhood quality on individuals’ lives. In Section 3.3.1.1, I describe the mechanisms through which neighbourhoods may affect individuals. In Section 3.3.1.2, I review the evidence for neighbourhood effects.

#### **3.3.1.1 Mechanisms of Neighbourhood Effects**

Atkinson and Kintrea (*ibid.*) distinguish compositional and contextual neighbourhood effects. Compositional effects result from a concentration of specific sub-populations in a neighbourhood which induces a lack of local cultural and social resources. This is what has been described by Wilson (1987) and social disorganisation theory (Shaw and McKay 1969; Sampson and Groves 1989) where the emphasis is on “norms and collective efficacy” (Sampson, Morenoff and Gannon-Rowley 2002: 457) that characterise ‘good’ neighbourhoods. The concentration of deprived individuals in neighbourhoods may lead to stigmatisation of areas, adaptation of deviant behaviours by inhabitants, limited social networks and stresses on local services. Especially the concentration of economically deprived individuals is reported in the literature as causing these problems (e.g. Friedrichs and Blasius 2003; Galster et al. 2008; Hastings 2009). Some research also points to ethnic segregation as a potential cause for negative neighbourhood effects (e.g. Clark and Drinkwater 2002; Drever 2004; and see the US literature on ethnic assimilation, e.g. Alba and Logan 1993), but it can be argued that not the concentration of ethnic minorities itself is an issue, but the presence of ethnic minorities may rather be an indicator for other problems in the neighbourhood that feed into negative neighbourhood effects (Harris 1999).

Contextual effects result from the built environment of the neighbourhood itself and its environmental conditions (Atkinson and Kintrea 2001). The built environment may affect the inhabitants of the neighbourhood by not providing resources

that promote safety and health, e.g. due to air pollution (Voigtländer, Berger and Razum 2010). The influence of lacking services and goods can be understood as a compositional as well as contextual effect. Goods and services may be of lower quality in a neighbourhood, because inhabitants are not able to voice their needs or local businesses do not make enough profit to provide certain products, thus being the result of the composition of the population in the neighbourhood (Hastings 2009). Other aspects of services and goods, e.g. public transport, are also a matter of the built environment.

The effect of neighbourhoods on individuals is not uniform across the whole population and these mechanisms may affect individuals differently. First, they depend on the life course stage. For example, pre-school children may not be affected by stress on local schools, while this will have a stronger effect on adolescents. Adults' behaviour will be less influenced by role models in the neighbourhood than children and adolescents, but the lack of services or information will be more influential for adults than for younger residents. Some individuals will spend more time in the neighbourhood and may be more exposed to potential negative neighbourhood effects, e.g. if they do not work. Some individuals may also be more mobile, e.g. if they own a car, and do not depend on the services in the neighbourhood, because they can use services in other areas (Ellen and Turner 1997: 836).

### 3.3.1.2 Evidence for Neighbourhood Effects

Identifying genuine neighbourhood effects is a complex endeavour. Most empirical research falls short of using appropriate methodological tools to capture the complexity of individuals nested in neighbourhoods. Therefore, most research on neighbourhood effects is flawed by fundamental methodological problems, e.g. the selection into neighbourhoods, and the evidence has to be treated with extreme caution (Dietz 2002: 549ff).<sup>9</sup>

Quasi-experimental studies such as government-sponsored relocation programmes offer potential ways to tackle the methodological problems of neighbourhood effect research (ibid.: 568). One of the most famous programmes of this kind is Move To Opportunities (MTO). MTO was conducted as a housing voucher lottery in five cities in the US from 1994 to 1997 to examine neighbourhood effects. The treatment group could only use their vouchers to relocate to non-poor neighbourhoods. Research finds ambivalent results of the programme. For example, labour market outcomes were not affected by relocations to other neighbourhoods, but mental health improved significantly in the treatment group (Leventhal and Brooks-Gunn

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<sup>9</sup> Other methodological problems are, e.g., that neighbourhoods and residents influence each other at the same time and it is difficult to establish the direction of causality (problem of simultaneity). In addition, it is complicated to measure the quality of the neighbourhood and analyses may be flawed because important neighbourhood variables are not observed (omitted variable problem). See Buck (2001) for a discussion.

2003; Turney et al. 2006; Kling, Liebman and Katz 2007). Another intervention placing families in diverse neighbourhood settings is the Gautreaux programme conducted in the late 1970s in Chicago. For example, Mendenhall, Deluca and Duncan (2006) find significant effects of racial segregation and resources in neighbourhoods on participating African American women's employment status and welfare receipt using the Gautreaux data. The authors consider residential relocation to better neighbourhoods as an important approach in reducing social inequality for the African American population. However, even these quasi-experiments have methodological problems which may obscure the identification of neighbourhood effects. For example, participation in the MTO programme is voluntary and non-random selection into the treatment group may be a result (Clampet-Lundquist and Massey 2008).

Neighbourhood effects may be smaller in the European context compared to the US for several reasons. First, disparities in living conditions are less in Europe than in the US. Second, public transport in Europe is well developed in most cities facilitating mobility across neighbourhoods. Third, more developed welfare states may soften spatial inequalities (Schönwälder and Söhn 2009). Hence, research on neighbourhood effects in the European context should be considered as well. To my knowledge, there are no quasi-experimental studies in England or Germany testing for neighbourhood effects. In Germany, Helbig (2010) finds good neighbourhoods to improve educational attainment for children in Berlin, but no negative neighbourhood effects. There does not seem to be a negative neighbourhood effect of ethnic concentration on social ties of ethnic minorities in Germany (Drever 2004). In England, McCulloch (2001) finds some effect of neighbourhood deprivation on individual outcomes — satisfaction with neighbourhood, employment status, and men's health status — using multi-level models. But Bolster et al. (2007) do not find a clear effect of neighbourhood deprivation at a very small neighbourhood scale (enumeration districts) on individual income trajectories. Propper et al. (2007) find social tenants that lived in more deprived neighbourhoods in 1991 to experience lower income and worse mental health in 2001 than those social tenants that lived in less deprived neighbourhoods. However, neighbourhood deprivation does not affect change in income or mental health and the authors conclude that the identified association is most likely not causal. Buck (2001) finds some evidence for a positive association of neighbourhood deprivation with non-monetary poverty of residents, the subjective expectation of not starting a job in the next year, not starting a job, entering poverty and not leaving poverty. The study questions if these associations are causal, because of the methodological problems of identifying pure neighbourhood effects.

In summary, the findings on neighbourhood effects are inconclusive. In general, evidence for neighbourhood effects on health and subjective wellbeing seem to be stronger than for material outcomes or employment status. If neighbourhood effects are found at all, they are mostly very small and have substantially less effects on individuals than individual- or household-level characteristics. From this one cannot conclude that there are no important neighbourhood effects on individuals. It may

well be that analyses up to now could not tap the causal effects despite all efforts due to the methodological problems involved with identifying neighbourhood effects. In addition, even relatively small neighbourhood effects may add up over the life course and result in significantly different outcomes for individuals over time (ibid.). So far, there is little research on the cumulative effect of various neighbourhoods over time. Thus, neighbourhood quality seems to be modestly relevant for individuals to the best of current knowledge.

### ***3.3.2 Measures of Neighbourhood Quality***

Neighbourhoods are complex social entities that can be characterised along numerous dimensions. In past research various variables have been used to describe these dimensions (Andersson et al. 2007). Often the choice of variables is strongly limited by the availability of data at the neighbourhood level, but recent years have seen an increase in data that can be used to analyse neighbourhoods. Measures of neighbourhood quality can be differentiated in those aiming to tap compositional or contextual neighbourhood effects. With regard to compositional effects, most research uses measures of the economic composition of the population, e.g. the share of poor residents (e.g. Brännström 2004; Crowder and South 2005). Some authors argue that instead of poverty measures, indicators of affluence are better suited to describe neighbourhood quality (e.g. Browning and Cagney 2003). The second most widely used set of indicators measures the ethnic composition of the neighbourhood's residents. Either the overall share of ethnic minorities or shares of various ethnic subgroups are used (e.g. Morenoff 2003; Crowder, Hall and Tolnay 2011). Following social disorganisation theory, residential stability is used as a measure to describe neighbourhoods by measuring the average population turnover in a given year or the average time that residents lived in a given neighbourhood (e.g. Sampson and Groves 1989; Browning and Cagney 2003). Several other indicators are regularly used to analyse compositional neighbourhood effects: average education of residents, prevalent housing tenure, average employment status and average family status (Clark, Deurloo and Dieleman 2006; Andersson et al. 2007; Baum, Arthurson and Rickson 2010).

Fewer studies explicitly consider the contextual dimension of neighbourhoods by including measures of the built environment or environmental conditions. Research on environmental inequality has used measures of environmental pollution, e.g. noise (Brainard et al. 2004) or emission of toxic chemicals (Crowder and Downey 2010). More popular is the consideration of measures of building density and degree of urbanisation (e.g. Sampson and Groves 1989; Clark 2007). Services and goods in the neighbourhood can be understood as part of the contextual dimension of the neighbourhood. For example, Pinderhughes et al. (2001: 944) use the self-reported satisfaction with several services in measuring quality in the contextual dimension.

### ***3.3.3 Delimitations of Neighbourhoods***

No universal criteria for the delimitation of neighbourhoods exist. (Quasi-) official demarcations — often used for administrative purposes — coexist with subjective boundaries of inhabitants and other users of neighbourhoods. When analysing neighbourhoods, the investigator must consider the relevance of the chosen delimitation of the neighbourhood for residents' behaviour (Barrett, Oropesa and Kanan 1994). Depending on which neighbourhood dimension should be investigated, different demarcations can be utilized that vary in geographic and population size and it has been found that neighbourhood effects may vary by spatial delimitation (Hipp 2007). At the one extreme, neighbourhood delimitations that are too large may include conditions that are very heterogeneous and residents are only exposed to particular subareas or subconditions (Blasius and Friedrichs 2007). At the other extreme, neighbourhood delimitations that are too small may be meaningless for residents, because they can easily leave the neighbourhood. Also, if the neighbourhood is small, a higher variance of its characteristics over time is likely. In general, such small geographical areas will also result in more data 'noise' due to small sample size (Meen 2009).

Empirical evidence shows that smaller neighbourhood delimitations are superior to larger delimitations to identify neighbourhood effects. Hipp (2007) shows that economic status and residential stability in very small delimitations of neighbourhoods (so-called "microneighbourhoods" (ibid.: 663)) in the US, which are constituted by the 10 closest neighbours, have a stronger explanatory power for satisfaction with the neighbourhood than larger areas such as the census tract (about 4,000 residents on average, and normally used for analysis of neighbourhood effects in the US). This is consistent with findings from Farwick (2009: 231) showing that very small areas are more relevant for the analysis of individual behaviour of ethnic minorities than larger, more heterogeneous areas in Germany. Farwick analyses neighbourhoods of about 5 households.

### ***3.3.4 Review of Empirical Research***

Surprisingly little research has been conducted with regard to changes in neighbourhood quality over the life course: "A clear weakness of research on neighbourhoods is that we do not know the degree to which people move between different types of neighbourhood across the lifecourse" (McCulloch 2012: 98). Not the least, this is due to the complex data that is needed to compare pre- and post-relocation situations. Nevertheless, over the last decades research on changes in neighbour-



hood quality due to relocations has developed along four lines:<sup>10</sup> 1) neighbourhood choice literature; 2) leaving deprived neighbourhoods; 3) spatial integration of ethnic minorities; and 4) urban-rural relocations.

First, there is general research on neighbourhood choice. This strand of research aims to answer the question of what determines the choice of certain neighbourhoods for individuals. As individuals choose neighbourhood with particular qualities, insights from this strand of literature may be important to understand changes in neighbourhood quality. In addition, findings from this strand of literature put more specific findings from the other strands of literature into perspective. It has been shown that characteristics of neighbourhoods are influential in the location choice of individuals (e.g. Barrett, Oropesa and Kanan 1994; Ham and Feijten 2008). In a survey about residential choice, respondents were asked to choose one of two potential, equally priced residential locations: a very good dwelling in a less favourable neighbourhood or a less favourable dwelling in a very good neighbourhood. More than two thirds of the respondents chose the location with the better neighbourhood (Butler et al. 1969: 22; cited in Lee, Oropesa and Kanan 1994: 251).

The main finding of the neighbourhood choice literature can be summarised as ‘birds of a feather flock together’. Individuals relocate to neighbourhoods in which the residents resemble individuals’ own characteristics with regard to income, family status, ethnic status, education, and employment status (e.g. Ham and Feijten 2008; Hedman, Ham and Manley 2011). This helps to explain the sorting of neighbourhoods in terms of quality. However, the causal mechanisms behind this sorting may be twofold. First, the sorting may be driven by the preferences of individuals that want to live close to other individuals of their kind. Second, the sorting may be driven by constraints that limit the neighbourhood choice of individuals and cause individuals with similar constraints to end up in the same neighbourhoods. Both lines of argumentation have been followed in empirical research. As it is hard to disentangle these mechanisms there is little convincing evidence so far that shows the relative importance of both mechanisms. Contrary to the just described findings, there is also the theoretical approach of place stratification that assumes that all individuals have preferences to relocate to similar better neighbourhoods. This approach is further described below.

Second, research is concerned with relocations in and out of poor or deprived neighbourhoods, defined as having a share of poor or deprived individuals above a certain threshold. In general, “residents in poor areas respond to negative residential conditions in the same way as the rest of the population” (Kearns and Parkes 2003: 849). However, past research shows that not all residents in poor neighbourhoods can improve their situations to the same degree in cases of relocation. It is found that income positively affects relocations out of poor or deprived neighbourhoods (South and Crowder 1997a; Crowder and South 2005; Clark, Deurloo and Dieleman 2006).

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<sup>10</sup> I only report literature that is concerned with changes in neighbourhood quality, i.e. longitudinal research.

Individuals with more income are more likely to leave deprived neighbourhoods than individuals with less income. However, changes in individual income are not as clearly related to changes in deprivation of the neighbourhood. Sampson and Sharkey (2008) is one of the few studies that use panel methods to relate individual change to change in neighbourhood quality. The paper finds a very small positive effect of changes in income on changes in neighbourhood deprivation in Chicago, US. South and Crowder (1997a) do not find changes in income to have a significant effect on leaving poor neighbourhoods in the US.

Research finds uniformly that members of ethnic minorities are less likely than natives to leave poor neighbourhoods and improve the economic dimension of their neighbourhoods if they relocate (Crowder and South 2005; South, Crowder and Chavez 2005; Sampson and Sharkey 2008). Ethnic minorities are also more likely to relocate to poor neighbourhoods (Quillian 2003; Briggs and Keys 2009). Most of this research has been conducted for the US, where the race gap between African Americans and whites in the likelihood to leave poor neighbourhoods decreased significantly between 1970 and 1997, but remains significant even in 1997 (Crowder and South 2005). In other countries, the negative association between ethnic minorities and change in neighbourhood deprivation is also found, e.g. in France (Pan Ké Shon 2010). The findings have also been replicated with regard to environmental deprivation of a neighbourhood, i.e. high levels of environmental pollution. In the US, ethnic minorities are less likely than native majority members and individuals with higher income are more likely than individuals with lower income to leave polluted areas (Crowder and Downey 2010; research also shows environmental inequality in Germany: Raddatz and Mennis 2013).

Being in a partnership increases chances to leave poor neighbourhoods (South and Crowder 1998b). A higher number of children makes it more likely to stay in poor neighbourhoods — especially for ethnic minorities (Gramlich, Laren and Sealand 1992; Crowder and South 2005). Sampson and Sharkey (2008) find an increase in family size to have a positive effect on being in a high-income neighbourhood. Partnership status changes to cohabitation or marriage do not have significant effects. On the contrary, Crowder and South (2005) find divorce to affect the probability of relocation to affluent neighbourhoods negatively and marriage to affect chances to relocate to affluent neighbourhoods positively. Regarding other life course events, the event of birth is associated with an improvement of neighbourhood quality in England, while becoming unemployed makes it less likely to leave deprived neighbourhoods (Rabe and Taylor 2010). For the US, Sampson and Sharkey (2008) do not find changes in job status or prestige to affect average neighbourhood quality.

Regarding the housing market context, it is found that in tighter housing markets in the Southeast of England, even high-educated individuals have a harder time relocating away from deprived neighbourhoods than in looser markets in the rest of England (Bailey and Livingston 2008). In the US, individuals are less likely to leave poor neighbourhoods with higher poverty rates. This may be explained through the

geographical distance that most likely exists between areas with high poverty and areas with low poverty (Crowder and South 2005: 1739). Housing tenure and neighbourhood poverty are closely related. At the contextual level, neighbourhood quality is strongly correlated with the tenure mix in the neighbourhood and, on average, more home ownership in a neighbourhood is associated with better neighbourhood quality (Kearns and Mason 2007). Individual transitions into home ownership are often associated with an improvement in neighbourhood quality, while relocating to rental tenure increases neighbourhood deprivation on average (Sampson and Sharkey 2008; Rabe and Taylor 2010).

The third line of research deals with the neighbourhood situation of ethnic minorities. This strand is probably the most elaborate one but mainly focusses on the effect of ethnic minority status on neighbourhood outcomes. The main goals of this research is to analyse the spatial integration of minorities, i.e. whether minorities relocate to the same neighbourhoods as the majority. Researchers in this area measure neighbourhood quality based on the ethnic composition in the neighbourhood. Often, ethnic concentration in a neighbourhood is a proxy for low neighbourhood quality rather than a direct cause of low neighbourhood quality (Harris 1999). Research in this strand of literature is mainly based on four theoretical approaches:

1. The *spatial assimilation model* assumes that individuals prefer to live in neighbourhoods with residents similar to their own social statuses and life course stages. Thus, changes in preferences are caused by social mobility and family events. The model builds on early work of Rossi (1955) on the impact of the family cycle on relocations as well as on the ecological sociology of the Chicago school (Burgess 2007 [1925]). Preferences are assumed to be homogeneous for ethnic minorities and the majority. The actualisation of preferences is assumed to be primarily a matter of financial resources (Charles 2003). As differences in neighbourhood outcomes are only due to different financial resources, it is assumed that no discrimination constrains the relocations of ethnic minorities.
2. The *ethnic enclave model* was first introduced by Wilson and Portes (1980) and assumes that new immigrants settling in a city will cluster in certain neighbourhoods. After being a necessity in the beginning, this concentration soon provides amenities and support for the ethnic community such as the ethnic economy, close social ties and cultural affinity (Zhou and Logan 1991). These ethnic enclaves become attractive to other minority members who relocate into the neighbourhoods later on. To benefit from living in an ethnic enclave, ethnic minorities may accept a lower neighbourhood quality on other dimensions, e.g. the quality of the built environment (Schaake, Burgers and Mulder 2010).
3. Contrary to the assumption that individuals want to live close to others that are similar to themselves, the *place stratification model* assumes that neighbourhoods are stratified by the life chances they offer to their residents (Alba and Logan 1993). To improve their life chances, individuals prefer to relocate

to better-off areas independent of their similarities or differences to their potential neighbours. However, specific groups of the population, e.g. whites in the US, manage to constrain access to these areas for members of outgroups, e.g. African Americans, and secure the best areas for themselves. In stark contrast to the space assimilation model, the place stratification model assumes that while ethnic minorities and the majority have the same preferences, they are not equally able to meet their preferences even with the same financial resources, because of structural constraints (South and Crowder 1997a).

4. The *housing availability model* suggests that the structure of the housing market, e.g. the number of newly constructed dwellings, affects changes in neighbourhood outcomes (South and Crowder 1997a; Kearns and Parkes 2003). For example, a high supply of new high-quality dwellings might accelerate filter-down processes of dwellings (Millard-Ball 2002: 836). That is to say that households with high socio-economic status relocate to the newly constructed dwellings. Their old, now vacant dwellings can then be occupied by other households that are likely to improve their neighbourhood situations by relocating into these places.

Most of the research testing these theoretical approaches has been conducted in the US. No approach is fully supported, but rather a mix of different approaches is suggested by the evidence. Uniformly, the literature finds that members of ethnic minorities are more likely than the majority to relocate to neighbourhoods with high concentrations of minorities and are less likely to relocate to 'white' neighbourhoods (e.g. Alba and Logan 1993; South and Crowder 1998b; Magnusson and Özüekren 2002). Higher income and education makes relocations to segregated areas less likely, but ethnic minorities seem to be more likely to relocate to segregated areas even after controlling for economic status (Clark and Ledwith 2007; Bolt and Kempen 2010). The unemployed are more likely to relocate to more segregated areas than the employed. Families with children are less likely to relocate to segregated neighbourhoods (Bolt and Kempen 2010). Singles are more likely to relocate to ethnically segregated areas than couple households (Ham and Manley 2009). Older individuals are less likely to relocate to segregated areas.

Fourth, research on urban-rural relocations and suburbanisation is relevant for the present analysis as average neighbourhood quality differs strongly by degree of urbanisation or population density (Adams 1992; Ham and Feijten 2008; McCulloch 2012). Large increases in neighbourhood quality are observed for those relocating out of urban centres into rural areas (Sampson and Sharkey 2008). Leaving urban areas for less densely populated areas is more likely with older age, higher income and more education (South and Crowder 1997b; Feijten, Hooimeijer and Mulder 2008: 156). Relocating to urban areas is more likely for younger, single and well educated individuals (Courgeau 1989; Nilsson 2003; Kulu and Billari 2006). Life stages are important predictors of urban-rural relocations, because families prefer to live in less densely populated areas where they can buy cheaper, higher-quality prop-

erty with sufficient space (McCulloch 2012). Anticipation of first birth increases probability for relocations to rural areas. Especially couples with children in large cities relocate to less densely populated areas (Kulu 2008). In the US, African Americans have been found to be less likely to relocate to suburban areas than whites (South and Crowder 1997b; Sampson and Sharkey 2008). Individuals that have lived in rural areas before are more likely to relocate to rural areas again compared with those that never lived in rural areas (Feijten, Hooimeijer and Mulder 2008). Housing tenure choice affects relocations to suburban and rural settings as ownership is more prevalent in these areas (Deurloo, Clark and Dieleman 1990). But those that own a home in the city are less likely to relocate to rural areas than those not owning a home (Sampson and Sharkey 2008). Many of those who relocate from rural to urban areas will relocate back later in life. In Sweden, a study finds more than half of all individuals that relocated from rural to urban areas return within a 10-year period (Nilsson 2003).

As I stated at the beginning of this section, surprisingly little research analyses changes in neighbourhood quality for individuals. Thus, more longitudinal research is needed to replicate and extend past findings. This is especially so for general population, because a lot of research has focussed on ethnic minorities and low-income households. Neighbourhood quality changes for these two groups are well analysed — at least for the US. Patterns of neighbourhood quality changes for other groups in the population are less clear. This gap in research is especially wide in Germany, where almost no research has been conducted regarding neighbourhood quality changes. This may be due to data limitations of the past. By aiming to narrow these gaps, the present analysis makes a substantial contribution to the literature.

### **3.4 Effects of Relocations on Employment in Dual-Earner Couples**

In neoclassical economics, relocations are conceptualised as investments in human capital (cf. Section 2.1.3). Following from this human capital approach, individuals' long-distance relocations are mainly assumed to be motivated by potential increases in lifetime earnings. Mincer (1978) was among the first to point out the potential adverse effect that relocations of couples may have on one partner and that both partners may not enjoy equal returns from relocations.<sup>11</sup> Because it is unlikely that both partners find equally good jobs after a relocation, one partner may lose earnings or leave employment by relocating compared to staying put and, thus, she or he becomes a tied mover.<sup>12</sup> Some partners may profit from relocations, but the couple

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<sup>11</sup> Mincer's (1978) idea is more general and extends to all household members.

<sup>12</sup> Alternatively, the terms 'leading spouse' and 'trailing spouse' (for tied movers) are used to characterise the roles of both partners in relocation decisions in the literature.

stays put because they cannot assert their interests and these partners become tied stayers. In the literature, it is assumed that gender constitutes one of the most important determinants of the relative difference in economic returns from relocations in couples with women disproportionately losing in the event of a relocation.

Starting with the work of Mincer (1978), a comprehensive literature on the gender differences in economic returns and employment effects of relocations for couples has emerged. Two, broad strands of literature can be differentiated. The first deals with the analysis of relocation decisions in couples. A central research interest is whether potential gains or losses from relocations of men affect couples' decisions to relocate more than potential gains or losses of women. Potential gains or losses are mainly operationalised using human capital and employment status proxies, e.g. analyses test whether couples with highly-educated men are more likely to relocate than couples with highly-educated women. Recent work predicts returns from relocations to model relocation decisions instead of using proxies for returns (e.g. Rabe 2011). The advantage of this strand of literature is that potentially tied stayers can be identified, i.e. individuals that may profit from a relocation but do not relocate. A clear disadvantage of this literature is that the actual returns of relocations are not tested. Even if couples are equally likely to relocate in response to women's and men's characteristics, this does not mean that the actual returns after relocation are equal as well.

The second strand of literature deals with ex-post outcomes of relocations, i.e. the actual economic returns and employment effects of relocations are analysed. To do so, scholars compare pre- and post-relocation employment statuses of individuals. The advantage of this approach is that the actual return of relocations are analysed. The disadvantage of this approach is that tied stayers cannot be identified. For example, those individuals that cannot realise potential earnings by not relocating are not considered in the analysis. I present the empirical findings from these two strands of research in Section 3.4.2. Before, I briefly describe the relevance of analysing economic returns and employment effects of residential relocations for dual-earner couples (Section 3.4.1).

### ***3.4.1 Relevance***

It is highly relevant to analyse divergence in relocation outcomes of dual-earner couples for a number of reasons. First, it is commonly accepted in the study of couple behaviour that the idea of a unitary utility function and unconditionally pooled income is false (Beblo 2001: 12ff). One partner's gains and another partner's losses cannot simply be summed up to analyse the welfare of couples and one partner's income is not unconditionally shared for the benefit of both partners. Individuals within couples represent their own particular interests which may be opposed to interests of the other partner. Partners negotiate with each other and

use power to assert their interests (Blood and Wolfe 1960: 29ff). At the same time, behaviours are influenced by gender (e.g. Bielby and Bielby 1992). In contrast to changes in neighbourhood quality and room stress, employment effects of relocations may differ strongly for partners in couples sharing a residence.<sup>13</sup> Therefore, relocations' effects on careers should not be averaged over the whole household, but instead individual outcomes should be analysed.

Second, the effect of relocations on individuals' careers in dual-earner couples may affect the relative power of both partners, because relocations may affect the relation between both partners' incomes. Thus, the 'size of the pie' that both partners produce has to be differentiated from the change in the 'distribution of the pie' for each partner after relocations (Lundberg and Pollak 2003). Because even if women recover from initial losses after relocations, the relative difference between men and women may increase permanently. "It may be that over the long course, family migration drives a growing wedge between husbands and wives occupational and earnings attainment" (LeClere and McLaughlin 1997: 330). Similarly, Abraham, Auspurg and Hinz (2010: 889) state that small differences in initial relocation outcomes may be sufficient to prioritise the more successful career in future relocation decisions and widen the gap between women and men in dual-earner couples.

Third, the analysis of dual-earner couples is especially relevant. When Mincer (1978) published his article, women's labour market participation was much lower than it is today in 2013 and dual-earner couples have become much more frequent. Hence, the coordination of two careers is necessary for a growing number of individuals. Still, gender differences can be expected, because while women "now have a deeper commitment to the labour market than in the past they are still left performing two roles, while they excel outside the home, they must cope within it" (Hardill and Wheatley 2010: 257). In addition, women may be more adversely affected by relocations today than they have been in the 1970s on average, because "their greater attachment to the labor force may imply a greater loss in earnings as they leave jobs in the initial location" (Blackburn 2010: 88). Therefore, it is highly relevant to analyse the economic returns of relocations for women and men in dual-earner couples.

Fourth, and more generally, there is the widely shared idea in the literature that long-distance relocations — especially of men — increase earnings and are an important way to propel one's career (e.g. Blau, Duncan and Tyree 1967: 243ff). Indeed there is evidence that geographical mobility is, for example, an integral part of professional and managerial careers (e.g. Markham et al. 1983; Hardill 2002: 11ff). However, evidence also shows that there is high variance in economic returns and employment effects after relocations over the whole population (Jacobsen and

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<sup>13</sup> One may also expect intra-household differences in *subjective* neighbourhood quality and room stress. But these differences can be assumed to be smaller than with regard to career outcomes. Also, the data in the present analysis provide only limited information on subjective housing and neighbourhood measures.

Levin 1997, 2000; Clark and Withers 2002). For many individuals, long-distance relocations seem to have no effect on earnings or labour market participation (Clark and Withers 2002). Further research is needed to qualify the determinants of this variation in outcomes.

### ***3.4.2 Review of Empirical Research***

To understand the differences between women and men in couples, it is instructive to look at single households first. By analysing singles, gender differences that are independent of being constrained by a partner can be examined. Jacobsen and Levin (1997) show that single women that relocate have a higher individual wage growth than stayers. Also, single women and men do not differ in job-related determinants of their relocations in Germany (Jürges 2006: 316). Thus, single women and men seem to profit similarly from relocations at the beginning of the 21<sup>st</sup> century. Does this also hold for women in couples?

Women in couples profit less from relocations than single women. Evidence is strong for earning losses of partnered women after residential relocations for the US and the UK (Sandell 1977; McKinnish 2008; Blackburn 2010). Other research reports no significant changes for women, but even then women profit less than men from relocations (LeClere and McLaughlin 1997; Cooke 2003; Clark and Huang 2006; for East Germany: Nisic 2010). These losses are in contrast to earning gains for partnered men (Clark and Huang 2006; McKinnish 2008; Blackburn 2010; for East Germany: Nisic 2010). The effect of relocations on earnings varies in magnitude across the studies. For example, Cooke et al. (2009) find the immediate effect of long-distance relocations 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" (ibid.: 165). The differences between women and men remain significant in most cases when controlled for both partners' human capital, occupational position and family status.

How can these gender differences be explained? Findings suggest that norms about gender-appropriate behaviour affect relocation decision. Traditionally, it is gender-appropriate for men to be active on the labour market, while women are supposed to be homemakers. Non-traditional norms, on the other hand, state that "family and employment roles are the joint responsibility as well as a source of reward for both spouses" (Bird and Bird 1985: 754). If a couple has traditional gender role attitudes, women's losses after relocations are considered to be less important than men's gains (Bielby and Bielby 1992). This is in contrast to the human capital model that assumes that differences between women and men are only due to their specialisation in paid labour and unpaid house work (McKinnish 2008). The findings regarding the importance of gender roles for relocation outcomes are re-



peatedly supported (Bird and Bird 1985; Shihadeh 1991; Boyle et al. 1999; Cooke 2008a).

The literature shows that the negative effect of relocations on female careers is mainly due to a reduction in labour market participation. Employed women are likely to leave work after a relocation or to reduce their work hours (Long 1974; Taylor 2007; Boyle, Feng and Gayle 2009). LeClere and McLaughlin (1997) show that the average wage penalty for women after relocation in the US is about US-\$ 650 in the first year and almost 97 per cent of this penalty is due to lower labour market participation rates. After long-distance relocations in the UK, the number of annual work weeks drops for partnered women and annual income is lower than before the relocation mainly for this reason (Blackburn 2006). Thus, “the loss in income suffered by married women is caused more by their relative inability to find a full-time job after relocating than by their earning a lower wage when they do find a full-time job” (Jacobsen and Levin 1997: 699). Those women that stay in employment after a relocation do not experience earning losses in the US (LeClere and McLaughlin 1997). In France, women that stay in employment can even increase their earnings slightly (Pailhé and Solaz 2008: 356).

Relocations also lead to unemployment and reduced work hours of partnered women in the UK and this explains a big share of the loss in earnings (Boyle, Feng and Gayle 2009; Rabe 2011). The disruptive effect of relocations on employment is also apparent for men. In the UK, male movers are twice as likely (7.6 per cent in contrast to 3.5 per cent) to experience an interruption in their career than stayers (Böheim and Taylor 2007: 105). But men seem to find a new job more quickly than women. Conditional on staying in employment, wage rates are higher for both, women and men, after relocation. In the UK, Rabe (2011) finds women in dual-earner couples to increase their wage rate by 17.3 per cent on average (8.6 per cent for stayers). Men in dual-earner couples increase their wage rate by 21.1 per cent (7.7 per cent for stayers). For a sample also including single men, Böheim and Taylor (2007) find a wage premium of 3.4 per cent at the first observation after a relocation for movers compared to stayers. Men that changed their jobs in the same time interval had a wage growth premium of 3.8 per cent if they relocated compared to staying.

Two characteristics of couples that may moderate the effect of relocations on earnings and employment status are mainly tested in the literature. First, the relative differences in education and occupational status of both partners are tested. Higher education and higher occupational positions reduces chances of job loss after relocations for women in the US, UK and Netherlands (Boyle et al. 1999; Smits 1999). Women with high-education are not significantly affected in their earnings, if their male partners work in a mobile occupation in the US (McKinnish 2008). Women are more likely to leave the labour market after relocations if they worked in non-professional occupations before in the US (Lichter 1980). Women are strongly negatively affected by relocations in the UK and US, if their male partner is the main breadwinner (Boyle et al. 1999). Women with higher education profit more from long-distance relocations with regard to earnings than women with lower education

in West Germany, but not in East Germany (Nisic 2010). Relocations of highly-educated women have an additional positive effect if they end in metropolitan areas in Germany (Nisic 2009). For men in the UK, returns from relocations seem to be more substantial for highly-educated men than for low-educated men (Böheim and Taylor 2007).

Second, the effect of the family status is tested. Because women are still often considered the main caretaker for children, women's labour market participation may be lower and less stable, if children are around. Hence, mothers may be more likely to leave employment in cases of relocations than childless women. In addition, relocations of families may be mostly directed to suburban and rural areas. Because of the local labour market opportunities in these areas (cf. below), women may be less likely to find adequate jobs. Childbearing and the presence of children is not found to moderate the effect of relocations on women's returns to relocation in the UK and US (Boyle et al. 2003; Cooke 2003). Also, children leaving the household do not moderate the effect of relocations in the US (Cooke 2003). However, McKinnish (2008) finds a stronger negative effect of having a male partner in a mobile occupation in earnings of women in couples with children under the age of 18 than in couples without children. In the Netherlands, the negative effects of relocations for women's labour force participation are stronger if couples have children (Smits 1999).

In the literature, there is evidence that long-distance relocations affect careers more than short-distance relocations (e.g. Boyle, Feng and Gayle 2009). For example, Smits (1999) shows that the negative effect on women's careers is considerably stronger if a relocation crosses at least two provincial boundaries in the Netherlands. It is intuitive that long-distance relocations have a stronger effect on careers. Only if individuals relocate for a considerable distance, then the old places of work are too far away to commute there regularly. Therefore, in most of the reported empirical analyses, only long-distance relocations are considered. The operationalisation of long-distance relocations differs. In the UK, relocations across local authority districts' borders are used as a proxy for long-distance relocations (e.g. Böheim and Taylor 2007). In the US, mostly inter-state relocations are used (e.g. Jacobsen and Levin 2000). In Germany, relocations across county borders whose capitals are at least 50 km apart are used (Jürges 2006). Instead of analysing long-distance relocations, job-motivated relocations are also considered in the literature (e.g. Taylor 2007).

There is some evidence that destinations of relocations influence career outcomes for dual-earner couples. For example, metropolitan areas may provide better opportunities for both partners because of the higher density of jobs. In Germany, higher educated women can profit especially from relocating into metropolitan areas. East German, partnered women that relocate into metropolitan areas improve their wage significantly, women in West Germany do not (Nisic 2010). In France, high regional unemployment deters labour participation after relocations for women and men (Pailhé and Solaz 2008). In the Netherlands, the negative effect of relocations on

female labour participation is weaker in Randstad, which is an economically prosperous area, than in other areas (Smits 1999: 144). In Sweden, relocations into larger urban areas are associated with gains in earnings, while relocations out of urban areas are associated with smaller gains in earnings (Korpi, Clark and Malmberg 2011).

As time passes after a relocation, the effect of the event may vanish. Most studies suggest that negative as well as positive effects of relocations on earnings and employment status level out a few years after a relocation. Thus, in contrast to expectations from the human capital approach, relocation do not seem to increase lifetime earnings considerably. For example, for men in the UK, relocations initially increase earnings for movers compared to stayers. But the difference is no longer significant three years after a relocation took place (Böheim and Taylor 2007). Negative effects also seem to be only temporary. Clark and Withers (2002) show that participation rates of women fall immediately after a relocation, but within 10 months after the event, participation rates are back to pre-relocation levels in the US. Similarly, women in the US face a strong decline in work hours in the year right after a relocation. This drop causes income losses of about 20 per cent for partnered women. In the subsequent years, women adjust their situation and work hours as well as earnings return to pre-relocation levels. Thus, relocations seem to cause only short-term interruptions in female careers in the US (LeClere and McLaughlin 1997; Blackburn 2010). If the observation window is long enough, long-run returns may even turn out to be positive for women in the US. Lichter (1983) shows that while in the medium-run (1966-71) married women that relocate lose income compared to stayers, their incomes are slightly higher in the long-run (1966-76). In contrast to findings from the US, evidence for France suggests a persisting negative effect of relocations on women's earnings. Two years after a relocation, women's participation rates are still below pre-relocation levels. Women's earnings also remain lower in the second year after a relocation compared to before the relocation, while men's earnings increase compared to the pre-relocation levels (Pailhé and Solaz 2008: 356).

I have only discussed the returns from relocations, but did not consider the issue of forgone returns due to tied staying so far. For example, Nisic (2010) argues that many partners in German dual-earner couples are tied stayers. Especially in West Germany partners restrict each other's mobility in dual-earner couples. The research claims that especially men's mobility is increasingly deterred. This also implies that those dual-earner couples that relocate form a highly selective group of couples and movers. For example, one partner in the mobile dual-earner couple may be less determined to succeed in her or his career and may agree to sacrifice individual career prospects than in dual-earner couples that stay put (Boyle et al. 2001). In Germany, dual-earner couples are in general less mobile than single-earner couples, and men's job characteristics are more important to explain relocations than women's characteristics (Jürges 1998: 371ff). Human capital and employment status for women influence relocation behaviour stronger in non-traditional couples than in traditional ones, where gender role attitudes of couples are measured with partners' share of

the couple's time spent on housework on a Sunday (Jürges 2006). In the UK, Rabe (2011) finds dual-earner couples' relocations to be equally motivated by both partners' potential wage gains. However, about 12 per cent of women and only 1 per cent of men may be tied movers, i.e. movers that experience income losses while their partners gain. At the same time, there is also evidence for tied stayers among male partners in the UK (*ibid.*).

Past research on labour market outcomes of dual-earner couples after long-distance relocations has four 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. Instead, often researchers assume gender differences or postulate them without presenting statistical tests. Second, if pooled samples are analysed, research seldom accounts for the nonindependence between partners in the analysis. This may bias estimates and analysing nonindependence may provide further insights into the phenomenon under study. Third, 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 and Soskice 2001: 27–31). Comparisons with other countries such as Germany with divergent institutional settings are lacking. In the next chapter, I describe the institutional differences between England and Germany in more detail (Section 4.1). I also thoroughly describe my research design and empirical methods.

## Chapter 4

# Research Design and Methods

I apply a quantitative research design to be able to test the hypotheses developed in Chapter 2 and to generalise findings to a wider population than would be possible with qualitative methods. To this end, I use longitudinal micro-data that allow tracking of individuals over time. Thereby, the quality of locations before and after residential relocations of the same individuals can be examined. Individuals' residential trajectories are further contextualised by considering characteristics of their households and of the regions they live in. To establish claims about social regularities, it is important to test hypotheses in more than one national context and, thus, individuals from two national contexts with heterogeneous conditions for residential relocations are observed. This also provides the opportunity to analyse the effect of institutional contexts on relocation outcomes.

In the next section, I describe the two institutional cases that I selected for my analysis, England and Germany (cf. Section 4.1). I describe the housing markets, labour markets, welfare systems, and gender relations in both. The focus of my elaboration is on differences between housing markets, since I assume that these differences are most important to understand differences in outcomes of residential relocations. In Section 4.2, I briefly justify why I choose individuals instead of households as the central unit of analysis. Next, I present the data sources that I use at the level of individuals, households, neighbourhoods and regions in Section 4.3. In Section 4.4, I describe the analytic sample and in Section 4.5 I describe the construction of my dependent and independent variables. Finally, in Section 4.6, I discuss my choice of methods and describe the specific multivariate regression models that I use in the empirical analysis.

## 4.1 Country Case Description: England and Germany

Cross-national research is needed to establish regularities across societal contexts, but is also needed to bring national particularities to light (Kohn 1987; Mayer 2005; Blossfeld 2009: 287). To achieve these goals, I compare the cases of England and Germany in the present analysis. I concentrate on England rather than the whole UK in my analysis, due to of data limitations.<sup>1</sup> In the description of the institutional context below, I refer to the UK in general, as for the institutional areas that I consider in my analysis there are no systematic differences between the countries in the UK. In the following, I give more details about the institutional differences between the UK and Germany that I consider relevant for the outcomes of residential relocations. Due to the manifold institutional differences, direct causal links between institutional differences and outcomes of relocations are impossible to establish. Instead, possible links are described and alternative explanations evaluated in later chapters.

### 4.1.1 Housing Markets

The housing markets in the UK and Germany constitute very different contexts for residential relocations. The characteristics of these markets will have substantial influence on the outcomes of relocations as they determine who can when relocate where. First of all, the tenure structure differs strongly between the UK and Germany. Table 4.1 shows the share of different housing tenures in the UK and Germany and provides the average for the EU27 countries as a reference for the year 2005. The share of dwellings rented privately is only 16 per cent in the UK, but 37 per cent in Germany. In contrast, the share of dwellings owned with a mortgage is 44 per cent in the UK and only 29 per cent in Germany. In both countries, the share of dwellings owned outright is about 25 per cent. Social housing is slightly more popular in the UK (14 per cent) than in Germany (10 per cent). The term social housing is used to refer to dwellings owned by local authorities or housing associations in the UK. In Germany, social housing refers to dwellings that are subject to rent control due to public subsidization of the construction of the dwelling. Both types of social housing are particular and not directly comparable, but they have in common that access to them is regulated not only by price, but also by administrative allocation decisions (Stephens, Burns and MacKay 2003; Fitzpatrick and Pawson 2007).

Kemeny (1995: 16ff) argues that the UK has a dual housing market with the private and social housing sectors being strictly separated (cf. also Kemeny 2006). The social sector is strongly regulated. Supply of dwellings in the private rented

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<sup>1</sup> The data on neighbourhoods is not available for the other countries in the UK except for Scotland. The data for Scotland is not directly comparable with the data for England, however.

**Table 4.1** Housing tenure structure, 2005

	UK	Germany in per cent	EU27
Social housing <sup>a</sup>	14	10	12
Rented privately	16	37	20
Owned with mortgage	44	29	27
Owned outright	26	24	41

Data: Eurostat (2012)

Note: <sup>a</sup>: Dwellings owned by local authorities or housing associations in the UK, dwellings that are subject to rent control due to public subsidization in Germany.

sector has been reduced by strong regulation in the 1960s and 1970s, which caused rents in 1981 to be clearly below market price level (Voigtländer 2009). These regulations were introduced in response to the acute housing shortage after World War II. There is only weak legal protection for private renters in the UK (Balchin 1996b: 225). Short-term rent contracts are very common and “there is a strong emphasis in government housing policy in England on the role of private renting in providing a flexible source of mainly short-term accommodation” (Kemp and Keoghan 2001: 22). It is assumed that newly established households may spend some time in dwellings rented privately, before moving on to buy a home or being allocated a dwelling in social housing.

In general, social housing is more popular and offers better quality than the privately rented tenure in the UK (*ibid.*), but social housing is increasingly used by “economically inactive, less skilled, unemployed and low-income people” (Mullins and Murie 2006: 258) that cannot afford to buy homes. The increasing marginalisation of social housing is associated with a symbolic devaluation. Better-off households try to avoid social housing (Lee and Roseman 1999). The concentration of poor households in social housing is also due to allocation decisions and facilitates spatial segregation (Fitzpatrick and Pawson 2007).

Home ownership is very popular in the UK. The housing market is characterized by strong competition in the mortgage market, small transaction fees and high housing price to income ratios for home owners, i.e. loans can be comparably high relative to the income of borrowers — at least before the economic crisis in 2008 (Diamond and Lea 1992: 118ff). Mortgages can be re-paid early without high penalties and mortgage interest rates are mostly fixed only for short terms. Therefore, households in the UK are able to “buy several properties during their life time” (Voigtländer 2009: 368). Owner occupation is cheaper than renting in the UK on average (Freeman 1997). Home ownership is strongly supported by public policies in the UK, e.g. through tax benefits and the Right to Buy for tenants in the social

housing sector (Balchin 1996b: 227).<sup>2</sup> The high share of owners and the strong political support of ownership have the effect that “owner-occupation is ‘normalised’” (Smith, Easterlow and Munro 2004: 597) in the UK. Therefore, tenants may make a stronger effort to relocate into home ownership to comply with this norm than in other countries in which ownership is not the norm (Mulder and Wagner 1998; Ronald 2008: 119ff). In the UK, relatively young people already relocate into ownership and, in 1994, 74 per cent of childless couples with a household head aged 25 were already home owners in the UK (Freeman 1997).

In contrast to the UK, Kemney describes the German case as an “*unitary rental market*” (Kemney 1995: 49, emphasis in original), i.e. the social housing sector is not regulated strongly and competes with the privately rented sector. In Germany, rents are relatively low due to the competition between the private and publicly subsidized housing sectors and general rent control (ibid.: 49). The legal protection of tenants is very strong in Germany and landlords cannot easily terminate rental contracts. Rents are capped according to local average rents and increases in rent for sitting tenants are strongly regulated (Kirchner 2007). As a consequence, sitting renters enjoy lower rents on average than tenants that recently signed a new rent contract (Voigtländer 2009). Privately rented dwellings are on average in good condition, as landlords can realise sufficient returns of their investment in property (Mulder and Wagner 1998; Kirchner 2007). However, regulation of the private rented sector is low in Germany compared with other countries, and the market was liberalised much earlier after World War II than in the UK. “This allowed the private rental housing market to develop further and ensured the availability of a steady supply” (Voigtländer 2009: 362).

Social housing in Germany is constituted by dwellings which have been publicly subsidised in their construction and regulated in terms of access and rent (Kirchner 2007). Rents in social housing are lower than in the private market on average, but may not be the lowest rents in the market.<sup>3</sup> Access to social housing is subject to administrative regulation, e.g. access is mostly denied for high-income households (Dorn 1997). Every developer can claim subsidies and only few dwellings in social housing are actually publicly owned. Restrictions of rent and access in social housing are temporarily fixed and after a certain period, dwellings enter the private market. Experts expect that only 4 per cent of social housing dwellings in 2002 will still be rent-regulated in 2020 (Kirchner 2007). Due to the shrinking share of social housing in Germany and their unattractive locations mainly in the periphery of cities, social housing is mostly a safety net for households that do not have access to dwellings in the private market due to low income or discrimination (Häußermann and Siebel 2000: 165).

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<sup>2</sup> The Right to Buy from 1980 allowed sitting social tenants to buy their dwellings for reduced prices (Lowe 2007: 366).

<sup>3</sup> For example, old, privately rented buildings in urban centres that have not been modernised often have lower rents.



Buying property is relatively expensive in Germany compared to the UK, due to high construction and land prices and the need for high down payments to purchase property (Freeman 1997; Mulder and Wagner 1998; Kurz 2004). Further characteristics of the German housing market include long term contract saving schemes (*Bausparen*), only medium tax benefits for home owners and high transaction costs in the housing market.<sup>4</sup> Home owners, however, can gain extra tax credits if they have children (Deurloo, Dieleman and Clark 1997). Yet, the credit line for home buyers depends much more on the current income situation than in the UK (Diamond and Lea 1992: 79ff). There is almost no ‘sub-prime’ mortgage market in Germany. Particular to the German mortgage market are high penalties for early repayment of mortgages and long-time fixed interest rates, which make repeated home purchases less attractive than in the UK (Voigtländer 2009).

“Germans need more time to save before buying a home” (Mulder and Wagner 1998: 702) and once they bought a home, buying a second time becomes difficult. In addition, public subsidies for owners are mostly granted only once for individuals (Voigtländer 2009). Thus, buying property is a once-in-a-lifetime investment for most households. Due to the longer time needed for saving, individuals in Germany relocate into ownership much later in life than in the UK. In 1993, only 17 per cent of childless couples with a household head aged 25 were in ownership in Germany. The differences between the UK and Germany in home owner rates are much weaker, if home owner rates in mid- and late-life are compared (Freeman 1997). The rate of outright ownership is also comparable in both countries. “In Germany, the transition to first homeownership is strongly connected with events in the family life course” (Mulder and Wagner 1998: 707), e.g. marriage. This connection is weaker in the UK. Germans are more likely to make relocations within the rental tenure before they buy homes than in the UK (Deurloo, Dieleman and Clark 1997; Mulder and Wagner 1998).

Housing markets in the UK and Germany differ in their degree of decommodification. The degree of decommodification may indicate how dependent outcomes of relocations are on current market incomes of individuals in the UK and Germany. Doling (1999) argues that housing is decommodified, if access to housing and maintenance of one’s home is relatively independent from current household income. Regarding access, I showed above that access to ownership is more decommodified in the UK than in Germany. Access to property is mainly a function of the household income in Germany, while home buyers in the UK can more easily obtain loans even with low incomes. Access to private rented accommodation is more decommodified in Germany than in the UK. Access to social housing is relatively decommodified in both countries. Regarding maintenance of the current housing status, housing allowance in the UK covers the total rental payment of tenants with

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<sup>4</sup> The term *Bausparen* denotes publicly subsidised saving schemes that are coupled with attractive loans that can only be obtained after some time of saving. On average, almost every German household owns a *Bauspar* contract (Mulder and Wagner 1998).

low or no income as long as they do not exceed certain limits, but is not paid to home owners (Doling 1999: 162). In Germany, low-income households are eligible to receive housing support for rent and costs of homes. Recipients of unemployment benefits and social assistance receive housing benefits that only cover ‘appropriate’ rents, which are determined by local authorities. Households with higher rents must relocate or pay the excessive part themselves (Busch-Geertsema 2004).

There is regional heterogeneity in housing markets in the UK and Germany. Regarding the spatial structure for England, scholars describe a strong regional North-South divide that can be traced in various indicators, e.g. unemployment rate and affluence, where the South is more successful in most of these indicators (O’Leary et al. 2005). London and the South-East has been described as an escalator region which propels young peoples’ careers (Fielding 1992). At the level of cities, the UK is more segregated than Germany, i.e. in the UK the concentration of low-income individuals and migrants in certain neighbourhoods is higher (Musterd 2005).

Regional patterns of inequality are more complex in Germany. A North-South is overlaid by an East-West divide after re-unification, but also strong disparities on lower regional levels persist (Kilper 2004). The North and the East are less affluent than the rest of Germany on average. The housing markets in East and West Germany differ strongly. The “East German housing stock still bears the mark of state socialism” (Tomann 1996: 52). Home ownership rates are very low in East Germany. The conditions of buildings are worse on average in East Germany at least in the 1990s. Yet, convergence of standards in East and West Germany is apparent over time (Frick and Grimm 2009). Population dynamics are different between East and West Germany as well. The population declines in many East German regions due to of low fertility and outbound relocations. After re-unification in the 1990s, high mobility from East to West Germany occurred (Rees and Kupiszewski 1999).

### ***4.1.2 Labour Markets***

Conditions in labour markets can be expected to affect the occurrence and outcomes of relocations, as relocations may be occupationally motivated and because labour income is the most important source of income for most individuals. Especially with regard to labour market outcomes of dual-earner couples, institutional differences between labour markets in the UK and Germany are highly relevant. The labour market in the UK can be described as a liberal market economy. It is characterised by “firms [that] coordinate their activities primarily via hierarchies and competitive market arrangements” (Hall and Soskice 2001: 8). Firms make decisions mainly based on current revenues and shareholder values and lack close-knit information networks linking them to other firms. Unions are weak on average, worker representation is not institutionalised and the relations between employees and firms are individualised. Managers can make top-down decisions and hiring and firing

is frequent. Firms provide inhouse training, but no intense apprenticeships. Highly mobile and fluid labour markets result (ibid.: 27–31). Outsiders can relatively easily enter the labour market and unemployment spells are shorter than in Germany on average (Mills and Blossfeld 2006: 78).

The German labour market is part of a coordinated market economy. “Firms [in these economies] depend more heavily on non-market relationships to coordinate their endeavors with other actors and to construct their own core competencies” (Hall and Soskice 2001: 8). Coordinated market economies are characterised by close-knit information networks between firms. In firms, coordinated instead of unilateral decision making is common and employee representatives participate to some degree in decision making, e.g. through work councils. Employees share their skills and knowledge with the firm and to avoid head-hunting or exploitation of employees, industry-wide wages are set in bargains between unions and industry associations. Since employees need high industry-specific skills, public training systems are in place. Job tenures are long on average and firms organise inter-firm networks to share knowledge without sharing employees through job mobility. Job mobility is lower in Germany compared to the UK and entry for outsiders is more difficult.

**Table 4.2** Labour market statistics, 2005

	UK		Germany		EU27	
	Women	Men	Women	Men	Women	Men
	in per cent					
Labour force participation	66	78	60	71	56	71
Part-time employed	42	9	43	7	30	7
Gender pay gap <sup>a</sup>	21	–	23	–	17	–
Job tenure <sup>b</sup>						
0 < 5 years	51	46	40	36	43	38
6 < 10 years	21	21	21	19	20	20
≥ 10 years	28	33	39	45	37	42

Data: Eurostat (2012); Organisation for Economic Co-operation and Development (2012)

Note: Population aged 15–64. <sup>a</sup>: 2008; Gender pay gap is defined as difference between average gross hourly wage of men and of women as a percentage of average gross hourly wage of men.

<sup>b</sup>: EU15 only.

Table 4.2 provides an overview how these institutional similarities and dissimilarities play out and also hints at characteristics of the welfare systems and gender relations in both countries. First, labour force participation is slightly higher in the UK than in Germany and Europe on average. This hints at the importance of gainful employment in the UK that is further discussed in Section 4.1.3 regarding differences in the welfare systems. Second, in both countries, labour participation of women is lower than for men, but higher than the average in all EU27-countries. Gender differences also exist with regard to part-time employment. While only a

very small share of men are working part-time, almost one in two women in the UK and Germany work part-time. In both countries, this is higher than the average of the EU27-countries. By 2005, the share of women working part-time was similar in the UK and Germany after a strong increase in female part-time work in Germany. In the 1990s, female part-time work was more frequent in the UK than in Germany. Working part-time is associated with a wage penalty in the UK which is not the case in Germany (McGinnity and McManus 2007; Cooke and Gash 2010; Cooke 2011: 111). The high share of part-time work in the UK is partly due to the low statutory regulation of employment (Crompton and Lyonette 2006). The Organisation for Economic Co-operation and Development (OECD) has developed an index of employment protection ranging from 0 to 6, where 0 indicates the least protection and 6 indicates the most protection. In the UK, labour protection varies between 0.60 in 1990 and 0.75 in 2008. Labour protection in Germany varies between 3.17 in 1990 and 2.12 in 2008 (Venn 2009: 8). Thus, employment protection is much stronger in Germany, but has eroded between 1990 and 2008.

The gender pay gap, i.e. the differences between women's and men's hourly gross wage rates as a percentage of men's wage rates, is 21 per cent in the UK and 23 per cent in Germany, which indicates that women earn about one fifth less than men on average in both countries. This is higher than the average for all European countries. The last three findings show that labour markets in the UK and Germany are clearly gendered. I describe these gender differences in more detail in Section 4.1.4. Third, Table 4.2 clearly shows higher job mobility in the UK than in Germany. Only one third of men in the UK had their current job for at least 10 years, but 45 per cent of German men had their current job for at least 10 years. About 46 per cent of men in the UK worked in their job for less than 5 years, but only 36 per cent of German men worked in their job less than 5 years. For women, the job mobility is higher than for men in both countries, but shows similar differences between countries.

### 4.1.3 Welfare Systems

Welfare systems in the UK and Germany are substantially different. The welfare system will affect the way negative life course events such as unemployment are moderated and will thereby alter the effect of these events on relocations and their outcomes. For example, Esping-Andersen (1990), who uses the dimensions of de-commodification and stratification to classify welfare states, describes the UK as a liberal welfare state.<sup>5</sup> Liberal welfare states are characterised by “individualism and the primacy of the market” (Arts and Gelissen 2002: 141). Decommodification is low and stratification between individuals is high, which results in a residual

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<sup>5</sup> Regarding de-commodification see Footnote 20 above. Stratification refers to the social inequalities and to the kind of solidarities that are generated by the welfare state (Arts and Gelissen 2002).

welfare provision. Due to low decommodification, economic security outside of the labour market is low (Dingeldey 2007). Women are encouraged to participate in the labour market. Benefits are mostly means-tested and private insurance is encouraged (McGinnity 2004: 8). In case of unemployment, the system offers minimal levels of income protection, but does not cover all unemployed. The system is mainly aimed at preventing poverty (*ibid.*: 12).

Germany is described as a conservative welfare state by Esping-Andersen (1990: 27). Decommodification is moderate. Stratification is characterised in three ways: 1) Income maintenance support is linked to labour market participation. Those that leave work due to unemployment, illness or pre-retirement are protected against high income losses. Individuals in need without prior labour market participation receive less support (Arts and Gelissen 2002; Mills and Blossfeld 2006: 13). 2) The conservative welfare state is committed to the male-breadwinner model, i.e. a traditional division of labour in which men work for pay to support their family and women mainly work unpaid in the household and only do part-time paid work (Mills and Blossfeld 2006: 13, cf. next Section for more details on gender relations). 3) Following the principle of subsidiarity, the conservative welfare state only steps in, if the resources of the family are exhausted (Arts and Gelissen 2002). Benefits are mostly insurance-based in Germany rather than means-tested as in the UK. Welfare for the unemployment provides a higher level of protection in Germany than in the UK, but only for those with continuous employment histories (McGinnity 2004: 12). Wage replacement rates for unemployed are higher for singles in Germany in the 1990s, but for families with children they are slightly lower than in the UK. This is for the reason that benefits are based on earned contributions in Germany, while they are based on need in the UK (*ibid.*: 80f).

The German conservative welfare state has seen fundamental changes in the early 2000s which marked an important step away from the conservative welfare model towards a more liberal model. These changes were introduced by the so called Hartz laws in 2002 and 2003. The primary goal of these laws was “getting people back to work” (Ludwig-Mayerhofer and Wroblewski 2004: 500) by using enabling or activating instruments. The duration of unemployment benefits were shortened and eligibility restricted. Similar measures had been introduced in the UK in 1996/1997 under the ‘New Deal’ (Dingeldey 2007).

The welfare systems mediate life course risks differently in the UK and Germany. DiPrete (2002: 300) shows that in Germany “institutions suppress the rate of class-altering events but do not uniformly suppress the consequences of negative events”. For example, while the likelihood of union dissolution in Germany is relatively low, the negative financial consequences of dissolution for women are not as strongly cushioned in Germany as in other countries. Similarly, employment protection is high for those in work in Germany. The long-term financial consequences of unemployment are high, though, because re-entry into the labour market is difficult. Those on favourable tracks in the labour market benefit from this security, while labour market outsiders face difficulties to improve their situations (Mayer 2005). The

mediation of life course risks has consequences for inequalities over the life course of individuals. The German institutional context “places people on a track early in their life course (stratified by class background) and keeps them there for the duration of the journey” (Brückner 2004: 20). While inequalities between individuals are relatively moderate in Germany, these inequalities are relatively stable over the whole life course (Leisering 2003: 218; Mayer 2005).

Regarding life course risks, “Germany, although a different welfare regime, is close to Britain as a ‘welfare state with integrated safety nets’, which promotes a continuous life course” (Leisering 2003: 216). Nevertheless, the UK is characterised by less standardisation and security over the life course. Transitions in the job and family trajectory are more common in the UK than in Germany (Allmendinger and Hinz 1998: 76; Mayer 2005: 30). For example, the average duration of marriage until divorce in 2008 in England is 11.5 years (Office for National Statistics 2010). In Germany the average duration is 14.1 years (Statistisches Bundesamt 2012b). The total fertility rate was 1.96 in the UK and 1.38 in Germany in 2008 (Eurostat 2012).<sup>6</sup> The UK and Germany are characterised by stratified educational systems which determine much of later life inequalities, but in the UK downward class mobility is higher than in Germany due to “the unstandardised vocational training available in Britain which provides little protection against downward class mobility” (Allmendinger and Hinz 1998: 76). On average only 4 per cent of German men, but 7 per cent of British men experience changes in their class position in a given year (ibid.: 76). Jarvis and Jenkins (1998: 151) show that downward income mobility is slightly more likely than upward income mobility in the UK. Thus, in the UK life course risks are more prevalent and individuals are more likely to experience changes in their life courses (Leisering 2003: 216).

#### ***4.1.4 Gender Relations***

Gender relations can be defined as “the set of mutually constitutive structures and practices which produce gender differentiation, gender inequalities, and gender hierarchy in a given society” (Orloff 1996: 52). The UK and Germany differ in these structures and practices and, thus, gender inequalities over the life course diverge. The gender relations in both countries are likely to affect differences in labour market outcomes of long-distance relocations between women and men. In the UK, the welfare policies “emphasize the principle of individual freedom” (Blossfeld and Drobnič 2001: 43) and this is also reflected in family policies and gender differences. Female labour participation is neither actively supported nor hindered by welfare state incentives. The tax burden for singles relative to married couples has

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<sup>6</sup> The total fertility rate indicates the number of childbirth for a women in her life under the assumption of the fertility rates per age in a given year.

been reduced and family members are taxed individually since 1991. Tax regulations facilitate dual-earner couples (Sainsbury 1999: 247; McCulloch and Dex 2001: 197; Apps and Rees 2005). The British welfare state — contrary to the German case — is not committed to the support of the family as such and only rudimentary family policies are in place, e.g. parental leave is weaker (Ruspini 1998: 299; Kilkey and Bradshaw 1999: 149; Ferrarini 2006: 66). Public childcare is also weakly developed in the UK compared to Germany and most parents must privately organise additional daycare, especially for children under 3 years old (Sainsbury 1999: 247; Meyers, Gornich and Ross 1999: 127). Ferrarini (2006: 13) characterises this combination of little direct support for dual-earner couples and rudimentary public family support as a “market-oriented family policy model”.

The German welfare policies “emphasize the value of the family based on marriage” (Ostner and Lewis 1995: 184). For couples, the welfare state supports male-breadwinner families in which women prioritise unpaid housework and carework (ibid.: 187). Partnered women’s work is often part-time and supplements family income, which mainly relies on the male partners’ incomes (Blossfeld and Drobníč 2001: 39). Social benefits are allocated to the family and not individuals. Non-working female partners have no economic independence (Kilkey and Bradshaw 1999: 254; Bussemaker and Kersbergen 1999: 18). Maternal leave is extensive, but has been reformed in recent years to become slightly less gendered (Lewis et al. 2008). Public day-care for children is more extensive in Germany than in the UK and provision is better in East than West Germany, but still day-care is limited (Sainsbury 1999: 247). The couple is taxed jointly, which undermines women’s labour participation (Apps and Rees 2005). Ferrarini (2006: 13) describes these policies as the “general family policy model” and Strauß (2008: 67) argues that the institutional setting in Germany makes it more likely for German women to completely withdraw from the labour market than for British women.

Leaving aside important issues of intra-household welfare distribution, division of labour in the household may not be a problem as long as couples stay together. Low or no labour market participation of women is a much bigger problem in case of union dissolution, which affects 20 to 30 per cent of marriages in Europe within 15 years after marriage (Andersson 2003). Differences in women’s outcomes after dissolution will depend on their role in the labour market and their dependence on their partners’ incomes (Ruspini 1998). Germany as well as the UK fail to provide independence of partners’ incomes for a vast share of women (Kilkey and Bradshaw 1999: 254). While separations have adverse material effects on both ex-partners by reducing income and increasing the risk of poverty, women lose more due to their lower labour income on average — also in childless couples — in both countries (DiPrete and McManus 2000; Vandecasteele 2011). The strong division of labour between the genders increases these effects in Germany especially for women not in the labour market, but also for men due to joint taxation during marriage. German women need a long time to recover materially from union dissolutions. In Britain, women rely on the labour market more strongly to secure their living and repart-

nering quickly reduces financial losses after dissolution (Andreß et al. 2006). The event of dissolution increases poverty risk stronger in Germany than in the UK for women (Ruspini 1998).

Gender relations are also shaped by norms, values and attitudes that are prevalent in a society and affect gender-appropriate behaviour (Pfau-Effinger 1997: 517; Lück 2008: 428). Treas and Widmer (2000) show that attitudes towards labour participation of women differ between the UK and Germany, but more strongly within Germany between East and West. About 90 per cent of East Germans agree that married women should work full-time before the first child, while 88 per cent of Britons agree and only 78 per cent of West Germans. With a child in pre-school age, only 21 per cent of East Germans agree that mothers should stay home and quite work, but 63 per cent of Britons and even 69 per cent of West Germans agree. Treas and Widmer (*ibid.*) categorise East Germany as having a “work oriented” gender ideology, where attitudes are more favourable for working mothers than in other countries. West Germany and the UK belong to the cluster of “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 (*ibid.*: 1427).

## 4.2 Unit of Analysis

After the description of my country cases, I now elaborate on further details of my research design. In the literature on residential relocations, the unit of analysis varies between individuals and households. Some researchers treat the household as the unit of analysis arguing that “moving is ordinarily a group rather than an individual action” (Rossi 1955: 15; similarly DaVanzo 1981: 112). Other researchers treat the individual as the central unit, since households are not stable over time (Mulder 1993: 24). Dissolving and forming households are important processes that are often associated with residential relocations. To be able to consider such relocations that are associated with household changes, the individual instead of the household must be treated as the unit of analysis. I therefore apply a combination of both approaches and treat individuals as the central unit of analysis in the present analysis, and, at the same time, I acknowledge that individuals mostly relocate together with other individuals in the social convoys of their households. To this end, I include information about the household and other household members in the analysis of individual relocation behaviour (Mulder 1993: 24; Winstanley, Thorns and Perkins 2002).



## 4.3 Data

Different data sources are combined in the present analysis. At the individual and household level, data is drawn from two nationally representative panel surveys (Section 4.3.1). These data sets are supplemented with additional data sets at the neighbourhood level (Section 4.3.2) and the regional level (Section 4.3.3).

### *4.3.1 Panel Data at the Individual and Household Level*

For panel data sets, the same individuals are interviewed in at least two — often more frequent — discrete points in time with broadly the same interview instruments to facilitate comparison across time. Panel data sets enjoy increasing popularity in social science, as they can be used to analyse dynamic relationships, i.e. changes in independent variables can be related to changes in dependent variables (Giesselmann and Windzio 2012: 10ff). This makes causal claims at least more credible than in cross-sectional analysis, since the time sequence of changes can be considered as well. Panel data can also be used to control for unobserved heterogeneity in surveyed individuals. Finally, estimators from panel data may be more efficient than estimators from cross-sectional data, due to repeated observations of respondents (Frees 2004: 5ff).

However, panel data come with a number of down-sides. If respondents are asked the same questions repeatedly, their responses may be affected by having answered the question before. In addition to potential non-random sample selection that may affect all survey data, panels are also subject to attrition, i.e. some respondents drop out of the panel over time. If drop-out is selective, the remaining sample population is non-random. While these problems can be tackled with appropriate data collection and weighting procedures, there are more fundamental problems to panel data that cannot be solved that easily. Panel data provides only limited information about the ordering of events and especially on the time passed since the onset of a given process, due to the discrete time structure of data collection. The shape of processes evolving over time can hardly be captured using panel data. This is especially true regarding long-time processes, since panels may not survey retrospective life history data. In these cases, only limited sections of different life course trajectories can be analysed (Blossfeld and Rohwer 2002: 13ff). In addition, panel data offer only limited opportunities to analyse rare events such as residential relocations, because of the relative small sample sizes compared to topic-specific and census-type surveys. For the present analysis, the advantages of panel data outweigh the limitations, seeing that panel data allow comparison of the same individuals before and after relocations. This is necessary to examine the effect of relocations on outcomes. For these reasons, panel data is the best possible format for empirically researching

the life course event of residential relocation across a population and panel data are used to conduct the empirical analyses. The limitations of the data must be kept in mind in interpreting the results, though. I now introduce the two panel data sets for England (Section 4.3.1.1) and Germany (Section 4.3.1.2).

### 4.3.1.1 British Household Panel Survey

The British Household Panel Survey (BHPS) is run by the Economic and Social Research Council UK Longitudinal Studies Centre with the Institute for Social and Economic Research (ISER) at the University of Essex and started in 1991.<sup>7</sup> The original sample for the BHPS was drawn in 1990 and is representative of the British population at that time in England, Wales and Scotland south of the Caledonian Canal. For the sample 8,167 issued addresses were drawn from the small users Postal Address File. A two-stage clustered probability design and systematic sampling were used.

Additional samples for specific subpopulations, e.g. low-income households, were drawn and added to the BHPS later on, but these sample members are not used in the current analysis. The BHPS has no refresher or booster samples. The data sets provides longitudinal and cross-sectional weights to adjust the sample.<sup>8,9</sup> In 2008, 5,391 households of the original sample were still in the panel of which 4,509 were interviewed. In these households, 9,249 eligible individuals lived of which 7,500 completed a full interview (response rate: 81 per cent). The field period for data collection runs from early September to early December each year. In 1999, data collection was changed from Pen and Paper Interviews (PAPI) to Computer Assisted Personal Interviews (CAPI). Few households are also interviewed via telephone. If a person is too infirm or absent at the time of the interview, a proxy interview is conducted, which covers only a reduced set of topics.

All household members that were sampled at the start of the survey are referred to as Original Sample Members (OSMs). Each OSM over the age of 16 has been interviewed annually since 1991 as long as she or he did not refuse to take part in the panel or her or his address is unknown. Household members that moved into a household with an OSMs are interviewed as well, but not followed if they leave the household again. They are referred to as Temporary Sample Members (TSMs). Children born to OSMs become OSMs as well. Parents of OSMs that are TSM become

<sup>7</sup> The BHPS data is freely available from the UK Data Archive.

<sup>8</sup> See Taylor et al. (2010: A5-1ff) for details on the construction of weights.

<sup>9</sup> In the descriptive analyses of BHPS and SOEP data, I use cross-sectional weights to adjust for non-random sample selection in both data sets. I refrain from using weights in the multivariate, longitudinal analyses, because including design weights in these models is very complex, e.g. period-specific weights cannot be included in ordinary fixed-effects regression models (Bjerk 2009: 9, footnote 13). In these models, non-randomness of the sample is controlled for, if selection processes are due to observables or time-constant unobserved heterogeneity (cf. Section 4.6.1).

Permanent Sample Members (PSMs) and are also followed if they leave the household. At each interview, all eligible household members are interviewed individually and supplementary information on the household is collected. The BHPS covers a wide range of topics including neighbourhood characteristics, intentions for residential relocations and actualised relocations, and characteristics of the dwelling. Additional topic modules are asked at certain waves, e.g. regarding the cohabitation history, and additional neighbourhood characteristics.

OSMs and PSMs are followed when they leave the household or relocate. Several measures are taken to track movers: Change-of-address and address-confirmation cards are issued to respondents before field work starts. If the field team did not receive information about a new address beforehand, a forwarding address or phone number is searched from other respondents, new residents at the old address, neighbours, local phone directories, shops or post offices. As a last resort, the panel maintenance team tries to identify new addresses through contact persons that were provided by the respondents (Taylor et al. 2010). Buck (2000b) and Rabe and Taylor (2010) found no attrition bias due to residential relocations in the panel.

#### 4.3.1.2 Socio-Economic Panel Study

The Socio-Economic Panel Study (SOEP) was established in 1984 and is run by the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung, DIW) in Berlin.<sup>10</sup> The SOEP is a representative survey of the German population. The original samples of 1984 were drawn separately for the autochthonous (sample A) and foreign population (sample B); the latter was over-sampled to achieve a sufficient number of cases.<sup>11</sup> The sample selection for sample A was based on a random selection of 584 sample points from a market research address register through a multi-stage stratified sampling procedure. For each sample point, interviewers selected households by means of a random-walk procedure. Sample B was selected using a random draw of metropolitan areas and counties for each nationality as PSUs. Households were then selected from the respective foreigner register in each PSU. Before reunification, an East German sample was added, which was drawn from the East German central population register.

In addition, five supplementary and boosting samples were drawn until 2006, which followed slightly divergent sampling strategies.<sup>12</sup> I do not use the high-income sample G and the innovation sample I in my analysis, as they are very selective samples and use specific instruments respectively. The data set provides

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<sup>10</sup> The SOEP data can be obtained from the DIW.

<sup>11</sup> Sample B includes households with a Turkish, Greek, Yugoslavian, Spanish or Italian household head.

<sup>12</sup> See Wagner, Frick and Schupp (2007: 149ff) for a description of the sample strategies.

longitudinal and cross-sectional weights to adjust the sample.<sup>13</sup> In 2008, 10,959 of 12,651 households were successfully interviewed. In these households, 22,594 individuals lived of which 19,684 completed a full interview (response rate: 87 per cent). The field period for data collection starts in February (January before 2005) each year. Interviews run until October, but by March normally about two thirds of all interviews are collected. Data is collected in a mixed mode approach. The survey is mainly conducted through CAPI, but also a considerable number of self-administered PAPI are carried out.<sup>14</sup> No proxy interviews are conducted.

Data for each participating household is collected annually and each household member above the age of 17 is interviewed. In contrast to the BHPS, there is no difference between OSMs and TSMs in the SOEP.<sup>15</sup> Every member of a household in which a SOEP sample member lives is followed if this household is left again.<sup>16</sup> This also applies to children born to household members. At each interview, all eligible members of the household are interviewed individually. One household member provides supplementary information on the household in general. The range of topics in the SOEP is similar to the BHPS. The intention to relocate is not recorded in the SOEP (Wagner, Frick and Schupp 2007).

Relocated households and members leaving the household are traced through various means. A database of the respondents addresses is updated regularly based on information from the respondents themselves by keeping in contact with the households throughout the year, or from the interviewers' fieldwork, e.g. by talking to neighbours, and from searches in other (official) address databases. For the year 2008, 96.3 per cent of the addresses of relocated households could be identified. Due to the high rate of identified movers, panel attrition due to residential relocations is not considered a problem (TNS Infratest 2008: 28).

### ***4.3.2 Neighbourhood Level***

In Section 3.3, I have described, how past research measured neighbourhood quality. In the following, I describe the data that I use to measure neighbourhood quality in England (Section 4.3.2.1) and Germany (Section 4.3.2.2). There are no equivalent data sets for both countries. The selected data sets provide the best available information about neighbourhoods for each country. Although there are some impediments

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<sup>13</sup> See Kroh (2009) for a short overview.

<sup>14</sup> CAPI was introduced in 2000.

<sup>15</sup> Schonlau, Watson and Kroh (2010) examine the effect of such differences in following rules on the sample population. The paper finds following rules to have relatively little effect on sample size.

<sup>16</sup> This following rule was established in 1989.

to direct cross-national comparison. In Section 4.5.1.3, I describe the construction of neighbourhood quality measures from these data.

### 4.3.2.1 Indices of Multiple Deprivation

The Indices of Multiple Deprivation (IMDs) provide the most comprehensive data on neighbourhood quality in England.<sup>17</sup> In 2000 the IMDs were introduced and renewed in 2004 (IMD2004) and 2007 (IMD2007).<sup>18</sup> The IMDs have been created by Noble et al. (2003) and Noble et al. (2008) and were intended to inform policy and planning. As the construction of the indices fundamentally changed between 2000 and 2004, this elaboration focuses on the two recent editions. The IMDs consist of seven domain-specific indices (Income deprivation; Employment deprivation; Health deprivation and disability; Education, skills and training deprivation; Barriers to housing and services; Living environment deprivation; Crime) which cover the social and built dimension as well as the environmental conditions of the neighbourhood and a general, weighted index combining these different domains.<sup>19</sup> The domain-specific indices are built on a set of about 40 diverse indicators. The indicators are mainly drawn from administrative sources and were selected based on their appropriateness to measure the respective dimension of deprivation, their availability at a small-scale geographical level, recent measurement points, expected recurrent measurement in the future and their statistical robustness (Noble et al. 2006). For each domain, a score is computed using factor analysis. The higher the score, the more deprived a neighbourhood is. Then, the neighbourhoods are ranked according to the score for each domain. The lower the rank, the more deprived a neighbourhood is. The ranks range from 1 (the most deprived neighbourhood) to 32,482 (least deprived neighbourhood).

The IMDs provide only cross-sectional information. Most of the underlying data refers to the years 2001 (IMD2004) and 2005 (IMD2007) respectively. While the computing of the general index and the derived indices stayed the same between 2004 and 2007, some variables were changed in the Income deprivation domain and the Education, skills and training deprivation domain, but neighbourhood deprivation measured by IMD2004 and IMD2007 is rather stable over time. I decided to

<sup>17</sup> This presentation of the IMDs is based on Noble et al. (2003) and Noble et al. (2008) if not otherwise stated. Only the English IMDs are described.

<sup>18</sup> The IMDs can be retrieved freely from the Internet (Office for National Statistics 2012b).

<sup>19</sup> The overall score of deprivation is constructed using the ranks of the domain-specific indices, applying a logarithmic transformation and a weighting procedure. The transformation is  $X = -23 * \log(1 - R * (1 - \exp(-100/23)))$ , where  $R$  denotes the domain-specific rank which is scaled to the range  $[0, 1]$  by  $R = (-1 * \text{domain-specific rank} + \text{number of LSOAs}) / \text{number of LSOAs}$ . The income and employment indices are more heavily weighted than the other indices and account for 45 per cent of the overall score. The resulting score ranges by definition from  $[0, 100]$ .

use both indices combined for the period 2000 to 2008, because for these years neighbourhood data for Germany is available.

The IMDs can be linked to the BHPS using the Lower Super Output Areas (LSOAs) identification number.<sup>20</sup> LSOA are the smallest geographical unit that IMDs are available for. LSOAs contain 1,500 inhabitants on average. In 2007, the population size in LSOAs ranged from 400 to 7,000 inhabitants. Using the LSOA identification number assigned to all households in the BHPS, the IMDs can be easily matched to the individual and household level information.<sup>21</sup>

#### 4.3.2.2 Microm Data Set

The SOEP data can be merged with information on neighbourhoods from the Microm data set. The Microm data set has been generated by a market research company (Microm Micromarketing-Systeme und Consult GmbH) for commercial purposes. The data can be merged to the SOEP data set at the household level from the year 2000 onwards using household identification numbers.<sup>22</sup> Data before 2004 is taken from the year 2004, i.e. if the household does not relocate in that time it has the same data values assigned. Most of the data is available at the building (on average 8 households) or street level (on average 25 households). If a building hosts less than 5 households, the building is pooled with similarly structured buildings in the direct proximity to protect privacy (Goebel et al. 2008).<sup>23</sup> Thus, neighbourhood units at the street and building level are considerably smaller than LSOAs in England. The advantages and disadvantages of such “microneighbourhoods” (Hipp 2007: 663) have been described in Section 3.3.3. There it was argued that small neighbourhood delimitations are appropriate to measure neighbourhood quality.

About 60 variables are available in the Microm data set that describe the neighbourhood (Goebel et al. 2008). The data are mainly aimed at identifying potential consumers. Nevertheless, there are numerous variables that are highly relevant for measuring neighbourhood quality. The variables in the data set cover the following topics: purchasing power, consumer behaviour, built structure, demo-

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<sup>20</sup> LSOAs have been designed to provide constant geographical units over time for statistical purposes and delimitations have been chosen to account for a socially homogeneous population and obvious boundaries (Office for National Statistics 2007). It can be argued that LSOA are a relatively good representation of the neighbourhood concept outlined in Section 3.3.3 (Noble et al. 2006).

<sup>21</sup> The LSOA identification number for respondents in the BHPS is not part of the public distribution of the data set, but can be obtained free of charge under special licence from the UK Data Archive.

<sup>22</sup> The data can only be analysed on site under special license from the DIW.

<sup>23</sup> Additional data is available on the “*Marktzellen*” level. This unit contains 450 households on average. However, there are only six variables available at this level which cover mobility and the purchasing power in the neighbourhood.

graphic characteristics and residential mobility. The data set also provides a number of comprehensive variables describing dominant life styles and social milieus in neighbourhoods. Information about the generation of all these variables by Microm Micromarketing-Systeme und Consult GmbH is quite limited. In the following, I describe the generation of the variables central for my analysis in detail.

The *purchasing power* variable is based on official tax data which is enhanced through estimations by the data provider. Official register data on income and taxes at the municipality level is broken down to lower levels of data aggregation using regression models (ibid.). An internet search brought to light a Microm documentation from 2000, in which the following variables were listed as entering the regression for modelling purchasing power on lower levels of data aggregation: age structure, credit risk, share of foreigners, Microm-generated variables on social milieus, family structure, building types, street type, cars in area (Microm Micromarketing-Systeme und Consult GmbH 2000). The variable *average population turnover* is based on a data base of movers maintained by the Deutsche Post AG (primary German postal service) and extended with further, not specified data sources (Microm Micromarketing-Systeme und Consult GmbH 2012). For *newspaper readers* and *donations*, there is no information on the generation of the variables.

### 4.3.3 Regional Level

I also include regional level data in my analysis. The regional data is mainly used to describe housing markets. Data are drawn from official sources.

#### 4.3.3.1 English Regional Data

For England, data at the level of 88 counties is used. I use the variable *share of owned dwellings* which is based on information from the 2001 census (Office for National Statistics 2012b). Unfortunately, there is no information on home owner rates in counties over time from official sources. Thus, the data from 2001 is used for all years.<sup>24</sup> The variable *number of new constructions* is based on information from the Department for Communities and Local Government's housing statistics (Department for Communities and Local Government 2012b). Missing information for singles years is linearly interpolated for each county. The variable *population balance* is based on official data from the Office for National Statistics' annual population estimates (Office for National Statistics 2012a). The variable *regional unem-*

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<sup>24</sup> At the regional level, the share of home owners is available for the years 2000 to 2007. In most regions, home owner rates do not change substantially over time and it can be assumed that this is also true at the county level.

*ployment rate* is based on data from the official labour market statistics of the Office for National Statistics (Office for National Statistics 2012c). The regional data has been merged with the BHPS data using the Local Authority District code available under special license from the UK Data Archive.

#### 4.3.3.2 German Regional Data

For Germany, data at the level of counties (*Kreise und kreisfreie Städte*) is used. Germany is divided into 413 counties. The information can be matched to the SOEP data using an official identification number (*Gemeindekennziffer*), which is available for all SOEP households under special license. The data is drawn from the INKAR data set from 2010. The INKAR data set is a comprehensive collection of official data provided by the Federal Institute for Research on Building, Urban Affairs and Spatial Development. More specifically, I use the variable *share of buildings with only one or two dwellings* which is based on official statistics from the projection of the dwelling stock in Germany of the federal states and the federal government (*Fortschreibung des Wohngebäude- und Wohnungsbestandes des Bundes und der Länder*). The variable *number of new constructions* is drawn from data on constructions of the federal states and the federal government (*Statistik der Baufertigstellungen des Bundes und der Länder*). The variables *population balance* and *regional unemployment rate* are based on official data from the Eurostat Regio database.

### 4.4 Sample Selection

My analytic sample consists of data for the years 1991-2008 and is further restricted in a number of ways: First, I exclude all individuals that do not live in private households. For example, students that live in dorms and older people in retirement homes are excluded from the analysis by this rule. I exclude these observations, because the relocation behaviour of individuals in institutional homes is different from other individuals. In addition, measures of housing quality that are used for other households cannot readily be applied for institutional homes, e.g. room stress indicators. I also exclude members of armed forces, as their choice of location is not voluntary. Second, I only include information on the household head and her or his partner. This rule excludes young children living in a shared household with their parents from the analysis. I only consider household heads and their partners, since I concentrate on individuals that have left the parental nest and started their own residential trajectories. Furthermore, the household head and her or his partner are most likely to make decisions regarding relocation behaviour in the household. To identify household heads, I use the indicators provided in the BHPS and SOEP. In the BHPS, the household head is the principal owner or renter of the prop-



erty. In case of shared ownership, the eldest owner takes precedence (Taylor et al. 2010: App2-3). In the SOEP, the household head is the person that considers her- or himself as being the person that can best provide information about the household (Haisken-DeNew and Frick 2005: 21).

Third, I exclude all individuals younger than 18 years and older than 79 years. Individuals below the age of 18 that relocate independently from their parents are too few. Individuals above the age of 79 are likely to have a particular relocation behaviour. For example, older individuals are more likely to relocate because of their health. Fourth, I do not consider households of unrelated adults on the grounds that in these households it is not clear who makes decisions about relocations. In addition, in households of unrelated sharers, the clustering of observations in households cannot be avoided by separating the analysis by gender. Due to this problem, I also exclude homosexual couples from the analysis. Finally, I only consider individuals that have been observed for at least two observations. Individuals that have only been observed in one panel wave cannot contribute information about changes in the quality of their location and, thus, are excluded. Further, more specific restrictions of the sample are described in the introductions to each empirical chapter.

## 4.5 Measurement

I now describe the construction of the dependent (Section 4.5.1.1) and independent variables (Section 4.5.2) used in the empirical analysis. Descriptive statistics of these variables are presented in each empirical chapter, as the analytic samples differ between the chapters. The original names of the variables in the BHPS and SOEP that are used in the present analysis are presented in Table A.1 in the appendix.

### 4.5.1 *Dependent Variables*

#### 4.5.1.1 Residential Relocation

In Chapter 5, I analyse the occurrence of *residential relocations*. Beside being the dependent variable in Chapter 5, residential relocations is also the most important independent variable in Chapter 6 and Chapter 7. I identify residential relocations through the address log files that the field work teams maintain for each respondent. Through these files, respondents that live at a new address compared to the last interview can be identified. I consider all address changes as residential relocations irrespective of the distance that the respondents relocated. Using the address log files instead of subjective measures of mobility is especially helpful for also gathering in-

formation on respondents that have not been interviewed, but for which an address log file entry is available. This is relevant to analyse the selectivity of attrition after residential relocations. However, for these cases, there is no information available from the interview after the residential relocation. For the analysis of the occurrence of residential relocations, the event is measured at the survey year, before the relocation takes place, i.e. relocations are measured at  $t$  if it occurs until  $t + 1$ .<sup>25</sup> For the analysis of the effects of relocations on other variables, the relocation variable is coded 1 at  $t$ , if a relocation occurred between  $t - 1$  and  $t$ . Otherwise the variable is coded 0.

For the analyses in Chapter 6 and Chapter 7, I differentiate types of relocations depending on whether households relocate together, or whether households change their compositions with the relocation: 1) *Stable single* ( $\leq 35$  years): A single under the age of 36 relocates and stays single after the relocation. 2) *Stable single* ( $\geq 36$  years): A single above the age of 35 relocates and stays single after the relocation. 3) *Stable couple*: A couple relocates collectively and still lives together after the relocation. 4) *Single to couple*: A single relocates and lives together with a partner after the relocation. 5) *Dissolved couple*: A couple relocates and the partners live in separate households after the relocation. 6) *Other relocations*: If the household of origin or destination is neither a single nor a couple household, I categorise the relocations as other. This category also includes households, in which the type of relocation could not be identified clearly. All variables are binary and coded 1 if the particular event took place and 0 otherwise.

In Chapter 8, I analyse the effect of *long-distance relocations* on dual-earner couples. I operationalise long-distance relocations using a proxy. I treat relocations across borders of Local Authority Districts (LADs) in England and relocations across county borders in Germany as long-distance relocations. This approach has also been used in past research in England (e.g. Rabe 2011) and Germany (e.g. Jürges 2006: 306, but author also takes into account the distance between counties' capitals). Arguably, relocations across administrative borders is a relatively imprecise proxy for long-distance relocations. Relocations 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, relocations within administrative borders may be actually long, if the county or LAD covers a large area. Therefore, I re-estimated all models in Chapter 8 using the actual relocation distance with a cut-off value of 50 km to indicate long-distance relocations. 50 km is a common threshold for long-distance relocations in the literature (Boyle et al. 2003). Unfortunately, the information on relocation distances is not available in the SOEP before 2001. Therefore, the main

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<sup>25</sup> Due to the fact that data collection for both panels is conducted on a yearly basis, not more than one relocation between two consecutive interviews is observable. However, certain individuals may move more often. To circumvent this problem I considered monthly observations of the dependent variable, since the month of relocating into the current dwelling is recorded in both panels. However, the vast majority of relevant covariates are only collected yearly.

results are presented using the cross-border proxy for long-distance relocations. I refer to the results using actual relocation distances, if they differ substantially.

#### 4.5.1.2 Room Stress

In Chapter 6, I analyse the effect of residential relocations on *room stress*. In Section 3.2.1, I identified room stress as one of the most important measures of housing quality. Room stress measures the relation of room needs to available rooms for a household and is a standard measure of housing quality (e.g. Rossi 1955: 179; Townsend 1979: 476). In this analysis, the room need of a household is defined as follows:

- Two rooms are added for the household head.<sup>26</sup> If the head is living with a partner, they also have a combined room need of two rooms.
- For every other household member above the age of 9, one more room is added.
- For every child below the age of 10 in the household, half a room is added. The room need is rounded upwards.

The construction of the room need measure follows Clark (1992) and Huang (2003: 599), but the room need of adolescents is weighted more heavily. I call this room need the ‘objective room need’. The available rooms are then subtracted from the objective room need for the household to compute the room stress variable.<sup>27</sup> Thus, a positive room stress value indicates that a household has less available rooms than its objective room need, while a negative room stress value indicates that a household has excess rooms relative to the objective room needs. I understand room stress as a relative measure. While the scale has a zero point at which objective room needs and number of actual rooms match, I do not claim that this is the optimal room stress situation for each household. As becomes apparent in the empirical analysis, most individuals live in ‘negative’ room stress, i.e. their dwellings have more rooms than they would need according to their objective room need. Thus, the room stress indicator may be rather interpreted as a measure of wealth than deprivation in England and Germany.

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<sup>26</sup> A single person is in need of two rooms to separate basic functions of the dwelling, e.g. eating and sleeping, in different rooms and to be able to sustain their privacy even when hosting guests.

<sup>27</sup> The variable for the number of rooms in the dwelling is measured slightly different in the BHPS and SOEP. In the BHPS, respondents are asked for the number of all rooms excluding kitchens, bathrooms and sublet rooms. In the SOEP, respondents are asked for rooms larger than 6 square metres, excluding kitchens and bathrooms. Thus, a similar dwelling may be reported slightly different in the two surveys and English households are likely to report more rooms than German households. This has to be kept in mind in comparing descriptive measures of room stress across the two countries.

### 4.5.1.3 Neighbourhood Quality

In Chapter 7, I analyse the effect of residential relocations on *neighbourhood quality*. To measure neighbourhood quality in England, I use data from the IMD2004 and IMD2007 (cf. Section 4.3.2.1). However, Niggebrugge et al. (2005) and Rabe and Taylor (2010) report problems with the indices of Barriers to housing and services and Living environment deprivation, since the indices do not behave in the expected way. In Table 4.3 a principal component analysis of the domain specific indices is presented. All indices but Barriers to housing and services and Living environment deprivation load highly and uniquely on the first component, indicating that these indices can be used to describe the latent variable neighbourhood quality. The indices of Barriers to housing and services and Living environment deprivation load on a separate component. Therefore, I exclude both indices, Barriers to housing and services and Living environment deprivation, from the analysis of neighbourhood quality.

**Table 4.3** Principal Component Analysis of IMDs

IMDs	Factor 1	Factor 2
Income	0.917	0.147
Employment	0.935	-0.011
Health deprivation and disability	0.921	-0.006
Education, skills and training	0.850	-0.191
Barriers to housing and services	-0.107	0.902
Crime	0.748	0.082
Living Environment	0.555	0.555

Data: IMD 2007

Note: Only data from 2007; Method: Principal Component Analysis, Rotation: Varimax; Extraction criteria: Eigenvalue > 1; overall KMO= 0.83

I use the remaining domain-specific indices to compute a general neighbourhood quality measure. To this end, I rescale the score of each index to vary between 0 and 100. Then, I sum the scores. I weigh the income deprivation score twice as much as the other scores together to account for the high importance of the economic situation in a neighbourhood. I use the logged scores for the indices of income deprivation, employment deprivation and education deprivation, because they have a very skewed distribution. Finally, I standardise the variable with a mean of 0 and a standard deviation of 1. I invert the variable, so that a higher value indicates a better neighbourhood quality. I assign the data from IMD2004 to the years 2000 to 2003 and the data from IMD2007 to the years 2004 to 2008.

The neighbourhood quality measure for Germany is based on four variables from the Microm data set (cf. Section 4.3.2.2): average purchasing power (used as a measure of affluence), residential turnover rate (used as measure of residential stability),

prevalence of national newspaper readers (used as proxy for cultural capital), prevalence of donations (used as proxy for social capital and affluence). Purchasing power is a continuous variable. I standardise the variable separately for West and East Germany and each observation year. I standardise separately for East and West Germany, because of the high average difference in purchasing power between the two parts of Germany. The other variables are categorical and have 9 categories each. The categorical variables are based on underlying continuous variables, which are themselves not part of the Microm data set. For each of the categorical variables, 1 indicates a very low value, 5 indicates an average value and 9 indicates a very high value on the underlying continuous variable. Purchasing power is measured at the street sector level. No lower level information is available for this variable. The other variables are measured at the building level. Besides the residential turnover rate, no higher level information for these variables are available. I rescale all variables so that they vary between 0 and 100. To test the assumption that these variables measure the latent concept neighbourhood quality, I perform a principal component analysis. The results in Table 4.4 show that for the year 2008, two principal components are extracted. Purchasing power, newspapers and donations load on the first component, while only residential stability loads on the second component. Due to the theoretical relevance of residential stability and the lack of better measures I still decide to combine these variables in the neighbourhood quality measure. To construct the neighbourhood quality measure, all variables are summed and the average purchasing power is weighed twice as much as the other variables. The resulting index is standardised in the same way the English neighbourhood quality measure is standardised. A higher value indicates a better neighbourhood quality.

In the analysis, the focus is on changes in neighbourhood quality due to residential relocations. The issue of changes in the neighbourhood itself is left aside. These changes may affect the neighbourhood quality for the residents in the area, but may also trigger relocations. For example, gentrification processes may affect the average neighbourhood quality for the residents in a neighbourhood. At the same time, individuals may leave the neighbourhood because of these changes. These changes are very interesting and important to analyse. Unfortunately, the available data does not adequately capture these dynamic processes. The IMDs are only measured at two points in time. The Microm data only varies over time after 2003. Therefore, I average the neighbourhood quality across residential spells, i.e. the time that an individual lives in a particular neighbourhood. Thus, by definition, neighbourhood quality can only change, if the individual relocates. As long as individuals live in the same neighbourhood, they have the same neighbourhood quality assigned.

The neighbourhood quality measures for England and Germany use the available data to its maximum. They describe neighbourhoods in England and Germany in the best way possible given data limitations. However, this makes a direct comparison of changes in neighbourhood quality between England and Germany impossible, because very different measures for neighbourhood quality are applied. Only the

**Table 4.4** Principal Component Analysis of Microm variables

Variable	Factor 1	Factor 2
Purchasing power	0.744	0.298
Residential stability	-0.028	0.975
Newspapers	0.887	-0.286
Donations	0.825	0.101

Data: Microm 2010

Note: Only year 2008; Method: Principal Component Analysis, Rotation: Varimax; Extraction criteria: Eigenvalue > 1; overall KMO= 0.48

direction of changes can be interpreted meaningfully, if it is assumed that the variables measure the latent variable neighbourhood quality.

#### 4.5.1.4 Career Characteristics

In Chapter 8, I analyse the effect of long-distance relocations on subsequent employment of dual-earner couples. I analyse whether partners *leave employment* after relocations. The leaving employment variable is binary and coded 1 if the respondent is unemployed, inactive or in education at  $t + 1$  and coded 0 if the respondent is still in employment, or entered other activities at  $t + 1$ . Individuals that are in other activities at  $t + 1$  are treated as not having left employment, since they may still have a legal work contract, e.g. when in maternal leave. The measure of employment status depends on the status at the time of the interview irrespective of changes between the interviews.

Additionally, to describe the quality of pre- and post-relocation jobs for those that maintain employment, the hourly gross *wage rate* is analysed in accordance with recent literature (e.g. Böheim and Taylor 2007). The hourly wage rate is a more accurate measure of potential lifetime earnings than the gross labour income, for the reason that the hourly wage rate is independent from the work hours of individuals. Past literature shows that especially women temporarily decrease work hours after relocations (Boyle, Feng and Gayle 2009). By using the hourly wage rate, this drop in work hours does not affect my results. Imputed, current, monthly labour wages before taxes at the time of interview deflated to prices of 2006 are used. The wages are made comparable across countries by using purchasing power parity. Reported normal working hours and overtime are used to compute hourly wage rates. I assume that for paid overtime respondents receive a 50 per cent wage premium (see similarly Rabe 2011).<sup>28</sup>

<sup>28</sup> The 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

### 4.5.2 Independent Variables

In my analyses I include the following independent variables.

- *Women* is coded 1 if the respondent is female and 0 if the respondent is male.
- The *age* of respondents in years is considered. To model non-linear relationships with age, I also include  $age^2/100$  in some analyses. I divide the squared term by 100 to make the scale of the variable more similar to the other variables in the analyses. The variables are continuous.
- I include variables for the *presence of children aged 0 to 4*, *presence of children aged 0 to 5*, *presence of children aged 0 to 9*, *presence of children aged 5 to 10* and *presence of children aged 10 to 17*. All variables are binary and indicate whether at least one household member is in the given age range (coded 1), or whether no household member is in the given age range (coded 0). In some analysis, I also include a variable indicating the event of childbearing. To avoid multicollinearity between the childbearing variable and the variable *presence of children aged 0 to 9*, I include the variable *presence of children aged 1 to 9* instead of latter variable. The variables are measured at the household level.
- I differentiate several life course stages with regard to age, partnership status and presence of children: *single* ( $\leq 35$  years old), *single* ( $\geq 36$  years old), *single parent*, *couple parent*, *childless couple* and *multigenerational household*. In multivariate analysis, these life course stages are included as dummy variables coded 1 if the respondent is in this stage and 0 otherwise. The variable is measured at the household level.
- I include various family events in my analysis. The variable *child born* is coded 1 if respondents experienced a childbirth between  $t - 1$  and  $t$  and 0 otherwise. If a child left the household between  $t - 1$  and  $t$ , the variable *child moved out* is coded 1 and 0 otherwise. If respondents live in a household in which a partner moved in after the last interview, the variable *partners moved together* is coded 1 and 0 otherwise. If respondents lived in a shared dwelling with a partner at  $t - 1$ , but not anymore at  $t$  the variable *partners moved apart* is coded 1 and 0 otherwise. If respondents' partners died between  $t - 1$  and  $t$ , the variable *partner died* is coded 1 and 0 otherwise.
- I differentiate three categories in the partnership status. The variable *single* is coded 1, if respondents live without a partner in the same household.<sup>29</sup> If respondents cohabit with a partner, but are not married, the variable *cohabiting* is coded 1 and otherwise 0. If respondents live together with their spouses, the

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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).

<sup>29</sup> Living-apart-together (LAT) couples can only be identified in a few waves in the BHPS. While respondents in LAT couples could be identified in the SOEP, for reasons of comparability, LAT couples are treated as singles in the present analysis.

variable *married* is coded 1 and 0 otherwise. Because I do only include one single or one couple per household in my analytic sample, the partnership status variables are constant at the household level.

- I measure the presence of immigrants in the household. Immigrants have been born outside of England and Germany respectively (first generation immigrant) or have been born in England and Germany respectively by parents of which at least one party immigrated (second generation immigrant). *Immigrant in HH* is a binary variable that takes the value 1 if at least one household member is a first or second generation immigrant and 0 if no household member is an immigrant.
- For England, the binary variable *egalitarian couple* is coded 1, if both partners strongly agree or agree to the statement “Both the husband and wife should contribute to the household income” and is coded 0 otherwise. For Germany, the variable *egalitarian couple* is coded 1, if the male partner contributes at least one third of the couples’ time use on chores, shopping and childcare on a regular Sunday and is coded 0 otherwise (cf. Jürges 2006).
- The variable *she earns  $\geq 50\%$*  is coded 1, if the female partner earns at least 50 per cent of the couple’s annual labour income and is coded 0 otherwise. *She earns  $\leq 25\%$*  is coded 1, if the female partner earns not more than 25 per cent of the couple’s annual labour income and is coded 0 otherwise. Both variables are included at the same time in the analysis and the reference category is women that earn more than 25 per cent and less than 50 per cent of the couples’ annual labour incomes (even though the operationalisation of the variable is different, the basic idea follows from Sørensen and McLanahan 1987).
- *Household income (log)* is measured as annual household income after taxes and including transfers and benefits.<sup>30</sup> To adjust the income for economies of scale in the household and age-specific needs, I equalise the income using the modified OECD-scale. This scale assigns a value of 1 to the household head, a value of 0.5 to each additional household member above the age of 13 and a value of 0.3 to each child under the age of 14 (Eurostat 2011).<sup>31</sup> I deflate the income to prices of 2006. I adjust the income using purchasing power parity to make it comparable across countries. Thus, the unit of income is PPP-\$. Finally, I transform the variable using the logarithm, because in general income has decreasing marginal returns. The variable is measured at the household level and is continuous.

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<sup>30</sup> For the SOEP I use post-government income information from the Cross-National Equivalent Files. For the BHPS, I use post-government income data from the ‘Derived Current and Annual Net Household Income Variables, BHPS waves 1-18’ (Levy and Jenkins 2012). For the BHPS, post-government income information is only available for households in which all household members responded.

<sup>31</sup> I use an equalised income measure in my analysis, as I do not include counts of the number of household members in the relevant age groups in my multivariate models.



- I use a continuous variable *relocation distance* that measures the distance between the present and the previous locations of respondents in kilometres. The distance measure is constructed by the survey teams using geo-coded address data of the respondents. The distance variable is available with the public BHPS file and for the SOEP it is available under special license. Geo-coded addresses in the SOEP are only available starting in 2000.
- The variable *involuntary relocation* is coded 1, if respondents report at least one of the following reasons for their relocations: ‘notice given by landlord’, ‘housing costs too high’ and ‘partnership dissolution’. The reason ‘housing costs too high’ cannot clearly be identified in the BHPS data, because the reason is not coded alone, but rather as ‘Wanted smaller/cheaper accommodation’.
- The variable *years in residence* measures the time that respondents lived in a dwelling. In the SOEP, only the household head reports the time she or he has lived in the dwelling. I assign this value to all household members, but I restrict the maximum time in residence to respondents’ age. This is a continuous variable.
- I measure the *housing costs* of households. The housing costs cover monthly gross rent and mortgage payments. I adjust the costs using purchasing power parity to make them comparable between England and Germany and divide the costs by 100. Thus, the variable indicates the monthly housing costs in PPP-\$ 100. The variable is continuous and measured at the household level.
- The tenure status of respondents is measured at the household level. In England, the variable *social housing* indicates whether respondents live in accommodation rented from local authorities or housing associations (coded 1, coded 0 otherwise). In Germany, the variable *social housing* indicates whether respondents live in rental accommodation with rent control due to public subsidization of the dwelling (coded 1) or not (coded 0). The variable *rented privately* is coded 1 if respondents live in rented accommodation that does not fall in the category of social housing just described and coded 0 otherwise. If respondents live in own homes for which they still pay mortgages, the variable *owned with mortgage* is coded 1 and 0 otherwise. If respondents live in own homes without paying mortgages, the variable *owned outright* is coded 1 and 0 otherwise.
- The employment status is measured with three binary variables. The variable *employed* is coded 1 if the respondent is in paid employment or self-employed and coded 0 if the respondent is not in paid employment or self-employed. The variable *unemployed* is coded 1 if the respondent reports being unemployed and coded 0 otherwise. The variable *inactive* is coded 1 if the respondent is not in paid employment, self-employed or unemployed and coded 0 otherwise. For example, respondents are inactive, if they are retired, in education, or in parental leave.
- I include variables describing events in the job trajectory in the analyses. The variable *promotion* indicates whether respondents’ real hourly wage rate increased by more than 10 per cent since the last interview (coded 1, coded 0

otherwise). The variable *demotion* is coded 1 if respondents' real hourly wage rate decreased by more than 10 per cent since the last interview and is coded 0 otherwise. The variable *became unemployed* is coded 1 if respondents are unemployed at the time of the interview, but were not unemployed at the last interview (coded 0 otherwise).

- I use the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) classification scheme (König, Lüttinger and Müller 1988). The CASMIN scheme differentiates nine levels of qualification: inadequately completed education (1a), general elementary school (1b), basic vocational qualification (1c), intermediate general qualification (2a), intermediate vocational qualification (2b), higher general qualification (2c\_gen), higher vocational qualification (2c\_voc), lower tertiary qualification (3a) and higher tertiary qualification (3b). I combine these into three categories: *basic* (1a, 1b, 1c), *intermediate* (2a, 2b, 2c), and *higher education* (3a, 3b). In the analysis, I include basic and higher education as dummy variables with intermediate education as the reference category.
- To measure the attachment to the labour market I use the variable *continuous work history*. The variable measures the time the respondent spent being employed since she or he first left education as a share of the time since she or he left education. Thus, a respondent that worked continuously since she or he left education has a value of 1, while a respondent that was out of employment for some time since she or he left education will have a value smaller than 1. A respondent that never worked will have the value 0.
- I measure the occupational status of respondents using four binary variables. I use the one-digit International Standard Classification of Occupations (ISCO) code to generate the variables. The variable *professional/manager/technician* is coded 1, if respondents work as legislators, senior officials and managers (ISCO 1), professionals (2) or technicians and associate professionals (3). Otherwise the variable is coded 0. If respondents work as clerks (4), service workers and shop and market sales workers (5), the variable *skilled non-manual* is coded 1 and 0 otherwise. If respondents work as skilled agricultural and fishery workers (6), craft and related trades workers (7), or plant and machine operators and assemblers (8), the variable *skilled manual* is coded 1 and 0 otherwise. For respondents in elementary occupations, the variable *partly and unskilled occupations* is coded 1 and for all other respondents the variable is coded 0. Members of armed forces (0) are dropped from the analysis (cf. Section 4.4).
- *Time with employer* measures the time respondents worked 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.

- To control for regions, I include binary variables for *East* Germany (coded 1 for East Germany, coded 0 for West Germany) and *Southeast* England (coded 1 for Southeast England including London and coded 0 for the rest of England). See Section 4.1.1 for a justification.
- I measure the *degree of urbanisation*. The variable is measured at the level of counties in Germany and at the level of LADs in England. In Germany, I derive the degree of urbanisation from the municipality classification system (*Siedlungsstrukturelle Gemeindetypen*) of the Federal Institute for Research on Building, Urban Affairs and Spatial Development (Bundesinstitut für Bau- Stadt- und Raumforschung 2009). I join the categories of core cities (*Kernstädte*) to form the metropolitan category. Rural counties are joined to form the rural category. The rest of the municipalities make up the urban category. In England, the variable is based on the ‘Defra Classification of Local Authority Districts and Unitary Authorities in England’ (Rural Evidence Research Centre 2005). ‘Major Urban’ and ‘Large Urban’ cities make up the metropolitan category. ‘Other urban’ and ‘Significant Rural’ LADs are joined in the urban category. ‘Rural – 50’ and ‘Rural – 80’ form the rural category.
- At the level of counties in Germany and LADs in England I measure three characteristics of housing markets. In England, I use the share of *owned dwellings* in a housing market as a measure for the general quality of locations in the market. In Germany, I use the share of buildings with only one or two dwellings as a proxy for house ownership, because no information on house ownership itself is available. The variable *new constructions* measures the number of newly constructed dwellings per 1,000 existing dwellings in each year. The *population balance* is measured as the change in total population of a given year from the year before per 1,000 inhabitants averaged over the last five years. This is a proxy for the demand side on the housing market. All three variables are continuous.
- At the level of counties and LADs, I also measure the *regional unemployment rate* for the civilian labour force.

## 4.6 Methods

The theoretical model developed in Chapter 2 motivates the choice of quantitative, empirical methods in the present analysis in the following ways: First, the theoretical model makes assumptions about the effect of a relocation event on individuals’ quality of location. To estimate the effect of the event as accurately as possible with the available observational data, appropriate methods of regression analysis should be used that account for heterogeneity and self-selection of individuals. Furthermore, the theoretical model relates changes in individuals’ life courses to changes in the quality of locations. The empirical analysis should be able to capture these

dynamics. Fixed-effects regression models meet these requirements. Fixed-effects regression models are the working horse of the present analysis. The models are described in detail in Section 4.6.1. They are applied throughout Chapter 6 and 7. Second, the theoretical model assumes that individuals are embedded in housing markets that shape individuals' opportunities and constraints. Therefore, methods must be applied that allow modelling the contextual effect of housing market characteristics on individuals. Multi-level regression models are appropriate for this kind of analysis. I describe these models in Section 4.6.2. They are applied in Chapter 6 and 7.

Third, the theoretical model assumes that partners in couples are nonindependent in their behaviour. Kenny, Kashy and Cook (2006: 5) highlight four reasons for this nonindependence: 1) "compositional effect": partners are not randomly selected but are similar in a variety of characteristics; 2) "partner effect": behaviour or characteristics of one partner affects the other partner ; 3) "mutual effect": both partners' behaviour or characteristics influence each other; and 4) "common fate": both partners are exposed to the same external conditions. Therefore, methods must be applied that estimate the effect of relocations taking this nonindependence and unobserved, shared characteristics of partners into account. The actor-partner interdependence model, which can be set up as a multi-level model, deals appropriately with these problems and I describe the method in Section 4.6.3. The actor-partner interdependence model is applied in Chapter 8. For the analysis of the occurrence of residential relocations in Chapter 5, I use event history analysis which is further motivated in Section 4.6.4.<sup>32</sup>

### ***4.6.1 Fixed-Effects Regression Models***

Sociological research uses mainly non-experimental, observational data, in which systematic differences in the observed individuals may obscure the effect of explanatory variables, i.e. some kind of treatment, on the dependent variable. First, individuals may be systematically different because of heterogeneity, i.e. selection bias. Second, individuals may be different due to endogeneity, i.e. self-selection into the treatment group (Gangl 2010). It follows that "because [in] observational data analysis [...] the researcher does not have the capacity to assign individuals to treatments [...], researchers must instead investigate how individuals end up in alternative treatment states" (Morgan and Winship 2010: 41). Simple regression analysis may be used, to control for the non-randomness of treatment. If relevant variables are controlled in regression models so that treatment "is as good as randomly assigned" (Gangl 2010), causal effects can be estimated. However, unobserved heterogeneity

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<sup>32</sup> The software Stata version 10.1 (StataCorp 2007) has been used for all empirical analyses, if not otherwise stated.

cannot be accounted for in such regression models (Halaby 2004). In addition, individuals intentional choice of the treatment is mostly not considered (Gangl 2010).

As an example for the present analysis, individuals living in low-quality neighbourhoods may select themselves into the group of movers. If changes in neighbourhood quality after relocations are analysed without taking account of this selection process, the coefficients for relocations may be biased. To alleviate this problem, panel data sets such as the BHPS and the SOEP have the great advantage to offer several observations for each individual. These subsequent observations can be used to identify the effects of certain changes controlling for self-selection and time-constant, unobserved heterogeneity by using special panel regression methods such as fixed-effects regression models. The fixed-effects model is a within-estimation procedure. That is to say that only within-individual variance in the independent variables is used to account for within-individual variance in the dependent variable. Following from this, the model provides a stronger support for causal claims not biased by self-selection processes and time-constant, unobserved heterogeneity, as only changes in the dependent and independent variables are considered.<sup>33</sup> Fixed-effects regression models have repeatedly been praised and considered superior to conventional cross-sectional regression models in the literature (Halaby 2004; Allison 2009: 1ff; Gangl 2010).

The fixed-effects model for individual  $i$  and time period  $t$  can be derived starting from the ordinary least squares (OLS) regression model for pooled observations, i.e. several  $t$  are recorded for each individual:

$$y_{it} = \alpha + \beta x_{it} + \gamma z_i + u_{it}, \quad (4.1)$$

where  $\alpha$  is a constant,  $\beta$  and  $\gamma$  are vectors of coefficients,  $x_{it}$  is a vector of time-variant covariates and  $z_i$  a vector of time-constant covariates (Allison 2009: 12ff; Giesselmann and Windzio 2012: 40ff). However, in OLS estimation for linear regression, it is required that  $u_{it}$  is not correlated across time and is independent from  $x_{it}$  as well as  $z_i$  to estimate unbiased coefficients among other assumptions (Menard 2008: 4ff). The assumption that  $u_{it}$  is not correlated with  $z_i$  and  $x_{it}$  is very strong, as certain unobserved characteristics of individuals are probably correlated with other variables in the equation. For example, this may be a problem if time-constant preferences for certain types of dwellings are not measured in a model, but are correlated with income and both affect outcomes of relocations. For time-constant unobserved heterogeneity, this problem can be solved by decomposing the error term  $u_{it}$  into  $v_i$ , which is fixed for each individual across time, and  $\varepsilon_{it}$ , which is the idiosyncratic error that may vary across individuals and periods. By eliminating  $v_i$  from the equation, the assumption of no correlation between the error term and the independent

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<sup>33</sup> The causal claim may be strengthened even more by explicitly considering the time order of events and processes. Thus, a prior change in the independent variables can be related to a later change in the dependent variable.

variables is weakened to the degree that the idiosyncratic error term should not be correlated with the predictors and with itself over time.

To eliminate  $v_i$  from the equation, several solutions are possible. The easiest way would be to include individual-specific dummy variables that control for  $v_i$  and a pooled OLS regression could be estimated. However, with large samples the computational burden of estimating all individual-specific dummy variables would be high. An alternative and equivalent approach is to de-mean all time-variant variables by using the individual-specific means for all covariates over time such that

$$\bar{y}_{it} = \alpha + \beta \bar{x}_{it} + \gamma z_i + v_i \quad (4.2)$$

and then subtract Equation 4.1 and 4.2. This results in

$$y_{it}^* = \beta x_{it}^* + \varepsilon_{it}, \quad (4.3)$$

where the time-constant individual error term  $v_i$  has been eliminated from the equation and the time-constant unobserved heterogeneity no longer poses as problem. The time-constant  $\alpha$  has been eliminated. Furthermore, time-constant covariates cannot be modelled anymore, because they are differenced out in Equation 4.3. However, if the research question motivates the analysis of a time-constant covariate, the covariate may be interacted with a time-varying variable. Equation 4.3 can be estimated using OLS.

It should be noted that the model still relies on the assumption that  $\varepsilon_{it}$  is not correlated with  $x_{it}^*$ . The subscript  $s$  indicates that no  $\varepsilon$  in the past, present or future is allowed to correlate with  $x_{it}^*$  in the present. This is the assumption of strict exogeneity. However, due to unobserved time-varying heterogeneity this assumption may be violated. In this case, the causal effect of  $x_{it}^*$  cannot be identified. Further, the assumption of exogeneity can also be violated due to reversed causality and measurement error. The effect of measurement error may be stronger in fixed-effects regression than in other types of regression models, since measurement error tends to vary from year to year (Angrist and Pischke 2009: 225). Fixed-effects models also have the same trend assumption. This means that individuals just differ in the level of their individual time-constant variables, but not in their slopes, e.g. fixed-effects models control for selection in the level of time-constant variables but not for selection in trends in time-constant variables (ibid.: 221). The further assumptions that  $\varepsilon_{it}$  should not be auto-correlated within individuals and the assumption of homoscedasticity can be dropped by computing standard errors for cluster-correlated data (Williams 2000).

One of the potential problems of the fixed-effects model is the lower efficiency of the model compared to other specifications, because, at least implicitly, an additional parameter for the number of individuals minus 1 has to be estimated in the model. In addition, fixed-effects models only make use of a relatively small portion of the available sample, on the grounds that only cases with within-variation in the

dependent and independent variable are used to draw inference from. That is to say that the model estimates the average treatment effect on the treated (ATT) in contrast to the population average treatment effect (ATE) (Gangl 2010). Individuals not experiencing a treatment are not contributing to the estimation of the treatment effect. Therefore, generalisations can only be made for those that experienced a treatment. This is especially relevant for the present analysis. Relocations are rare and only those individuals that experience a relocation contribute to the estimated coefficient for relocations. However, the research question of the present analysis is only concerned with outcomes of relocations and, therefore, it is sensible to draw inference only from movers.

An alternative way to model panel data would be random-effects models, which are more efficient than fixed-effects models, because they also consider individuals without within-variation. However, in most cases, random-effects estimations will be biased, as random-effects models rely on the assumption that  $v_i$  and all independent variables are not correlated. Only in the case that this assumption is met, random-effects models provide unbiased and more efficient estimations than fixed-effects models. To test this assumption, a Hausman test can be conducted based on the null hypothesis that the coefficients of a random-effects model are not significantly different from a fixed-effects specification.<sup>34</sup> Only if this null hypothesis cannot be rejected, the random-effects specification should be preferred. However, if the research question motivates a between-individual analysis, e.g. if effects of time-constant characteristics of individuals should be examined, the random-effects model should be preferred over the fixed-effects model. In cases of unbalanced panel data, random-effects models are more efficient than pooled OLS regression to analyse between-individual effects (Giesselmann and Windzio 2012: 91).

It was mentioned above that panel attrition may pose a problem for the analyses of longitudinal data. Results from fixed-effects models are unbiased from attrition, if attrition is random, i.e. unbalanced panel designs are not a problem for fixed-effects regression. Estimation is also unbiased, if non-response is correlated with time-constant characteristics, but problems arise if attrition is correlated with the idiosyncratic error (Wooldridge 2002: 579ff). To test the effect of attrition on the estimation results, Wooldridge (ibid.: 581) recommends to include a lagged indicator for non-response or a lead indicator of panel attrition in the estimation model. If these indicators are not significantly affecting the outcome, this is evidence against correlation of time-varying unobserved characteristics that are correlated with the dependent variable and the selection process controlled for all independent variables.

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<sup>34</sup> Hausman (1978) suggests a test to compare two sets of coefficients of which one may be inconsistent but more efficient than the other.

### 4.6.2 Multi-Level Regression Models

In recent decades, special regression methods have been developed to capture the multilevelled nature of human society, i.e. individuals and other units of analysis are nested within hierarchical groups. A classic example for a three-level data structure are students who are nested within classes which are nested within schools. In multi-level regression, the different levels of data are explicitly taken into account. For longitudinal research questions, time can be modelled as an additional level of data. For particular longitudinal research questions in which units of analysis are also nested in groups, multi-level regression may be a more appropriate analysis tool than fixed-effects regression. Panel regression and multi-level regression models share many similarities as becomes apparent in the following.

Multi-level regression can be understood as a two-step regression analysis (Kenny, Kashy and Cook 2006: 82ff). Here, a two-level model with random intercepts that I use in my analysis is described. In the first step of multi-level regression, the following linear regression equation is estimated:

$$y_{ji} = \beta_{0j} + \beta_1 x_{ji} + \varepsilon_{ji}, \quad (4.4)$$

where  $y_{ji}$  is the outcome for individual  $i$  in group  $j$ ,  $\beta_{1j}$  is a vector of regression coefficients,  $x_{ji}$  are variables at the level of individuals and  $\varepsilon_{ji}$  is random error. What distinguishes Equation 4.4 from a simple linear regression is the index  $j$  for the constant  $\beta_{0j}$ . The index indicates that the constant is allowed to vary by group. This means that the intercept may shift the regression line for each group up or down, while the regression lines of all groups remain parallel. In the second step of multi-level regression,  $\beta_{0i}$  is treated as the outcome of another regression equation:

$$\beta_{0j} = a_0 + a_1 z_j + v_j. \quad (4.5)$$

In this equation, the intercepts  $\beta_{0j}$  are a function of the constant  $a_0$ , group-level predictor variables  $z_j$  and random error  $v_j$ . Equations 4.4 and 4.5 can be joined so that

$$y_{ji} = a_0 + a_1 z_j + \beta_1 x_{ji} + v_j + \varepsilon_{ji}. \quad (4.6)$$

Equation 4.6 has two random error terms:  $v_j$  is a normally distributed random variable that represents variation in the group-specific intercepts that is not due to  $z_j$ .  $\varepsilon_{ji}$  is a normally distributed random variable that represents variation across individuals controlled for  $x_{ji}$  and  $z_j$ . Thus, the intercept consists of two parts in this equation. The fixed part is  $a_0$  and is constant across all individuals, while the random part is  $v_j$  and varies between groups (Twisk 2006: 28).

The levels of analysis may not always be as clearly distinguishable as in the student-class-school example. For example, individuals can be members in more than one housing market over time if they relocate. This kind of data structure can be



accommodated by multiple membership multi-level models (MMMLMs) (Browne, Goldstein and Rasbash 2001; Windzio 2008: 136).<sup>35</sup> In MMMLMs the membership in different groups is weighted. One common way is to use the time which respondents are exposed to the respective groups as a weight. In the estimation procedure, each respondent receives a weighted combination of residuals of all groups the respondent belonged to over time (Rasbash et al. 2009a: 283). To estimate MMMLMs, Markov Chain Monte Carlo (MCMC) methods are used in MLwiN (Browne 2012: 231).<sup>36</sup>

### 4.6.3 Actor-Partner Interdependence Models

Nonindependence in dyads, e.g. couples, prohibit the naive use of OLS regression to analyse dyadic data, because one basic assumption of OLS is independence of observations in the data. Instead, Kenny, Kashy and Cook (2006: 144) suggest actor-partner interdependence models (APIMs) for analysing mixed independent variables, i.e. variables that vary between couples and within couples. In APIMs each partner is at the same time “*agent of influence*” and “*target of influence*” (Oriña, Wood and Simpson 2002: 460, emphasis in original). The model allows estimation of 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 and Cook 2006: 146). Thus, the model allows estimation of the effect of variables on one partner controlled for characteristics of the other partner and the other way around. Furthermore, by including couple-level random effects APIMs control for “additional sources of nonindependence such as family effects” (Cook and Kenny 2005: 103).

APIMs can be estimated using different strategies. I describe 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. Dyadic data can be characterised as multi-level data with individuals at the lower level and couples at the higher level (Kenny, Kashy and Cook 2006: 87, see previous section on more details about multi-level regression). Multiple observations for each individual over time can be included as an additional level, so that individual-year observations are at the first level, individuals at the second level and couples at the third level. The use of multi-level APIM for such longitudinal data is more appropriate than fixed-effects regression, since 1) individuals are nested within couples, 2) random

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<sup>35</sup> MMMLMs models cannot be estimated in Stata. I used the software MLwiN version 2.24 (Rasbash et al. 2009b) to estimate the models.

<sup>36</sup> MCMC is a simulation procedure that uses repeated random draws from distributions of unknown parameters to derive estimates for these parameters. Each repeated draw is informed by prior draws (Browne 2012: 3ff).

intercepts can be correlated, and 3) between-individual differences of women and men can be estimated.

Following from my theoretical model, I expect differences between women and men in the effects of relocations on leaving employment. To test this expectation in Chapter 8, I follow the strategy of Raudenbush, Brennan and Barnett (1995) and include separate intercepts for women and men in my model (cf. also Kenny, Kashy and Cook 2006: 176).<sup>37</sup> I also interact these intercepts with all dependent variables in the model. These interactions result in having two different coefficients for each variable — one for women and one for men. Gender-differences can be tested by performing Wald tests under the null hypothesis that the difference between the coefficients for women and men is 0. The dependent variable leaving employment is binary (cf. Section 4.5.1.4).

A logistic regression framework is used to model the probability that the dependent variable is 1 ( $Pr(y = 1)$ ) conditioned on the independent variables (Pampel 2008: 3ff). The logistic multi-level APIM with two intercepts for individual  $i$  in couple  $c$  at time  $t$  can be written in the following form:

$$\log \left( \frac{Pr(y_{cit+1} = 1)}{1 - Pr(y_{cit+1} = 1)} \right) = \alpha_w + \alpha_m + (\alpha_w + \alpha_m)(\beta_1 z_{ct} + \beta_2 x_{cit} + \beta_3 p_{cit}) \quad (4.7)$$

$$+ v_{wc} + v_{mc} + \varepsilon_{cit},$$

where the first line on the right-hand side represents the fixed part of the equation and the second line represents the random part of the equation.<sup>38</sup>  $\alpha_w$  and  $\alpha_m$  are intercepts for women and men respectively. The intercepts represent the baseline probability for women and men that  $y = 1$ , 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. Because, the terms for all these variables are multiplied by the two gender-specific intercepts, vectors of coefficients  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  are estimated separately for women and men.  $v_{wc}$  and  $v_{mc}$  are random variables that represent the couple-specific variation from the intercepts for women and men respectively. The two terms are allowed to correlate to allow for selection into couples that is due to unobserved characteristics of both partners. Finally,  $\varepsilon_{cit}$  is random error.

In contrast to linear regression coefficients, logit coefficients are affected by residual variation. If residual variation varies between subpopulations, estimates for these subpopulations cannot be compared as differences in the estimates are confounded by differences in the residual variation (Allison 1999). To compare effects

<sup>37</sup> The intercepts are binary variables coded 1 if the respondent is a women respectively men and 0 otherwise. I include these variables in the model and suppress the overall intercept.

<sup>38</sup> The maximum likelihood (ML) function has no closed form for logistic random-effects models. Therefore, the ML must be evaluated with approximate procedures. Stata's `xtnl` uses Gauss-Hermite quadrature approximation. The accuracy of the approximation depends on the number of quadrature points used (Rabe-Hesketh and Skrondal 2005: 124ff).

across subpopulations or between models, average marginal effects (AMEs) instead of the logit coefficients can be used (Mood 2010). AMEs indicate the population average changes in  $P(y=1)$  given a change in the respective variable while holding all other variables at their sample values (Cameron and Trivedi 2010: 343f).<sup>39</sup>

#### ***4.6.4 Shared Frailty Discrete-Time Event History Models***

In Chapter 5, I analyse the occurrence of relocations. Event history analysis (EHA) is an especially handy tool for this, since relocations should be understood in relation to other life course events and state dependencies, as relocations and the life course are closely related (Buck 2000b: 251). Furthermore, the method allows for time-dependent covariates and censored data (Heaton and Call 1995).<sup>40</sup> In EHA, data is used that records the transition from one state to another at certain points of time (Hougaard 2000: 2). The hazard of a transition in interval  $t$  is modelled and it is interpreted as the probability of transition occurrence, given that no transition has occurred before the start of interval  $t$ . In regard to relocations, the states are different residential locations, while events or transitions are relocations. As the BHPS and SOEP data is collected in annual interviews, i.e. the data is grouped annually, and for most of the variables only annual information is available, I use a discrete time model to analyse the data. The event history model is estimated using logistic regression. Furthermore, repeated events have to be taken into account, as persons may relocate more than once (Allison 1982; Singer and Willett 2003: 357ff; Box-Steffensmeier and Jones 2007: 69ff). I extend the basic discrete-time model by including individual-specific, time-constant random-effects to account for unobserved heterogeneity. These models are called shared frailty models (Box-Steffensmeier and Jones 2007: 146; Steele 2011).<sup>41</sup> I use random-effects instead of fixed-effects models to model relocations, since I aim to describe between-individual differences between movers and stayers as well as intra-individual determinants for relocations.

The model can be specified as

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<sup>39</sup> For binary variables, the change in the respective variable is from 0 to 1 and for continuous variables the AME is computed for an infinitesimal change in the respective variable.

<sup>40</sup> An observation is right-censored, if the observation ends before the completion of a spell. A spell is the time a respondent stays in the same state which is ended by an event. In the present analysis, the relocation history is analysed which is only completed with the death of a respondent. Thus, nearly all observed respondents are right-censored at the end of their observation periods. A high share of the observed spells are also left-censored, i.e. observations start after respondents' spells began. Guo (1993) recommends inclusion of these cases starting with their first observation and their event time as is.

<sup>41</sup> Frailty refers to the assumption that some individuals are more likely than others to experience an event due to unobserved characteristics. In the present case the frailty is shared by all observations that an individual contributes to the sample.

$$\log \left( \frac{\Pr(y = 1)}{1 - \Pr(y = 1)} \right) = \alpha + \tau d_{it} + \beta x_{it} + \gamma z_i + v_i + \varepsilon_{it}, \quad (4.8)$$

where  $y_{it}$  is coded 1 if the event occurs between  $t$  and  $t + 1$  and coded 0 if the event does not occur or the observation is censored.  $\alpha$  is the constant baseline probability to experience the event. The variable  $d$  measures the duration that a respondent has spent in the current state and  $\tau$  captures the duration dependency of an event, e.g. to account for the cumulative inertia described in Section 2.1.3. Here the duration is only included as a linear term, but it is straight-forward to extend the model by including duration dummies, polynomials or splines (Box-Steffensmeier and Jones 2007: 75f).  $x_{it}$  is a vector of time-varying covariates,  $z_i$  is a vector of time-constant covariates,  $v_i$  is the individual-specific frailty to experience the event — similar to random-effects described before — which is drawn from a normally distributed random variable and  $\varepsilon_{it}$  is random error.

## Chapter 5

# Setting the Scene: Occurrence and Characteristics of Relocations

I showed that England and Germany differ in their average residential mobility rates (cf. Section 3.1). To gain a better picture of these differences, I analyse the characteristics of relocations in both countries in this chapter in an explorative way. This is important for understanding who is relocating and to contextualise the outcomes of relocations for subsequent chapters. To analyse the occurrence of relocations, I proceed as follows. First, I present descriptive findings regarding the frequency and characteristics of residential relocations in Section 5.1. Next, I analyse the determinants of residential relocations using an event history analysis framework in Section 5.2. In Section 5.3, I examine potentially non-random panel attrition after relocations. Finally, I summarise my findings in Section 5.4. The observation period for the analysis in the present chapter is 1991 to 2008 (cf. Section 4.4 for a description of further sample rules).<sup>1</sup>

While transitions in the family trajectory are important trigger events for residential relocations (cf. e.g. Booth and Amato 1993; Flowerdew and Al-Hamad 2004; Feijten and Ham 2007), I restrict the analysis to individuals in stable households, i.e. households that remain single or couple households between  $t$  and  $t + 1$ . I exclude major household changes from the analysis in the present chapter, because it can be expected that the determinants of relocations in these cases are fundamentally different from those for other relocations (Pickles and Davies 1991). In addition, relocations and household changes are endogenous processes, i.e. the causal link between the processes can be imagined to go in both directions, and it is hard to disentangle, which decision precedes the other: ending the partnership or moving out of the shared dwelling. Outcomes of relocations accompanied by major household changes are analysed in the subsequent chapters.

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<sup>1</sup> Descriptive statistics for all variables are reported in Table A.2 for England and Table A.3 for Germany.

## 5.1 Descriptive Results

Evidence for a higher residential mobility of the English population that has been found in past literature cannot be reproduced with the current analysis for stable households. For the years 1991 to 2008, the pooled and weighted average mobility rate for individuals is about 6 per cent for England and Germany. In interpreting these rates, it has to be kept in mind that I analyse only stable households. As shown in Section 4.1.3, household changes are more frequent in England than in Germany. Thus, the overall mobility in England is higher than in Germany when also considering these relocations associated with household changes. I now present descriptive findings about who relocates and the average characteristics of relocations in England and Germany. In Section 5.1.1, I analyse characteristics of residential relocations focusing on the subjective motivation and distance of relocations as well as the re-occurrence of relocations over the observation period. Section 5.1.2 shows differences in the characteristics of movers and stayers in both countries.

### 5.1.1 Characteristics of Residential Relocations

Residential relocations differ in their characteristics. Here, I describe relocations of stable households along three dimensions: 1) the distance of relocations; 2) the motivation for relocating; and 3) the re-occurrence of relocations. These characteristics are selected, because it can be expected that they relate to different outcomes after relocations. For example, long distance relocations may cause deteriorating relocations more often than short-distance relocations. Concerning distance, relocations in England are shorter than in Germany on average.<sup>2</sup> In England, the average distance is about 28 kilometres ( $SD = 69.34$ ,  $N = 6,895$ ).<sup>3</sup> In England, about 48 per cent of all relocations are less than 3 kilometres. About 13 per cent are at least 50 kilometres. In Germany, the average distance of relocation is about 37 kilometres ( $SD = 86.42$ ,  $N = 8,232$ ). In Germany, about 52 per cent of all relocations are less than 3 kilometres. About 13 per cent are at least 50 kilometres. Thus, Germans relocate over a short distance more often than movers in England. However, the average distance of relocations is higher in Germany because of a small share of very long relocations. This is in accordance with earlier findings (Bonin et al. 2008: 33).

There are different motivations for relocating. In the literature, it is common to differentiate housing, family, job and area reasons (e.g. Clark and Huang 2003;

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<sup>2</sup> For Germany, the relocation distance is only available from 2000 to 2008.

<sup>3</sup> It has to be kept in mind that the potential maximum distance of relocations in England is smaller than in Germany. For example, the distance between Newcastle upon Tyne in the North-East to Portsmouth in the South of England is about 466 kilometres. From Flensburg in the North to Constance in the South of Germany it is 792 kilometres.

Bonin et al. 2008: 71). In the BHPS and the SOEP, respondents that relocated are asked for their subjective reasons for the relocation.<sup>4</sup> In both countries, a high share of movers are motivated by housing related issues.<sup>5</sup> In Germany, 70 per cent of all respondents stated that they relocated for housing reasons. In England, 58 per cent stated housing as one of the two main reasons for relocating. The single most stated reason for relocations is insufficient space in the old dwelling. This reason has been stated by 17 per cent of movers in England and 27 per cent in Germany. Across the two countries, singles and couples are, on average, motivated by different reasons to relocate. Singles are more likely to be motivated by family and job reasons, while individuals in couples are more likely to be motivated by housing and area reasons. These differences are aligned with my theoretical expectations. Stable couples will mainly relocate if their housing situations deteriorate because of insufficient housing space after childbirth or if they live in unattractive areas, while singles experience more trigger events in the job and family trajectory which motivate their relocations. The triggers of residential relocations are further scrutinised in the multivariate analysis in Section 5.2.

In the literature on residential relocations, it is very common to differentiate between job motivated relocations that are believed to be of longer distances and housing motivated relocations that are more likely to be shorter distances (e.g. Böheim and Taylor 2002). At first sight, this differentiation is supported by the present analysis. Households relocating for job reasons relocate longer distances than those relocating not for job reasons. In Germany, the average distance of relocation for those relocating for job reasons is 143 kilometres ( $SD = 156.67$ ,  $N = 604$ ), while the distance for those relocating not for job reasons is only 15 kilometres ( $SD = 50.88$ ,  $N = 4,934$ ). In England, the average distance of relocation for those relocating for job reasons is 79 kilometres ( $SD = 92.59$ ,  $N = 627$ ), while the distance for those relocating not for job reasons is only 16 kilometres ( $SD = 45.59$ ,  $N = 3,548$ ). However, only looking at those that relocated for at least 50 kilometres — which is a common cut-off value for long-distance relocations (e.g. Boyle et al. 2003) — and analysing their motivations for relocations reveals that a significant share of long distance relocations are at least partly motivated by housing and family reasons. For example, in Germany about 25 per cent of those that relocate more than 50 kilometres are motivated by housing reasons. Thus, treating all long distance relocations as motivated by job mobility is problematic as these relocations are also motivated by other reasons and I do not follow the differentiation of relocations by distance in the subsequent analyses of housing and neighbourhood quality. Instead, I consider all changes in the addresses of individuals as residential relocations.

<sup>4</sup> In the BHPS and SOEP, housing reasons include, e.g.: dwelling too big or too small, dwelling too expansive, notice given, dwelling inadequate furnished. Family reasons include, e.g.: separation, marriage, child left and other family reasons. Area reasons include, e.g.: quality of location and surroundings.

<sup>5</sup> In comparing the shares across countries, note that in the SOEP several reasons could be stated, while in the BHPS only the two most important reasons after job reasons are recorded.

Unfortunately, retrospective information about the residential history is very limited in the BHPS and SOEP and I have no information about the relocations before the start of the observation period. Thus, I most likely underestimate the number of relocations that individuals experienced in their life until the end of the observation period. For example, almost all individuals will have experienced at least one relocation out of the parental nest. Within the observation period, 41 per cent of individuals in England experienced at least one relocation. About 2 per cent relocated at least four times. In Germany, I observe more individuals that do not relocate within the observation period (67 per cent). Only about 1 per cent relocated at least 4 times. Thus, English individuals are slightly more likely to relocate repeatedly within the observation period, while Germans are more likely to not relocate at all. Other retrospective data shows that 18 per cent of the German population and 30 per cent of the English population have relocated more than four times over their whole life course since childhood until the interview (Bonin et al. 2008: 36).

### *5.1.2 Characteristics of Movers*

Table 5.1 presents group averages for individuals in England and Germany by their relocation status. The characteristics are measured at the interview before the relocation took place. There are no significant differences between stayers and movers regarding their gender. Movers are more likely to live in Southeast England than in the rest of England, but there are no significant regional differences between stayers and movers in Germany. English movers are more likely to live in metropolitan and less likely to live in rural areas than stayers. In Germany, movers are more likely than stayers to live in urban but less likely to live in metropolitan areas on average.

In accordance with the cumulative inertia axiom, individuals that live for a shorter time in their residences are more likely to relocate on average. In England and Germany, individuals that relocate lived for about 7 years in their residence on average, while it is at least twice as long for stayers. In both countries, movers are more likely to be young singles or single parents than stayers. Movers are less likely to be older singles and childless couples than stayers. Movers are non-significantly less likely to be couples with children than stayers in England, but they are more likely to be couples with children in Germany. Seven per cent of movers in England experience a childbirth, while only 3 per cent of stayers do. In Germany 6 per cent of movers and 2 per cent of stayers experience a childbirth. Movers are as likely as stayers to experience a child moving out in both countries. Individuals that relocate are more likely to live with young children than those staying, but movers are less likely to live with older children. Movers live more often in households in which at least one immigrant lives than stayers in both countries.

About 61 per cent of stayers and 66 per cent of movers are employed in England. In Germany, only 56 per cent of stayers are employed, while 66 per cent of movers



are employed. Movers are more likely to be unemployed in both countries, but less likely to be inactive. Movers and stayers are equally likely to be in dual-earner couples in both countries. The average household income for stayers is about PPP-\$ 1,821 in England and does not differ significantly between stayers and movers. In Germany, stayers have a significantly higher income (PPP-\$ 1,761) than movers (PPP-\$ 1,608).

The distribution of housing tenure is very different in England and Germany. This is reflected in the strong differences in the shares of renters and owners. Owner occupancy is much more prevalent in England than in Germany. In Germany, the majority lives in dwellings rented privately or in social housing. In both countries, movers live as often in social housing as stayers on average. Living in privately rented accommodation is much more common for movers than for stayers in both countries. In Germany, 85 per cent of all movers rent privately, while only 47 per cent of stayers rent privately. In England, 27 per cent of movers and only 5 per cent of stayers rent privately. Stayers in both countries live more often in their own homes than movers whether or not they own with a mortgage or outright. Movers in both countries live in significantly higher room stress than stayers. The average neighbourhood quality is significantly lower for movers in both countries. The difference is especially strong in Germany, where movers live in neighbourhoods whose quality levels tend to be 0.31 standard deviations lower than for stayers. I now test, if the differences identified in the descriptive analyses also hold in a multivariate framework.

## 5.2 Multivariate Results

I analyse the event of residential relocation using shared frailty discrete-time event history analysis (EHA; cf. Section 4.6.4). The dependent variable measures whether an individual relocated (coded 1) or not (coded 0) between  $t$ , i.e. the current wave, and  $t + 1$ , i.e. the next wave, for each pair of subsequently observed interview waves. All independent variables are measured in the wave before a potential relocation and events are measured synchronously with relocations between  $t$  and  $t + 1$ . Table 5.2 reports the estimation results for individuals in England and Table 5.3 for individuals in Germany. The unstandardised coefficients  $b$  and the average marginal effects (AME) are listed (cf. Section 4.6.3). In the estimation table,  $\rho$  indicates the proportion of the total variance that is contributed by the individual-specific, time-constant random term. A higher  $\rho$  indicates that a higher proportion of the overall variance in the model can be explained by the random term. The random term is identified by repeated relocations.

For English women and men, the chances of relocations to occur decrease significantly with the time they spent in their residences in accordance with the cumulative inertia axiom and past literature (cf. Section 2.1.3). Age also has a strong

**Table 5.1** Group averages, movers vs. stayers

Variables	England		Germany	
	Stayer	Mover	Stayer	Mover
	Average		Average	
Women	0.54	0.53	0.53	0.52
Southeast England/East Germany	0.35	** 0.37	0.19	0.20
Urbanisation				
Metropolitan	0.41	*** 0.44	0.21	*** 0.18
Urban	0.34	0.33	0.48	* 0.49
Rural	0.25	* 0.23	0.32	0.33
Years in residence	13.11	*** 6.64	15.66	*** 6.99
Life stage				
Single ( $\leq$ 35 years old)	0.02	*** 0.09	0.04	*** 0.12
Single ( $\geq$ 36 years old)	0.13	*** 0.09	0.17	*** 0.13
Single parent	0.05	* 0.06	0.04	*** 0.06
Couple parent	0.42	0.40	0.38	** 0.40
Childless couple	0.38	** 0.35	0.37	*** 0.29
Family events				
Child born	0.03	*** 0.07	0.02	*** 0.06
Child moves out	0.04	0.04	0.02	0.02
At least one child				
aged 0 to 9	0.21	*** 0.30	0.18	*** 0.30
aged 10 to 17	0.20	*** 0.15	0.18	*** 0.16
Immigrant	0.18	*** 0.21	0.17	*** 0.24
Employment status				
Employed	0.61	*** 0.66	0.56	*** 0.66
Unemployed	0.03	*** 0.04	0.05	*** 0.08
Inactive	0.36	*** 0.30	0.39	*** 0.26
Dual-earner couple	0.39	0.40	0.29	0.29
Household income	1,821.22	1,799.37	1,761.00	*** 1,608.43
Housing costs	331.37	*** 421.86	375.56	*** 437.10
Tenure				
Social housing	0.16	0.17	0.05	0.06
Rented privately	0.05	*** 0.27	0.47	*** 0.85
Owned with mortgage	0.50	*** 0.43	0.25	*** 0.05
Owned outright	0.29	*** 0.13	0.23	*** 0.04
Room stress	-2.08	*** -1.57	-1.29	*** -0.52
Neighbourhood quality <sup>1</sup>	0.02	** -0.05	0.04	*** -0.27

Data: BHPS waves 1-18, SOEP v26 waves 8-25 (cross-sectionally weighted)

Note: Within country differences: \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%. <sup>1</sup>: Only 2000-2008.

negative effect on relocations for both genders in England in accordance with previous findings (e.g. Böheim and Taylor 2002). The effect of an additional year of age becomes slightly weaker with growing age according to the coefficient of age squared, but the hazard rate to relocate decreases for the observed age range of 18 to 79 years. Cohabiting men are slightly more likely to relocate than single or married men. For the interpretation of the effect of partnership status on relocation behaviour, it is important to keep in mind that only stable households are considered in the present analysis. The presence of children aged 1 to 9 and 10 to 17 have negative effects on the hazards for relocations for English women which is aligned with research showing the increasing costs of relocations for larger households (Kearns and Parkes 2003). English men are less likely to relocate, if they live together with older children, but not if they live with young children. At the same time, childbearing has a positive effect on the chances to relocate (cf. also Kulu 2008). English women and men that experience a childbirth are 2 percentage points more likely to relocate in the same year than those not experiencing a childbirth. The same applies for those experiencing a child moving out.

English women and men are less mobile if they are employed compared to those inactive. Job mobility has almost no effect on geographical mobility. Only women that become unemployed have a hazard rate that is 2 percentage points higher than for those not becoming unemployed, but the status of being unemployed has no significant effect on the hazard rate of relocations compared to inactivity for women. Together with the significant effect of becoming unemployed, this may indicate that the hazards to relocate decrease with the duration of unemployment (Windzio 2004). English men are less likely to relocate if they are unemployed compared to being inactive. Unexpectedly, women and men in dual-earner couples are not less likely to relocate compared to single-earner couples and singles. Income has a positive effect on the chance to relocate, but the effect is very small and not significant in accordance with past findings (Kearns and Parkes 2003; Clark and Huang 2003).

As expected from past research, housing tenure has a strong effect on the hazards to relocate in England (Kearns and Parkes 2003). Compared to owning with mortgage, individuals in both rental tenures have a higher hazard to relocate. For renters in social housing, the hazard rate is 1-2 percentage points higher on average. Private renters have a 9 percentage points higher hazard rate to relocate compared to owners with mortgages. The effect of living in privately rented accommodation on the chances to relocate is the highest for women and men in England compared to all other effects in the model. Room stress also has a significant positive effect on the hazard of relocation for both genders. The fewer rooms available relative to the number of residents, the more likely individuals relocate in England (cf. also Böheim and Taylor 2002). Other variables in the model do not significantly affect the hazard for relocation in England.

In Germany, individuals are less likely to relocate the longer they live in their present dwelling and the older they are (cf. Table 5.3). For German women, I find a significant coefficient for age squared. This again indicates that the effect of an

**Table 5.2** Discrete-time event history models of relocation, England

	<b>Model 5.1 England</b>			
	Women		Men	
	<i>b</i>	AME	<i>b</i>	AME
Time in residence/100	-2.937** (-2.92)	-0.155** (-2.84)	-1.895* (-2.09)	-0.102* (-2.08)
Time in residence/100 sq.	2.164 (0.86)	0.114 (0.85)	-0.915 (-0.43)	-0.049 (-0.43)
Urbanisation (ref: Rural)				
Metropolitan	0.038 (0.61)	0.002 (0.62)	0.024 (0.36)	0.001 (0.36)
Urban	-0.057 (-1.05)	-0.003 (-1.04)	-0.004 (-0.06)	-0.000 (-0.06)
Age/100	-5.135*** (-3.41)	-0.271*** (-3.49)	-6.023*** (-4.04)	-0.325*** (-4.05)
Age/100 sq.	1.706 (1.09)	0.090 (1.10)	2.896 (1.73)	0.156 (1.73)
Partnership status (ref: Single)				
Cohabiting	0.061 (0.63)	0.003 (0.63)	0.199* (2.07)	0.011* (2.08)
Married	0.019 (0.26)	0.001 (0.26)	0.118 (1.38)	0.006 (1.38)
Child aged (ref: No child)				
1 to 9	-0.133* (-2.40)	-0.007* (-2.37)	0.004 (0.07)	0.000 (0.07)
10 to 17	-0.491*** (-7.39)	-0.026*** (-7.13)	-0.513*** (-5.56)	-0.028*** (-5.67)
Family events (ref: No event)				
Child born	0.405*** (4.46)	0.021*** (4.49)	0.449*** (4.80)	0.024*** (4.84)
Child left	0.408** (3.28)	0.022** (3.20)	0.397** (2.91)	0.021** (2.91)
Job mobility (ref: No mobility)				
Promotion	-0.117 (-1.41)	-0.006 (-1.41)	0.000 (0.00)	0.000 (0.00)
Demotion	-0.019 (-0.23)	-0.001 (-0.23)	-0.123 (-1.60)	-0.007 (-1.59)
Became unemployed	0.434*** (3.63)	0.023*** (3.65)	0.177 (1.43)	0.010 (1.42)
Job status (ref: Inactive)				
Employed	-0.183* (-2.08)	-0.010* (-2.08)	-0.324*** (-3.31)	-0.017*** (-3.32)
Unemployed	-0.186 (-1.24)	-0.010 (-1.24)	-0.307* (-2.22)	-0.017* (-2.23)

continued overleaf

continued				
<b>Model 5.1</b>				
<b>England</b>				
	Women		Men	
	<i>b</i>	AME	<i>b</i>	AME
Dual-earner couple	0.034 (0.38)	0.002 (0.38)	-0.017 (-0.26)	-0.001 (-0.26)
Income (log)	0.008 (0.22)	0.000 (0.22)	0.053 (1.27)	0.003 (1.27)
Housing tenure (ref: Owned with mortgage)				
Social housing	0.287*** (3.61)	0.015*** (3.59)	0.268*** (3.36)	0.014*** (3.36)
Rented privately	1.620*** (23.79)	0.086*** (24.80)	1.741*** (24.54)	0.094*** (24.09)
Owned outright	0.158 (1.65)	0.008 (1.65)	0.141 (1.41)	0.008 (1.40)
Room stress	0.102*** (5.74)	0.005*** (5.84)	0.111*** (6.38)	0.006*** (6.53)
Constant	-0.787* (-2.01)		-0.935** (-2.94)	
$\rho$		0.02*		0.02
Individual-year observations	38,906		33,199	
Individuals	4,498		3,943	
Relocations	2,485		2,177	
LL Null-model	-9,081.84		-7,921.05	
LL	-8,036.62		-6,958.04	

Data: BHPS 1-18 (individual level, unweighted)

Note: Logistic random-effects model, dependent binary variable: relocation (coded 1 if relocates until  $t + 1$ , coded 0 otherwise); unstandardised coefficients, z statistics in parentheses based on bootstrapped standard errors (50 replications); \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include covariates for period and region not shown here.

additional year of age decreases with higher age. The effect of time in residence is weaker in Germany compared to England, which may indicate that cumulative inertia has a stronger effect in England. German men are less likely to relocate if they live in metropolitan areas compared with rural areas. German women and men are less likely to relocate if they live in urban areas compared to rural areas, but the effect is very small with less than 1 percentage point difference in the hazards to relocate between rural and urban areas. Cohabiting and married men are more likely to relocate than single men in Germany. Again, it is important to note that only stable households are considered. Married women are less likely to relocate than single women. The presence of young children and childbearing clearly increases

**Table 5.3** Discrete-time event history models of relocation, Germany

	<b>Model 5.2 Germany</b>			
	Women		Men	
	<i>b</i>	AME	<i>b</i>	AME
Time in residence/100	-1.721*** (-3.58)	-0.089*** (-3.51)	-1.589** (-2.75)	-0.082** (-2.73)
Time in residence/100 sq.	0.646 (0.58)	0.033 (0.58)	0.454 (0.35)	0.023 (0.35)
Urbanisation (ref: Rural)				
Metropolitan	-0.058 (-1.93)	-0.003 (-1.94)	-0.077* (-2.08)	-0.004* (-2.08)
Urban	-0.089** (-2.86)	-0.005** (-2.88)	-0.098** (-2.88)	-0.005** (-2.89)
Age/100	-5.392*** (-7.49)	-0.278*** (-7.55)	-4.894*** (-5.24)	-0.253*** (-5.22)
Age/100 sq.	2.273** (2.78)	0.117** (2.78)	1.638 (1.60)	0.085 (1.59)
Partnership status (ref: Single)				
Cohabiting	-0.018 (-0.38)	-0.001 (-0.38)	0.230*** (3.76)	0.012*** (3.77)
Married	-0.118** (-2.66)	-0.006** (-2.65)	0.139* (2.25)	0.007* (2.26)
Child aged (ref: No child)				
1 to 9	0.156*** (4.23)	0.008*** (4.20)	0.176*** (5.14)	0.009*** (5.16)
10 to 17	-0.198*** (-6.25)	-0.010*** (-6.31)	-0.234*** (-5.48)	-0.012*** (-5.45)
Family events (ref: No event)				
Child born	0.508*** (8.67)	0.026*** (8.62)	0.463*** (7.75)	0.024*** (7.65)
Child left	0.559*** (6.52)	0.029*** (6.49)	0.350*** (4.15)	0.018*** (4.07)
Job mobility (ref: No mobility)				
Promotion	0.125** (2.71)	0.006** (2.72)	0.003 (0.08)	0.000 (0.08)
Demotion	0.026 (0.43)	0.001 (0.43)	-0.041 (-0.88)	-0.002 (-0.88)
Became unemployed	0.445*** (7.41)	0.023*** (7.35)	0.254*** (4.08)	0.013*** (4.12)
Job status (ref: Inactive)				
Employed	-0.189*** (-3.66)	-0.010*** (-3.70)	-0.032 (-0.53)	-0.002 (-0.53)
Unemployed	-0.002 (-0.05)	-0.000 (-0.05)	0.079 (1.30)	0.004 (1.30)

continued overleaf

continued				
<b>Model 5.2 Germany</b>				
	Women		Men	
	<i>b</i>	AME	<i>b</i>	AME
Dual-earner couple	0.079 (1.67)	0.004 (1.67)	0.009 (0.27)	0.000 (0.27)
Income (log)	0.051** (2.70)	0.003** (2.69)	0.063** (2.75)	0.003** (2.78)
Housing tenure (ref: Owned with mortgage)				
Social housing	1.501*** (20.13)	0.077*** (19.49)	1.553*** (21.80)	0.080*** (20.29)
Rented privately	1.895*** (33.39)	0.098*** (32.16)	1.903*** (34.47)	0.098*** (30.42)
Owned outright	0.373*** (4.76)	0.019*** (4.75)	0.352*** (3.44)	0.018*** (3.41)
Room stress	0.164*** (12.63)	0.008*** (13.09)	0.171*** (11.73)	0.009*** (12.25)
Constant	-2.261*** (-12.62)		-2.617*** (-13.45)	
$\rho$		0.03***		0.02**
Individual-year observations	116,464		102,848	
Individuals	14,431		13,044	
Relocations	7,124		6,216	
LL Null-model	-26,337.75		-23,157.46	
LL	-22,909.57		-20,041.26	

Data: SOEP v26 waves 8-25 (individual level, unweighed)

Note: Logistic random-effects model, dependent binary variable: relocation (coded 1 if relocates until  $t + 1$ , coded 0 otherwise); unstandardised coefficients, z statistics in parentheses based on bootstrapped standard errors (50 replications); \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include covariates for period and region not shown here.

the hazard of relocation. German women and men that experience a childbirth are 2-3 percentage points more likely to relocate than those not experiencing birth. The presence of older children reduces the hazards to relocate, but the effect is only half as strong as in England. If children move out of the household, German women are 3 percentage points more likely to relocate themselves, while men are only 2 percentage point more likely.

Promotions positively affect the hazards to relocate for women in Germany, but the difference in the hazard to relocate between women with promotion and those without is less than 1 percentage point. Women and men are more likely to relocate if they became unemployed. Women have a 2 percentage point higher hazard rate

to relocate on average if they become unemployed, while men have a 1 percentage point higher hazard rate. Being employed reduces the chances to relocate significantly for women but not for men compared to the inactive. Being unemployed has no significant effect on the hazard rate. Dual-earner couples do not significantly differ in their hazards to relocate from other couples and singles. Women and men with higher incomes are more likely to relocate, but the effect is very small.

Housing tenure has a strong effect on the hazard rate to relocate in Germany as well. Compared to owning with mortgages, social renters' hazard to relocate is 8 percentage points higher on average. The difference between owners and social tenants in their hazards to relocate is much stronger in Germany than in England. Those renting privately, are about 10 percentage points more likely to relocate than those owning with mortgage. Owners that do not pay a mortgage are 2 percentage points more likely to relocate than owners with a mortgage. The strong difference between private tenants and owners can be observed in both countries, but in contrast to England, the average mobility of home owners is much lower in Germany (cf. Table 5.1). Finally, women and men in higher room stress are significantly more likely to relocate than those in lower room stress in Germany.

The hazard rate to relocate may be affected by unobserved, time-constant characteristics, e.g. openness to new experiences and past relocation history. Indeed, I find  $\rho$  to be significantly different from 0 at least at the 95 per cent confidence level for all but English men. However,  $\rho$  is not larger than 0.03 in any of the models.<sup>6</sup> Thus, controlling for time-constant individual unobserved heterogeneity is important in modelling relocation behaviour. The estimation of the random error term should be treated with caution, though, because the estimation may be inconsistent as only few individuals in my sample experience repeated relocations<sup>7</sup>

The models also include year dummies, for which the coefficients are not reported here. The models do not control for past relocations, because the retrospective residential history before the first interview is not surveyed in the BHPS and SOEP.<sup>8</sup> The random terms may capture some of the inter-individual differences in unobserved residential histories. Neighbourhood quality is not included as an independent variable in the model, because the information is only available after 1999. I also estimate an alternative specification including neighbourhood quality

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<sup>6</sup> This is substantially smaller than  $\rho$  reported in Rabe and Taylor (2010) for a relocation model in the UK, but this may be due to the fact that I control for more individual characteristics in my model that may be absorbed in the random term than in the model reported in Rabe and Taylor (ibid.).

<sup>7</sup> I estimate a pooled cross-sectional logistic regression with clustered standard errors and without random error terms as an alternative specification to check the robustness of my estimation results. As the alternative estimation results without random error terms do not differ in their interpretation, I do not elaborate on the alternative model here.

<sup>8</sup> The estimation of a variable measuring observed number of relocations may be obscured, because for each individual the number of observed relocations may diverge more or less dramatically from the actual number of past relocations (Taylor 2007).



for the years after 1999. The models show that the chances of residential relocations decrease with higher neighbourhood quality in Germany, but in England neighbourhood quality has no significant effect on the chances to relocate.<sup>9</sup> Rabe and Taylor (2010) only find a significant effect of neighbourhood quality on chances to relocate for couples in England.

Leaving major household changes aside, the results of the multivariate analysis support the theoretical framework developed in Section 2.2. Relocations occur, because the preferences of individuals no longer match their residential locations. The results regarding the presence of children and family events support this assumption. Transitions in the job trajectory may also affect preferences regarding residential locations and I find job status and job mobility to have some effect on relocations. I find support for the assumption that relocations depend on resources of individuals only for Germany. The more economic resources Germans have, the more likely they are to relocate according to my model. The residential biography is also found to be important. Individuals become less mobile the longer they live at a location. This supports the assumption that the costs of relocations increase with the time spent at a certain location. The costs of relocations also increase if individuals live in ownership compared to rental tenure as shown in the model. I find some support for the assumption that relocations depend on the contextual opportunities and constraints in Germany, where individuals in urban areas are less likely to relocate than individuals in rural areas.

### 5.3 Selective Sample Attrition Due to Residential Relocations

When analysing panel data, selective attrition poses a problem. Selective attrition occurs, if respondents that leave the panel are systematically different from those respondents that stay in the panel (Frees 2004: 11). Individuals that relocate and drop out of the panel in the next wave may form a selective group of all movers. If this is the case, the results for my analysis in subsequent chapters would be biased as I only consider outcomes of relocations for those households that have been interviewed at wave  $t$  and  $t + 1$ . Both datasets, the BHPS and the SOEP, record if a respondent has not been found at the same address from the last interview even if the respondent did not take part in an interview in that year. I examine whether those taking part in an interview significantly differ from those that did not take part in an interview after a residential relocation. I analyse differences between the two groups regarding age, income, education, immigrant status, household type and tenure at time  $t$ , i.e. the interview before the potential drop out. The individual response behaviour is analysed. It should be kept in mind that for the BHPS only OSMs and

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<sup>9</sup> English women:  $b = 0.057$ ,  $z=1.23$  ; English men:  $b = 0.045$ ,  $z=1.13$ ; German women:  $b = -0.092$ ,  $z=-3.82$ ; German men:  $b = -0.084$ ,  $z=-3.36$ .

PSMs are traced to the new address (see Section 4.3.1.1). Only these sample members are included in the present analysis. The response behaviour is examined by running a pooled binary logistic regression model with clustered standard errors where the dependent variable takes the value 0, if the respondent relocated between  $t$  and  $t + 1$  and took part in an interview in  $t + 1$ . The dependent variable takes the value 1, if the respondent relocated between  $t$  and  $t + 1$  and did not take part in an interview in  $t + 1$ . The estimation results are shown in Table 5.4. Cases that are not clearly identified as movers or stayers are not considered in the analysis.

Across the years 1991-2008, about 9 per cent of respondents in the BHPS selected under the sample rules for the present chapter that are identified as movers are not interviewed for at least one wave. In the SOEP, about 11 per cent of respondents in the current sample that are identified as movers are not interviewed in the next wave. The corresponding numbers for non-movers are much lower with 4 per cent in the BHPS and 6 per cent in the SOEP. Respondents with unclear mover status are not reflected in these numbers. Non-response is only in small part due to untraced addresses of movers. Only 2 per cent of individuals which are identified as movers could not be traced to their new address in England and 4 per cent in Germany.

According to the models in Table 5.4, in England, women are more likely to drop out, if they have children aged 10 to 17, live in an immigrant household or are in a dual-earner couple. They are less likely to drop out if they are married or are employed. For men in England, the probability to relocate and leave the panel is higher if respondents live in an immigrant household and the probability is lower with increasing household income. None of the modelled variables increases chances for German women to drop out. Having children aged 0 to 9 and a higher room stress significantly reduces the chances to drop out for this group. For German men, chances for drop out are increased if they cohabit, live with children aged 10 to 17, or live in an immigrant household. Chances for drop out are reduced for private tenants and with higher room stress. No other variable in England or Germany has a significant effect on the probability to leave the panel. I also test whether neighbourhood quality is associated with a higher probability for panel attrition for the years 2000-2008. I do not find any significant effects of neighbourhood quality on dropping out of the panel.

Thus, I find some evidence for selective attrition after relocations for particular groups. First, respondents in immigrant households seem to be more likely to leave the panel at least temporarily after a residential relocation than other respondents. This may bias my results upwardly, because immigrant households can be expected to live in lower quality housing and neighbourhoods and may not improve their locations as much as other respondents after relocations. Second, for Germany, I find a selection of respondents with low room stress into dropping out of the panel. It is not clear how this selection may affect my results concerning room stress. For example, these respondents may leave the panel because they experience union dissolution and these respondents are more likely to increase their room stress after relocation. For these cases, my estimation of changes in room stress would be biased upwardly.

Other selection processes seem to apply only to particular samples, but may nonetheless affect results for these samples. For example, the higher attrition for women in dual-earner couples in England may affect my results on labour market outcomes of dual-earner couples presented in Chapter 8. Thus, to be able to infer results regarding relocation outcomes to the whole population of movers, it is important to test for the sensitivity of my results regarding selectivity of respondents at wave  $t + 1$  after a relocation. I do so for the analyses in Chapter 6, 7 and 8.

**Table 5.4** Logistic regression models of drop-outs after relocations

	<b>Model 5.3 England</b>		<b>Model 5.4 Germany</b>	
	Women	Men	Women	Men
Age/100	-4.246 (-0.73)	7.006 (1.24)	2.227 (1.18)	0.262 (0.12)
Age/100 sq.	4.800 (0.72)	-10.084 (-1.47)	-2.153 (-1.00)	0.668 (0.28)
Partnership status (ref: Single)				
Cohabiting	-0.701 (-1.86)	-0.084 (-0.22)	0.120 (1.04)	0.310* (2.53)
Married	-0.821* (-2.51)	-0.645 (-1.71)	0.010 (0.10)	-0.072 (-0.62)
Child aged (ref: No child)				
0 to 9	-0.269 (-1.11)	0.247 (0.97)	-0.299** (-3.10)	-0.020 (-0.22)
10 to 17	0.821** (3.09)	0.259 (0.97)	0.023 (0.24)	0.336*** (3.38)
Education (ref: intermediate)				
Basic	0.191 (0.68)	0.284 (1.22)	-0.006 (-0.08)	-0.020 (-0.24)
Higher	-0.353 (-1.30)	-0.234 (-0.91)	-0.165 (-1.54)	-0.142 (-1.37)
Job status (ref: Inactive)				
Employed	-0.933* (-2.46)	0.472 (1.04)	0.041 (0.35)	-0.074 (-0.56)
Unemployed	-0.552 (-0.76)	0.676 (1.37)	0.169 (1.22)	-0.021 (-0.13)
Household income (log)	-0.017 (-0.18)	-0.197* (-1.97)	0.035 (0.78)	-0.014 (-0.33)
Immigrant	1.422*** (6.96)	0.518* (2.33)	0.110 (1.32)	0.287*** (3.54)

continued overleaf

continued				
	<b>Model 5.3</b>		<b>Model 5.4</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Housing tenure (ref: Owned with mortgage)				
Social housing	-0.043 (-0.14)	0.235 (0.85)	-0.138 (-0.71)	-0.356 (-1.86)
Rented privately	-0.220 (-0.75)	-0.586 (-1.91)	-0.178 (-1.32)	-0.329** (-2.59)
Owned outright	-0.128 (-0.29)	0.253 (0.56)	0.014 (0.07)	-0.368 (-1.69)
Dual-earner couple	1.355*** (3.41)	0.083 (0.29)	-0.206 (-1.87)	-0.181 (-1.91)
Room stress	0.048 (0.68)	0.088 (1.18)	-0.113*** (-3.85)	-0.101*** (-3.37)
Constant	-2.075* (-2.06)	-2.805* (-2.49)	-2.770*** (-5.75)	-1.935*** (-3.79)
Individual-year observations	2,435	2,348	9,284	8,161
Individuals	1,538	1,388	5,716	5,213
LL Null-model	-447.35	-489.99	-3,019.39	-2,882.45
LL	-409.32	-462.73	-2,989.73	-2,847.27
Pseudo R <sup>2</sup>	0.09	0.06	0.01	0.01

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

Note: Binary logit models, dependent variable: relocated and still in panel (0), relocated and dropped out (1); unstandardised coefficients, clustered standard errors, t statistics in parentheses. \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%.

## 5.4 Summary

In this chapter, I analyse the occurrence and characteristics of residential relocations in England and Germany. I focus on stable households, because major household changes such as union dissolutions and relocations are endogenous events. Average relocation rates in England and Germany for stable households of singles or couples are very similar. The theoretical expectations outlined in Section 2.2 are supported by the empirical analysis of relocation behaviour in the present chapter. The determinants of residential relocations of individuals in stable households differ only slightly between England and Germany. Detailed analyses in the next chapters show, whether relocations also have similar outcomes for individuals in both countries. In these analyses, I have to control for potential selectivity of respondents that stay in the panel after a relocation, because I show that drop-outs after residential relocation are a selective group in some characteristics.

In England and Germany, most relocations are motivated by housing reasons and limited space is the single most relevant motivation for relocations. Thus, one can

expect relocations to have a strong effect on room stress in both countries. On average couples are more often motivated by housing and neighbourhood reasons than singles. The latter are more often motivated by family and job reasons than couples. This may have the effect that couples are more likely to improve their locations with regard to room stress and neighbourhood quality than singles. Individuals that relocate because of job reasons relocate farther away than movers motivated by other reasons on average, but a high share of long distance movers are also motivated by family and housing reasons. The high share of movers that report occupational motives for their decision to relocate underline the link between residential and job mobility that is further analysed in Chapter 8. A major difference between both countries is the higher average mobility of owners in England compared to Germany which will be further illuminated in Chapter 9.

## Chapter 6

# Room Stress and Residential Relocations

In this chapter, I analyse the effect of residential relocations on individuals' room stress and test the theoretical framework laid out in Section 2.3 with regard to room stress. The space a dwelling offers is one of its most fundamental characteristics. The number of separate rooms is relevant for a dwelling's function to offer privacy and the possibility for retreat rather than the sheer floor space. The number of available rooms in relation to the room need of the household is referred to as room stress in this Chapter (cf. Section 4.5.1.2 for the construction of the variable). High room stress reduces psychological and physical wellbeing — especially for children (cf. Section 3.2.1 for more details).

I begin with a descriptive analysis of room stress in Section 6.1. I examine cross-sectional differences in room stress, before turning to a longitudinal analysis of changes at the national and individual level. Then, I analyse room stress in a multivariate framework (Section 6.2). In Section 6.2.1, I test for individual life course conditions and I analyse how singles and couples differ in their changes in room stress and in what way children affect these changes. I also scrutinise the effect of certain life course events in the family and job trajectory on changes in room stress. Tests of individual life course conditions is a special focus in the present chapter, since room stress can be expected to change after family events or relocations. In Section 6.2.2, I test for the stratification of room stress changes due to income and housing tenure. Section 6.2.3 is devoted to the analysis of involuntary relocations and the effect of relocation distance on changes in room stress. Next, I examine differences in changes of room stress between migrants and natives (cf. Section 6.2.4). I analyse structural conditions in regional housing markets and their effect on changes in room stress in Section 6.2.5. In Section 6.3, I summarise my findings.

## 6.1 Descriptive Results

According to official statistics for 2001, every household in England had 5.3 rooms on average and every person had access to about 2.3 rooms (Office for National Statistics 2012b). In Germany, the average number of rooms per dwelling was 4.4 and each person had about 2.1 rooms (Statistisches Bundesamt 2004).<sup>1</sup> Thus, dwellings in England offer more rooms and individuals have more rooms per capita than in Germany on average. However, this gross average is of little help in understanding the room stress situation of individuals in both countries. It can be expected that certain subgroups of the population will deviate strongly from the national average and I provide a more detailed picture of the room stress situation in both countries now.

### 6.1.1 Average Room Stress by Groups

In Table 6.1, the average room stress levels for households with certain characteristics are reported for England and Germany for the year 2008.<sup>2</sup> The figures underline that the average room stress is higher in Germany than in England, but in both countries households live in dwellings that are more spacious than their objective room need suggests on average.<sup>3</sup> In 2008, an average English household had about 2.1 excess rooms, i.e. 2.1 more rooms than its objective room need, while in Germany it was about 1.3 excess rooms. Average room stress does not differ between Southeast England and the rest of England. In Germany, room stress is much higher in East Germany than in West Germany. This reflects the initially low housing standard in East Germany after reunification (cf. also Frick and Grimm 2009).

Tenants experience a higher room stress than owners on average in both countries and social tenants live in especially crowded dwellings. Social tenants have only slightly more rooms than they need, with 0.7 rooms extra on average for England and 0.2 in Germany. In both countries, outright owners have the lowest room stress with 2.8 and 2.4 excess rooms. The relative differences between tenures within both countries are stronger in Germany than in England. In Germany, outright owners have on average more than twelve times as many excess rooms than social tenants. In England, outright owners have four times as many excess rooms.

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<sup>1</sup> In the official statistics in both countries, kitchens are counted as separate rooms. In the BHPS and SOEP, though, kitchens are not considered as separate rooms.

<sup>2</sup> For the first sections of the descriptive results, I consider data at the household level. From Section 6.1.2 onwards, I turn to analyses of individual level data, because I also account for changes in the household composition from a longitudinal perspective.

<sup>3</sup> Part of the differences between England and Germany are due to the particularities of measurement, which are described in Section 4.5.1.2.

I find strong differences in room stress by life course stages. Young singles below the age of 36 years and single parents experience the highest room stress in both countries. In England, both groups have about one excess room on average. In Germany, young singles have about 0.3 rooms more than their objective room need. Single parents have about 0.4 rooms more than their objective room need. Older singles above the age of 35 years have an average room stress of -1.8 rooms in England and -0.9 rooms in Germany. Couples with children live in slightly higher room stress than couples without children. The latter group experiences the lowest room stress in both countries. These findings show that couples are in lower room stress than singles on average. Families with children experience relatively high room stress, even though children are also especially vulnerable to the effects of room stress.

I expect that access to high quality housing is closely associated with household income (cf. Section 2.3.2). Indeed, I observe strong differences in the average room stress by income groups. In England, the lowest income quintile lives in dwellings that offer about 1.4 more rooms than the objective room need on average. In Germany, households in the lowest income quintile only have about 0.7 more rooms than their objective room needs. In England, the highest income quintile has about twice as many excess rooms than the lowest income quintile. In Germany, the ratio is about 1:3. Individuals in households with at least one immigrant have a higher room stress than the native German population on average. I do not find significant differences between households with an immigrant in the household and other households in England regarding room stress.

### ***6.1.2 Patterns in Changes in Room Stress over the Life Course***

I now present the country-specific within-individual and between-individual standard deviations of room stress. The within-standard deviation describes the variation in the de-measured data used for fixed-effects regression (cf. Section 4.6.1). The between-standard deviation describes the variation in the person-specific means. These statistics provide information about the magnitude of inequalities *over* the life course (within) and about inequalities *across* life courses (between). The within-individual standard deviation in England is 0.883 (95 per cent confidence interval (CI): [0.876, 0.884]). That is to say that roughly 68 per cent of English individuals live with room stress that varies about  $\pm 0.9$  rooms around the average over their observed life course. Only about one third of the population differs more from their individual averages. In Germany, the within-individual standard deviation is slightly smaller (within-SD= 0.823, CI: [0.821, 0.826]). About 68 per cent of the German individuals have a room stress within about  $\pm 0.8$  rooms of their individual average over their observed life course. The difference between the variation in England and Germany is statistically significant as the confidence intervals do not overlap. The



**Table 6.1** Average room stress by group and country in 2008

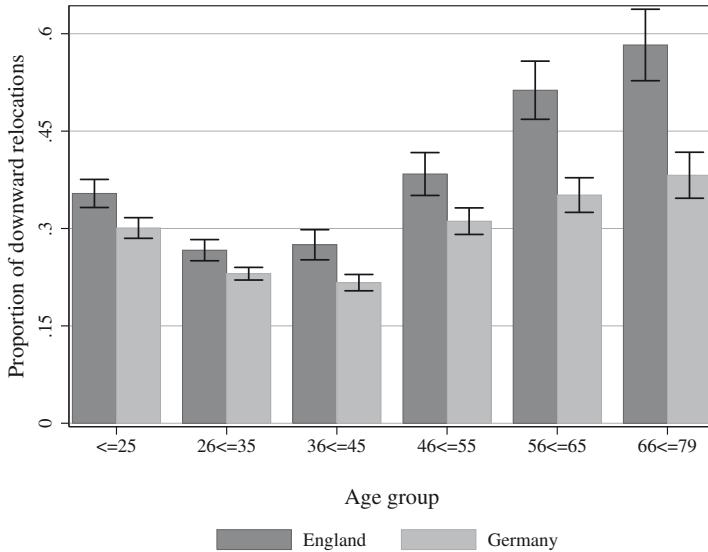
Group	Average room stress	
	England	Germany
Total	-2.14	-1.28
Region		
Southeast England/East Germany	-2.15 <sup>†</sup>	-0.90
Rest*	-2.13	-1.36
Tenure		
Social housing	-0.72	-0.21
Rented privately	-1.39	-0.63
Owned with mortgage*	-2.30	-2.08
Owned outright	-2.79	-2.42
Life stage		
Single ( $\leq 35$ years old)	-0.94	-0.25
Single ( $\geq 36$ years old)	-1.77	-0.86
Single parent	-0.94	-0.44
Couple parent*	-2.13	-1.53
Childless couple	-2.84	-1.91
Other	-1.46 <sup>§†</sup>	-1.58 <sup>§†</sup>
Household income		
1st quintile (lowest)	-1.37	-0.72
2nd	-1.49	-1.12
3rd*	-1.97	-1.28
4th	-2.29	-1.68
5th quintile (highest)	-3.00	-2.12
Immigrant in HH		
yes	-2.20 <sup>†</sup>	-0.81
no*	-2.12	-1.38

Data: BHPS wave 18, SOEP v26 wave 25 (household level, cross-sectional weights)

Note: \* indicates reference category, <sup>†</sup> indicates mean not statistically different from reference category. <sup>§</sup>: N < 100.

between-standard deviation is quite similar in England and Germany. About 68 per cent of the individual-specific means of room stress are not more than 1.4 rooms different from the average of all individual-specific averages in both countries. Thus, the inequality between life courses is higher in both countries than the inequality over individuals' life courses on average with regard to room stress.

Figure 6.1 shows the proportion of relocations in each age group that increase room stress. Between 23 to 57 per cent of relocations in each age group are downward, i.e. they increase room stress. The risk of relocating into more crowded dwellings is lowest in the age range 26 to 45 years. For individuals aged 25 and below the risk is slightly higher. Relocations for those aged 56 and above are especially likely to increase room stress. In all age groups the share of downward relocations is higher in England than in Germany and the difference is especially strong in late-



Data: BHPS waves 1-18, SOEP v26 waves 8-25 (household level, cross-sectional weights)  
 Note: Whiskers indicate 95 %-confidence interval of proportion.

**Fig. 6.1** Proportion of downward relocations (room stress) by age group

life. In the next sections, I turn to the analysis of residential relocations that shape these patterns. Changes at isolated times in the life courses of individuals are also the focus of the remainder of this chapter.

### 6.1.3 Average Changes in Room Stress After Relocations

Table 6.2 shows the effects of residential relocations on room stress in the year immediately after a relocation. In this table, I report the average change in room stress for all relocations and for different types of relocations separately that have been introduced in Section 4.5.1.1. It turns out that this differentiation is important. While relocations in general reduce room stress for women and men in England and Germany, a closer look at different types of relocations reveals that some types of relocations actually increase room stress on average and that some of these effects are different for men and women. I will therefore consider the types of relocations separately in the subsequent analysis.

Young stable single households significantly reduce their room stress if they relocate compared to stayers (Table 6.2). For example, English women reduce their

room stress by about 0.3 rooms. Only young, male singles in England do not significantly change their room stress if they relocate compared to staying put. Female and male singles aged 36 and above increase their room stress on average if they relocate in England. After a relocation, singles' average room stress is about 0.5 rooms higher than before the relocation. In Germany, female singles aged 36 and above slightly reduce their room stress in case of relocation, while men in Germany do not change their room stress. Relocations of stable single households are rarely motivated by adaptations to changes in objective room need, which only changes if a child joins or leaves the household. The former will rarely happen without a partner also joining the household. The latter may not trigger a relocation as long as the housing costs are not too much of a burden.

Couples that relocate reduce their room stress significantly. In England, couples reduce their room stress by about 0.5 rooms on average. In Germany, couples reduce their room stress by about 0.6 rooms on average. In general, couples are much less likely to relocate than singles (cf. Chapter 5). If couples relocate, they will often respond to increased room stress due to childbearing. Couples may also be more interested in investing into excess rooms as they anticipate future room needs after childbearing. Another reason for couples to relocate is the transition into ownership. Owned houses offer more rooms than apartments on average. In this regard, the difference in the changes in room stress between England and Germany are interesting. Couples in Germany reduce their room stress slightly more than couples in England through relocations. This may be due to the fact that couples in England are more likely to live in home ownership from the start of their partnerships, while couples in Germany make the transition into ownership during their partnerships (Mulder and Wagner 1998).

Relocations from single into couple households reduce room stress the most except for English men. For women in England room stress is reduced by about 0.6 rooms. In Germany, the change in room stress is even stronger and room stress is reduced by about 0.9 rooms on average for women and men. English men do not significantly change their room stress if they move together with a partner compared with not experiencing a relocation. These findings seem to be counter-intuitive at first sight, but are aligned with my expectations formulated in H 1.1. Forming a couple household seems to go along with an additional investment in excess rooms compared to singles with English men as an exception. First, this may be an anticipatory investment to meet future room needs after childbearing. Second, this may also indicate that couples have a higher preference for spacious dwellings than singles. Thus, the room need of two singles forming a couple may not just be additive, but may increase even more.

Significant gender differences for both countries exist in the effect of relocations that are accompanied by union dissolutions. Ex-partners that relocate into a single or new couple household experience an increase in room stress across all groups. However, in both countries, women face a greater increase in room stress than men. In England, women increase their room stress by about 0.9 rooms if they relocate

**Table 6.2** Average changes in room stress after residential relocations

Relocation type	Average change in room stress			
	England		Germany	
	Women	Men	Women	Men
No relocation	-0.02 (40,212)	-0.02 (32,359)	-0.01 (114,278)	-0.01 (103,363)
Relocation	-0.17 (3,435)	-0.19 (3,035)	-0.27 (9,997)	-0.34 (9,027)
Stable single ( $\leq 35$ years old)	-0.30 (387)	-0.09 <sup>†</sup> (277)	-0.19 (1,221)	-0.26 (945)
Stable single ( $\geq 36$ years old)	0.52 (323)	0.51 (189)	-0.09 (1,355)	-0.05 <sup>†</sup> (945)
Stable couple	-0.53 (1,745)	-0.52 (1,697)	-0.65 (4,636)	-0.62 (4,770)
Single to couple	-0.56 (188)	-0.29 <sup>†</sup> (155)	-0.88 (739)	-0.91 (624)
Union dissolved	0.85 * (251)	0.38 (172)	0.78 ** (945)	0.46 (716)
Other	0.36 (541)	0.43 (545)	0.28 (1,101)	0.36 (1,027)

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

Note: Within country differences: \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%. <sup>†</sup> indicates mean not statistically different from event not occurred. N in parantheses.

and dissolve their union. In Germany, they increase room stress by 0.8 rooms. English men only increase their room stress by about 0.4 rooms after relocations with union dissolution and German men increase their room stress by about 0.5 rooms.<sup>4</sup>

## 6.2 Multivariate Results

In this section, the effect of residential relocations is analysed in a multivariate framework to test the hypotheses outlined in Section 2.3. I mainly use fixed-effects panel regression models to analyse the average treatment effect on the treated of different types of residential relocations on room stress (cf. Section 4.6.1 for a description of fixed-effects regression models). These models allow relation of changes in independent variables to changes in the dependent variable. The focus on within-individual change provides the opportunity to tap into determinants of changes in room stress that would not be possible with cross-sectional regression tools, but inference only relies on those individuals that experience changes in the dependent

<sup>4</sup> The category of other relocations is too heterogeneous to interpret it meaningfully and instead functions as a control category.

and independent variables. Due to the limitations of fixed-effects regression outlined in Section 4.6.1, I refrain from making causal claims, but merely talk about associations between variables.

Table A.4 and Table A.5 in the appendix show descriptive statistics for all covariates used in the multivariate analysis. In the following sections, I split the sample by gender to allow the effects of covariates to vary between women and men. Furthermore, separating models by gender allows for inclusion of information at the household level while still treating individuals as the research unit. Thereby, the problem is tackled that households, in most cases, are the decision unit for relocation choices, while at the same time households are not constant over time.

### ***6.2.1 Individual Life Course Conditions***

In Table 6.3, I present estimation results for fixed-effects regressions on room stress.<sup>5</sup> I report models separately by country and gender. The independent variables of most interest measure the occurrence of different types of residential relocations. These variables measure the immediate effect of relocations on room stress. All independent variables are measured at the same time as the dependent variable. Relocations, family and job events are measured between  $t - 1$ , i.e. the interview before the current interview  $t$ , and  $t$ . All models have a satisfactory explained within-individual variance of 10 to 12 per cent. In all models, the period dummies increase the explained within-variance the most and between 2 and 4 percentage points of the within-change are attributable to period effects. In Germany, the housing tenure variables are also important in explaining within-change and contribute about

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<sup>5</sup> I performed the following diagnostic analyses for the main fixed-effects models presented in Table 6.3. 1) I tested whether the more efficient random-effect model would be preferable over the fixed-effects model, but the Hausman test rejected the assumption that the random-effect model is consistent with the fixed-effects estimations for all models. 2) I further tested for autocorrelation and heteroscedasticity in the data. Both tests indicated that the use of clustered standard errors is in order. 3) I analysed the variance inflation factor (VIF) for a pooled OLS regression model. Only the age variables showed a VIF exceeding the common cut-off value of 10. 4) I also tested for a non-response bias by including a lead indicator respectively a lagged indicator of non-response in my analysis. Including the non-response variables does not have substantial influence on the estimated effects of other covariates. 5) Finally, I examined influential individual-year observations with Cook's distance value exceeding  $4/N$  and absolute standardised Pearson residuals exceeding 3 (cf. Kohler and Kreuter 2005: 211). In England and Germany, influential cases had very low room stress on average and were more likely to own their dwelling outright. This may be caused by the strong heterogeneity of this group. After checking for data inconsistencies, I tested whether excluding the cases changes estimation results. The estimates were not substantially changed by excluding the cases in England. For German women, the negative effects of being employed or unemployed turned significant after excluding influential cases. For German men, relocations with union dissolution do not longer significantly affect room stress. I decided to keep all cases in the estimation sample.

3 percentage points to the explained variance. If included in a stepwise fashion, all variables increase model fit according to log-likelihood ratio (LR) tests with the exception of the job mobility variables that do not increase model fit in any specification.<sup>6</sup> The variables are still included in the final model to provide evidence against H 1.5 concerning job mobility. Inclusion of the relocation variables increases model fit significantly, but has only a small impact on the size of the explained within-variance of about 0.04 percentage points.<sup>7</sup> All models include dummy periods not shown in the table. The effects of periods are consistent with the descriptive findings and show a constant decrease in average room stress over time. The models also include natural cubic spline specifications of age that are not shown in the table.<sup>8</sup>

The relocation type variables are interactions of partnership status and residential relocation, which are grouped by age for singles. The reference category for all relocation types are single stayers that do not change their partnership statuses. The effect of relocations is estimated controlling for changes in the region, changes in the degree of urbanisation and changes in housing tenure. For example, the estimated effect of stable single ( $\leq 35$  years) relocations of women in England indicates that young women below the age of 36 reduce their room stress by about 0.3 rooms compared to single stayers that do not change their partnership statuses. Instead of the more complex relocation types, I also tested the effect of a general relocation variable in the model.<sup>9</sup> The estimated coefficients indicate that individuals that relocate reduce their room stress compared to years in which they do not relocate. English women reduce their room stress by -0.10 rooms ( $t = -4.54$ ), English men by -0.09 rooms ( $t = -3.90$ ), German women by -0.17 rooms ( $t = -15.40$ ) and German men by -0.19 rooms ( $t = -15.49$ ). For theoretical reasons and due to the better model fit, I use the differentiated relocation types in the subsequent analysis.

Young stable single women reduce their room stress by about 0.3 rooms in England and by about 0.1 rooms in Germany on average (cf. Table 6.3). Young, stable single men do not change their room stress significantly if they relocate in England and Germany. Older singles significantly increase their room stress, if they relocate. This effect is not significant for male movers in Germany. That improvements are

<sup>6</sup> All LR tests are conducted for models without clustered standard errors.

<sup>7</sup> LR tests for English women:  $\chi^2(6) = 165.38$ ,  $p = 0.000$ ; English men:  $\chi^2(6) = 161.15$ ,  $p = 0.000$ ; German women:  $\chi^2(6) = 715.69$ ,  $p = 0.000$ ; German men:  $\chi^2(6) = 569.47$ ,  $p = 0.000$ .

<sup>8</sup> I tested quadratic up to quintic polynomials, as well as natural cubic splines with 3 to 7 knots to model the effect of age. I tested these specifications in models only including age and period. I tested different positions for the function with 7 knots. I compared the Akaike information criterion (AIC) values for all models and selected the age specification with a relative good model fit in both countries and for both genders (AIC values not shown here). I decided for a natural cubic spline specification with 7 knots at age 23, 32, 38, 45, 52, 61, and 75. This specification is used in all models throughout the chapter.

<sup>9</sup> Including the relocation types instead of a general relocation variable significantly increases model fit for all groups (LR-tests for English women:  $\chi^2(5) = 125.07$ ,  $p = 0.000$ ; English men:  $\chi^2(5) = 131.68$ ,  $p = 0.000$ ; German women:  $\chi^2(5) = 386.44$ ,  $p = 0.000$ ; German men:  $\chi^2(5) = 203.76$ ,  $p = 0.000$ ).

**Table 6.3** Fixed-effects models of room stress

	<b>Model 6.1 England</b>		<b>Model 6.2 Germany</b>	
	Women	Men	Women	Men
Southeast ENG/East GER	0.641*** (4.82)	0.693*** (5.09)	0.124 (1.42)	0.037 (0.43)
Urbanisation (ref: Rural)				
Metropolitan	0.070 (0.70)	0.053 (0.48)	-0.096* (-2.01)	-0.068 (-1.36)
Urban	-0.171 (-1.77)	-0.185 (-1.79)	0.006 (0.17)	0.003 (0.09)
Partnership status (ref: Single)				
Cohabiting	-0.316*** (-6.21)	-0.142* (-2.04)	-0.355*** (-10.92)	-0.241*** (-6.50)
Married	-0.470*** (-10.20)	-0.236*** (-3.60)	-0.484*** (-16.57)	-0.304*** (-8.24)
Child aged 1 to 9	-0.346*** (-10.89)	-0.270*** (-7.66)	-0.236*** (-11.26)	-0.195*** (-8.56)
Family events (ref: No event)				
Child born	0.105*** (3.82)	0.092** (3.13)	0.206*** (10.92)	0.219*** (11.09)
Child left	-0.513*** (-22.75)	-0.534*** (-20.43)	-0.432*** (-22.40)	-0.456*** (-21.86)
Job mobility (ref: No mobility)				
Promotion	0.016 (1.13)	0.028 (1.83)	0.000 (0.02)	0.026** (2.79)
Demotion	0.012 (0.70)	0.009 (0.46)	0.008 (0.63)	0.005 (0.42)
Job status (ref: Inactive)				
Employed	0.027 (1.13)	-0.089* (-2.42)	-0.027 (-1.78)	-0.003 (-0.13)
Unemployed	-0.025 (-0.61)	-0.163*** (-3.35)	-0.034 (-1.87)	0.004 (0.19)
Household income (log)	-0.069*** (-3.30)	-0.107*** (-5.05)	-0.031*** (-5.29)	-0.053*** (-7.12)
Housing tenure (ref: Owned with mortgage)				
Social housing	0.600*** (8.53)	0.590*** (6.89)	0.805*** (20.79)	0.763*** (18.91)
Rented privately	0.363*** (5.79)	0.368*** (5.11)	0.740*** (22.85)	0.743*** (21.62)
Owned outright	0.012 (0.32)	0.017 (0.41)	0.104*** (4.02)	0.103*** (3.76)

continued overleaf

continued				
	<b>Model 6.1 England</b>		<b>Model 6.2 Germany</b>	
	Women	Men	Women	Men
Relocation type (ref: Stayer)				
Stable single ( $\leq 35$ years)	-0.266** (-3.09)	-0.064 (-0.60)	-0.102** (-2.96)	-0.031 (-0.68)
Stable single ( $\geq 36$ years)	0.228*** (3.62)	0.274** (2.77)	0.083** (2.77)	0.041 (0.86)
Stable couple	-0.188*** (-6.92)	-0.197*** (-7.02)	-0.288*** (-19.74)	-0.279*** (-18.92)
Single to couple	0.056 (0.64)	0.048 (0.60)	-0.291*** (-6.72)	-0.232*** (-5.04)
Dissolved couple	0.200** (2.73)	0.454*** (4.24)	0.159*** (4.75)	0.091* (2.12)
Other	-0.033 (-0.64)	-0.040 (-0.74)	0.027 (0.99)	-0.041 (-1.33)
Constant	-0.846 (-0.87)	-1.059 (-1.42)	-0.374 (-1.06)	-0.190 (-0.43)
Observations	44,027	37,947	119,790	104,523
Individuals	4,827	4,302	14,730	13,295
With change in outcome	3,925	3,488	10,442	9,352
LL Null-model	-53,996.37	-47,998.65	-145,213.12	-125,836.83
LL	-51,422.23	-45,953.30	-137,270.51	-119,558.40
within R <sup>2</sup>	0.11	0.10	0.12	0.11

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

Note: Linear fixed-effects regression model, dependent variable: room stress, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include covariates period and age not shown here.

more likely for young singles than for older singles is in line with past literature (e.g. Clark and Huang 2003; Morrow-Jones and Wenning 2005). Partners in stable couples significantly reduce their room stress in both countries. English women and men in stable couples reduce their room stress by about 0.2 rooms more than single stayers. Partners in stable couples in Germany reduce their room stress by about 0.3 rooms more than single stayers. Men in both countries reduce their room stress the strongest, if they relocate in a stable couple. However, for English men the difference to relocating as a young single is not significant<sup>10</sup> and for German men the difference to relocating and forming a new couple is not significant.<sup>11</sup>

<sup>10</sup>  $F(1, 4301) = 1.45, p = 0.228$ .

<sup>11</sup>  $F(1, 13294) = 0.98, p = 0.322$ .



English women reduce their room stress the most if they relocate as young singles, but the difference to stable couples is not significant.<sup>12</sup> German women reduce their room stress the most if they relocate and form a new couple. Again, the difference to relocations in stable couples are not significant.<sup>13</sup> Greater reductions in room stress for families and couples than for singles have also been found in the past (e.g. Feijten and Mulder 2002). Relocations of couples and relocations of singles to couples reduce room stress significantly more in Germany than in England.<sup>14</sup> Older singles increase their room stress more in England than in Germany, if they relocate.<sup>15</sup>

If singles relocate and form a couple in England, they do not significantly change their room stress compared to single stayers. However, the effects of these relocations should be assessed together with a change in partnership status. Being in a partnership reduces room stress clearly. Those individuals that cohabit live in lower room stress compared with years in which they do not cohabit. Married individuals live in even lower room stress. The differences between married and cohabiting individuals are significant for women, but not for men in both countries.<sup>16</sup> These findings confirm earlier results on the positive association of cohabitation and marriage with the quality of locations (Morrow-Jones and Wenning 2005). For English women and men, single to couple relocations do not significantly affect room stress, but women and men significantly reduce their room stress if they relocate and cohabit or marry.<sup>17</sup> In Germany, single women reduce their room stress by about 0.3 rooms and men reduce their room stress by about 0.2 rooms if they relocate and form a union. Relocations that are associated with the dissolution of a union increase room stress for women and men in both countries. Especially men in England are adversely affected and increase their room stress by about 0.5 rooms more than single stayers, if they dissolve their union and relocate.

These findings provide evidence for and against a number of hypotheses put forward in Section 2.3 with regard to room stress. First, I hypothesise in H 1.1 that single to couple relocations and relocations of couples reduce room stress more than

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<sup>12</sup>  $F(1, 4826) = 0.74, p = 0.391$ .

<sup>13</sup>  $F(1, 14729) = 0.00, p = 0.953$ .

<sup>14</sup> I test the difference between coefficients by stacking the samples and fully interacting the model with dummies for England and Germany. I then used Wald tests to evaluate the difference between coefficients. For women, stable couple:  $F(1, 19556) = 10.41, p = 0.001$ ; for women, single to couple:  $F(1, 19556) = 12.56, p = 0.000$ ; for men, stable couple:  $F(1, 17596) = 6.81, p = 0.009$ ; for men, single to couple:  $F(1, 17596) = 9.22, p = 0.002$ .

<sup>15</sup> For women:  $F(1, 19556) = 4.37, p = 0.037$ ; for men:  $F(1, 19556) = 4.49, p = 0.034$ .

<sup>16</sup> English women:  $F(1, 4826) = 11.89, p = 0.001$ ; English men:  $F(1, 4301) = 3.39, p = 0.066$ ; German women:  $F(1, 14729) = 19.30, p = 0.000$ ; German men:  $F(1, 13294) = 3.73, p = 0.053$ .

<sup>17</sup> Tests for combined effect of single to couple relocation and cohabiting: English women:  $F(1, 19556) = 165.06, p = 0.000$ ; English men:  $F(1, 17596) = 63.30, p = 0.000$ . Tests for combined effect of single to couple relocation and married: English women:  $F(1, 19556) = 244.89, p = 0.000$ ; English men:  $F(1, 17596) = 83.74, p = 0.000$ .

stable single relocations. I cannot reject this hypothesis for Germany. In England, I can reject the hypothesis regarding young singles which do not differ significantly in their changes in room stress in case of relocations from couples. Second, H 1.2 about the positive effect of marriage on the quality of location is supported. Third, H 1.4 states that relocations that are a) associated with union dissolution increase room stress and I expect this effect b) to be stronger for women than for men and c) to be persistent over the life course. I cannot reject the first part of the hypothesis, because women and men in England and Germany increase their room stress on average, if they relocate. The effect is stronger for women than men in Germany, but the difference is not statistically significant.<sup>18</sup> In England, I find a significant difference between women and men, but against my expectation men increase their room stress more than women.<sup>19</sup> Thus, I can reject the second part of H 1.4. To test the last part of the hypothesis, I include a variable measuring if an individual ever divorced before in the model. The results show no significant difference between English men and German women for the years before and after the first divorce in average room stress.<sup>20</sup> English women live in 0.20 ( $t = 2.61$ ) rooms higher room stress after the first divorce on average and German men live in 0.12 ( $t = -1.97$ ) rooms lower room stress after the first divorce. Thus, while I find an immediate, negative effect of relocations associated with union dissolution, most individuals seem to adapt in the long run after a divorce (cf. also Figure 6.2). The last part of H 1.4 must be rejected. This is in contrast to research regarding other quality indicators, e.g. Feijten and Mulder (2005) show that individuals are permanently less likely to live in home ownership after union dissolution.

**Table 6.4** Fixed-effects models of room stress with interaction of income and presence of children

	<b>Model 6.3</b>		<b>Model 6.4</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Child aged 1 to 9	-0.338*** (-6.47)	-0.211*** (-3.89)	-0.134** (-2.75)	-0.010 (-0.18)
Household income (log)	-0.069** (-3.28)	-0.106*** (-4.99)	-0.027*** (-4.31)	-0.047*** (-6.27)
Child*Income	-0.001 (-0.17)	-0.009 (-1.14)	-0.015* (-2.11)	-0.026*** (-3.33)

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

Note: Linear fixed-effects regression model, dependent variable: room stress, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates presented in Table 6.3.

<sup>18</sup> To test the differences in coefficients by gender I proceed as described in Footnote 14.  $F(1, 28024) = 1.56, p = 0.211$ .

<sup>19</sup>  $F(1, 9128) = 3.85, p = 0.050$ .

<sup>20</sup> English men:  $b = -0.148$  ( $t = -1.35$ ); German women:  $b = 0.052$  ( $t = 1.08$ )

Room stress of individuals that live with children aged 1 to 9 is about 0.3 rooms less in England and 0.2 rooms less in Germany on average compared to the same individual not living with children (cf. Table 6.3). Again, this reflects earlier findings on the positive association of being in a family and the quality of locations (Dieleman and Everaers 1994; Feijten and Mulder 2002). In Table 6.4, interaction effects of the presence of children and income are presented. For England, I do not find a significant interaction of these variables. Independently from income, individuals are in reduced room stress if children are present. In Germany, I find a significant interaction between the presence of children and income. The main effect of income for women and men in Germany shows that individuals with no children aged 1 to 9 significantly reduce their room stress if they have a higher income. The main effect of children aged 1 to 9 shows that in the hypothetical case of an individual with no household income, the presence of at least one child would reduce room stress for women by about 0.1 rooms but would not significantly reduce room stress for German men. The interaction effects of children aged 1 to 9 and income shows that women and men in Germany reduce their room stress significantly more in the presence of children if they have a higher income. The findings partly support H 1.3 about the a) positive effect of children on the quality of a location and b) a positive interaction effect between children and income. The first part of the hypothesis is supported in both countries. Individuals live in lower room stress in years in which a child aged 1 to 9 lives in the same household. The second part of the hypothesis is only supported for Germany and has to be rejected for England. The effect of children aged 1 to 9 is getting larger with increasing income only in Germany. Coming back to the models in Table 6.3, I find childbirth and a child leaving the parental home to have a strong effect on room stress. Individuals that experience a childbirth in their households increase their room stress by about 0.1 rooms in England. In Germany, room stress increases by about 0.2 rooms. If a child leaves the household, room stress of individuals is reduced by about 0.5 rooms in England and by about 0.4 rooms for women and 0.5 rooms for men in Germany.

In H 1.5, I stated that becoming unemployed or being demoted should increase room stress, while becoming employed and being promoted should reduce room stress on average. I do not find support for this hypothesis. German men increase their room stress slightly if they experience a promotion, but no other group is significantly affected by a promotion or demotion. Thus, individual labour income changes are not related to changes in room stress. English men live in dwellings with lower room stress if they are employed or unemployed compared to being inactive. The difference between employed and unemployed is statistically not significant.<sup>21</sup> English women as well as German women and men do not change their room stress on average if they change their job statuses. Overall, job mobility has only small

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<sup>21</sup>  $F(1, 4301) = 2.88, p = 0.090$ .

effects on room stress, but I find employment and unemployment to have stronger effects on men's room stress in England than in Germany.<sup>22</sup>

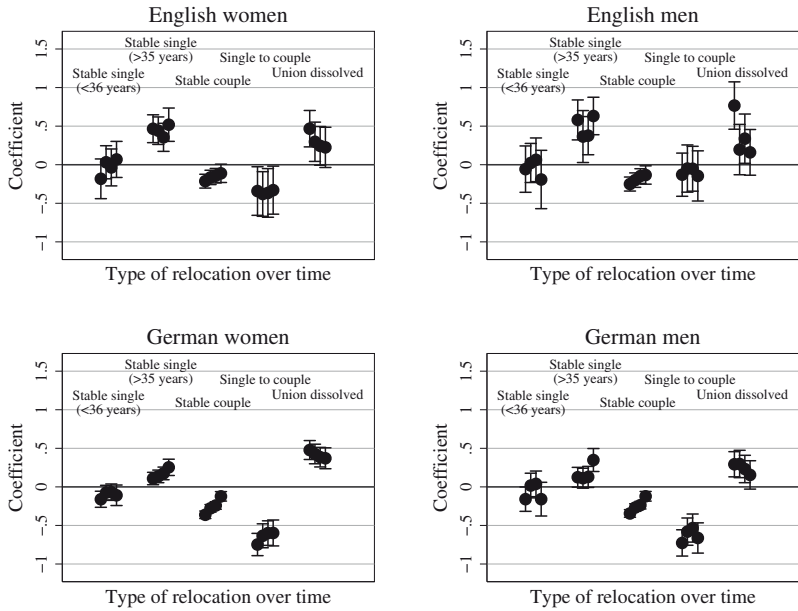
So far, I implicitly made rather restrictive assumptions about the effect of relocations on room stress. 1) I assumed that the effect of relocation is immediate and permanent. 2) I assumed that each subsequent relocation has the same additive effect on room stress. 3) I assumed that the effect of residential relocation on room stress is constant within subgroups of the sample. To test the first assumption, I allow the effect of relocations to vary over time. To this end, I include lagged variables in my model measuring the occurrence of a residential relocation not only at  $t$ , but also at  $t - 1$ ,  $t - 2$ , and at  $t - 3$  or earlier. My data does not allow me to test the second assumption. The assumption could be tested by separately identifying the effect of first and later relocations in the residential trajectory, but neither the BHPS nor the SOEP provides retrospective information about residential relocations. The third assumption is tested by interacting relocations with income to allow the effects of relocations to vary by income level.

I present estimation results of models including lagged variables of different relocation types in Figure 6.2. The figure only shows the coefficients of the lagged event variables and their 95 per cent confidence interval. For each relocation type, the immediate effects of the event taking place at  $t$ , i.e. in the year just before the interview, at the very left and the lagged effects up to  $t - 3$ , i.e. the relocation is at least 3 years ago at the time of the interview, at the very right are shown. Thus, by looking at each group of four coefficients from left to right the effect of relocations can be followed over time. Only coefficients for which the presented confidence interval does not include 0 are statistically significant.

For stable couples, the effect of relocations diminishes over time. In England, the effect is no longer significant if the relocation was at least three years ago. In Germany, even those stable couples that relocated at least three years ago are still in lower room stress compared to singles stayers. Single to couple relocations have a persisting effect on room stress in Germany. Even if the relocation is three or more years ago, individuals that relocate to form a couple are still in lower room stress than single stayers that do not change their partnership statuses. This is also true for English women, but not for English men whose room stress is not affected by this type of relocation at any point in time. Young singles in both countries and of both genders do not show a clear pattern regarding the effect of relocations on room stress over time. It seems that in Germany the effect of relocations of stable singles aged 36 or over on room stress increases over time after relocation. The positive effect of these relocations on room stress in England is essentially constant over time.

The negative effect of relocations that are associated with a union dissolution vanishes over time for all but German women. English women and men face a strong increase in room stress if they just relocated and dissolved their union in the year before the interview. Already in the second year after a relocation, men are

<sup>22</sup> Employment:  $F(1, 17596) = 4.10$ ,  $p = 0.043$ ; unemployment:  $F(1, 17596) = 9.69$ ,  $p = 0.002$ .



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

Note: Linear fixed-effects regression model, dependent variable: room stress; graph shows unstandardised coefficients and 95 %-confidence interval for event occurred at t (very left), t-1, t-2, t-3 or earlier (very right); models also include all covariates presented in Table 6.3.

**Fig. 6.2** Effects of relocation types on room stress over time

no longer in significantly higher room stress than single stayers that do not change their partnership statuses. English women’s room stress is no longer significantly different if the relocation is at least two years ago. Germans need more time to reduce their room stress after a relocation associated with a union dissolution. German men do not live in significantly higher room stress anymore only after the relocation is at least three years ago. For German women, the effect of relocations with union dissolutions also decreases over time. Even three or more years after the relocation took place, German women are still in significantly higher room stress than single stayers that did not change their partnership statuses.

### 6.2.2 *Economic Resources and Housing Tenure*

Housing is a good traded in markets and even though welfare states intervene in these market exchanges, the quality of housing that individuals can purchase is assumed to be strongly depended on individuals' economic resources. In H 2.1 a), I expect that individuals that increase their income are likely to reduce their room stress. In Table 6.3, I show that income changes have this effect on room stress. If individuals have a higher household income they are in lower room stress than the same individuals with lower income on average. English women and men reduce their room stress by about 0.1 rooms, German women by only slightly more than 0.0 rooms and German men by about 0.1 rooms on average if their log household income increases by 1 unit. This is in accordance with H 2.1 a). Higher incomes are associated with lower room stress, albeit only a slight difference. English women and men reduce their room stress about twice as much with an increase in income than individuals in Germany. This difference across countries is only statistically significant for men.<sup>23</sup> This is in accordance with H 4.3 which states that income and quality of housing are more strongly associated in England than in Germany, because housing is more decommodified in Germany than in England. I discuss this issue further in Section 9.1.3. My findings regarding the negative association of income and room stress are in accordance with the literature (Kendig 1984; Clark, Deurloo and Dieleman 1997, 2000; Buck 2000a).

In H 2.1 b), I expect that the effect of relocations on room stress varies by income. I expect individuals with higher incomes to reduce their room stress more through residential relocations than similar individuals with lower incomes. To test this expectation, I interact relocation types with income and I present the results in Table 6.5. The main effect of income indicates that for stayers in both countries, room stress is lower on average in years in which they have higher incomes. For example, English women reduce their room stress by about 0.1 rooms if their log household income increases by 1 unit. The main effects for the different relocation types show the effect of relocations if the individual has no household income, which is not sensible to interpret. The interaction effects of various types of relocations and income indicate how the effects of relocations linearly vary by log household income. For example, the interaction effect for stable single ( $\leq 35$  years) and income indicates how the effect of these relocations on room stress compared to the reference category of single stayers changes by household income.

I find several interaction terms to be significantly different from 0, and thus conclude that the effect of these types of relocations on room stress depends on the level of income. Young single relocations for women in England increase their room stress on average if they have a higher income. This is counter-intuitive, but the main effect of young stable single relocations is about -2.3 for women in England and, thus, for most observed income values these relocations will still reduce room stress

<sup>23</sup>  $F(1, 17596) = 5.84, p = 0.016$ .

**Table 6.5** Fixed-effects models of room stress with interaction of relocation type and income

	<b>Model 6.5</b>		<b>Model 6.6</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Household income (log)	-0.090*** (-4.21)	-0.102*** (-4.71)	-0.029*** (-4.85)	-0.049*** (-6.68)
Relocation type (ref: Stayer)				
Stable single ( $\leq 35$ years)	-2.285*** (-3.63)	-0.508 (-0.80)	-0.706 (-1.58)	0.431 (0.85)
Stable single ( $\geq 36$ years)	-0.977 (-1.24)	-0.295 (-0.44)	0.222 (0.84)	0.946* (2.24)
Stable couple	0.917* (2.56)	0.182 (0.49)	0.133 (0.93)	0.326 (1.51)
Single to couple	0.988 (1.09)	-0.921 (-1.01)	1.311* (2.42)	2.350*** (3.68)
Dissolved couple	-1.044 (-1.82)	0.657 (0.98)	0.308 (1.16)	-0.628 (-1.28)
Other	-0.113 (-0.25)	0.508 (1.45)	-0.231 (-1.44)	-0.210 (-0.80)
Interaction with income				
Stable single ( $\leq 35$ years)	0.300*** (3.37)	0.069 (0.77)	0.087 (1.38)	-0.064 (-0.91)
Stable single ( $\geq 36$ years)	0.171 (1.51)	0.077 (0.82)	-0.020 (-0.52)	-0.123* (-2.11)
Stable couple	-0.149** (-3.08)	-0.051 (-1.01)	-0.057** (-2.93)	-0.082** (-2.80)
Single to couple	-0.126 (-1.01)	0.130 (1.08)	-0.215** (-2.93)	-0.346*** (-4.00)
Dissolved couple	0.182* (2.16)	-0.027 (-0.30)	-0.021 (-0.56)	0.097 (1.46)
Other	0.009 (0.14)	-0.078 (-1.60)	0.038 (1.61)	0.025 (0.66)

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

Note: Linear fixed-effects regression model, dependent variable: room stress, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also includes all covariates presented in Table 6.3.

on average. The main effect may also indicate that low-income women reduce their room stress more than high-income women, because they experience higher room stress before the relocation. Relocations of older, male singles in Germany also interact significantly with income. With each unit increase in log household income, these relocations reduce room stress by an additional 0.1 rooms.

With increasing income, stable couples reduce their room stress to a greater degree if they relocate on average. This interaction is significant for women in England and both genders in Germany, but not for men in England. In Figure 6.3, I plot the marginal effects of stable couple relocations on room stress by income based on

the samples of women.<sup>24</sup> The marginal effects and the 95%-confidence intervals are shown. Marginal effects are significant if the confidence interval does not include 0. For English women, stable couple relocations only have a significant effect on room stress above PPP-\$ 800 household income. Below this income, relocations of stable couples do not significantly affect room stress. The marginal effects of stable couple relocations on room stress become more negative with increasing income. An English woman living in a household with PPP-\$ 1,000 income reduces room stress by about 0.1 rooms with a relocation on average. A woman living in a household with PPP-\$ 3,000 income reduces room stress by about 0.3 rooms. The predicted marginal effects for English men do not change as much by income as for women, but they show a similar picture: relocations of stable couples have a greater impact on improvement of room stress with higher incomes. I also find this to be true in Germany, where women in stable couples reduce their room stress more in case of relocation with higher household income. For example, women with a household income of PPP-\$ 1,000 reduce their room stress by slightly more than 0.3 rooms on average. Women with a household income of PPP-\$ 3,000 reduce their room stress by slightly less than 0.3 rooms.

The findings show that all stable couples except the lowest income groups reduce their room stress on average if they relocate. However, the reduction in room stress is clearly stratified by income. The returns of relocations increase with growing household incomes. Couples with high household incomes reduce their room stress substantially more than couples with low incomes. The stratification of returns by income seems to be stronger in England than in Germany. This finding again supports H 4.3 about the stronger association of income and quality of locations in England by comparison.

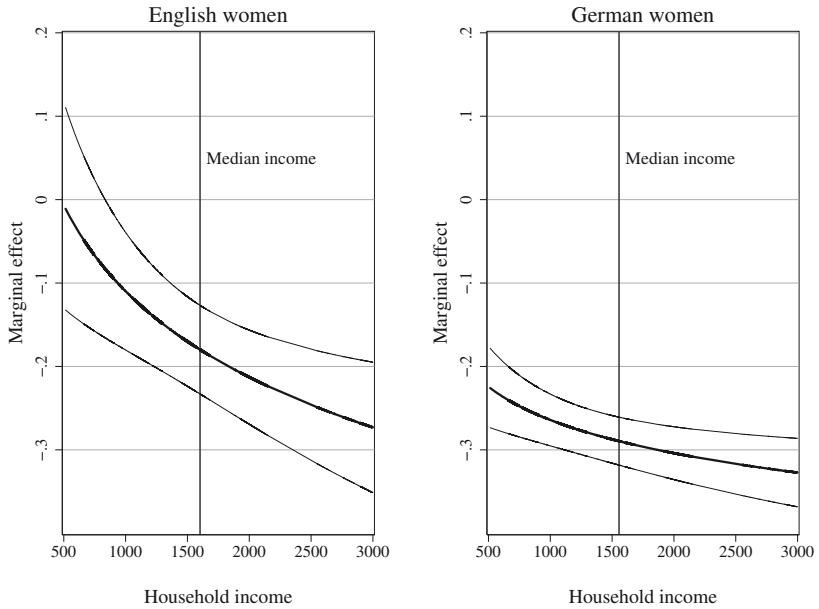
For Germany, I find significant interactions of single to couple relocations and income. Single women and men in Germany that relocate and form a couple reduce their room stress much more with growing income. Women and men with low income are likely to increase their room stress if they relocate and form a couple in Germany, which is apparent from the significant and positive main effect for single to couple relocations. Finally, relocations that are associated with a union dissolution interact positively with income to impact room stress for women in England. Thus, women with higher incomes reduce their room stress less than women with lower incomes. This finding is unexpected and one explanation may be that women with high household incomes have lived in relatively low room stress before. After union dissolution and relocation, these women are initially in small dwellings and this may drive the positive interaction effect. Over time, these women will reduce their room stress again and adapt to their new situations on average (cf. Figure 6.2).

Housing markets are structured by housing tenures and access to each tenure is strongly dependent on current and potential economic resources of individuals. At

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<sup>24</sup> The findings for men are similar to the findings for women. The graphs are generated with code suggested in Brambor, Clark and Golder (2006).





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

Note: Based on linear fixed-effects regression models shown in Table 6.5, dependent variable: room stress; Thin lines indicate 95 %-confidence interval of marginal effects.

**Fig. 6.3** Marginal effect of stable couple relocations on room stress conditional on household income, women

the same time, housing tenures are strongly correlated with average housing quality. In general, home ownership offers the best housing quality, but to purchase a home individuals need economic resources. In H 2.2, I expect changes into home ownership to reduce room stress the most, changes to private rented dwellings to reduce room stress moderately, and changes to social housing to reduce room stress the least. My analysis shows support of this hypothesis. For example, a stable couple that relocates from social housing to a dwelling owned with mortgage reduces room stress by about 0.8 ( $\approx -0.188 + (-1) * 0.600$ ) rooms on average in England (cf. Table 6.3, based on women sample). In Germany, the same couple would reduce room stress even by about 1.0 ( $\approx -2.88 + (-1) * 0.805$ ) room (based on women sample). In Germany, changes in housing tenure also considerably contribute to the explained variance of the model as mentioned above. The models show that both rental tenures are associated with higher room stress in England and Germany com-

pared to owning. The differences are especially strong in Germany and coefficients are at least marginally significantly different across countries.<sup>25</sup>

In England, the effects of living in social housing or privately rented dwellings differ significantly.<sup>26</sup> Individuals in social housing are in higher room stress than if they are in privately rented dwellings. In Germany, social housing and privately rented dwellings do not differ much in average room stress and only for women the coefficients for the two tenures are significantly different.<sup>27</sup> In England, living in dwellings owned outright does not significantly affect room stress compared to living in dwellings owned with mortgages. In Germany outright owners experience slightly higher room stress compared to owning with mortgages.

Figure 6.4 shows predicted changes in room stress for women in case of relocation by tenure of origin and tenure of destination.<sup>28</sup> The predictions are based on OLS regression models with change in room stress between  $t - 1$ , i.e. the year before the interview, and  $t$  as the dependent variable.<sup>29</sup> Three findings are especially relevant. First, social housing in both countries is associated with high room stress, but social tenants can improve their situations on average if they relocate independently of their tenures of destination. Second, private tenants change their room stress differently in England and Germany. In England, private tenants reduce their room stress significantly less than social tenants in most cases, while there is no difference in Germany on average. Private tenants in England only change their room stress significantly, if they buy a home. In Germany, private tenants also reduce their room stress on average if they continue to rent. Third, owners in both countries change their room stress similarly. Differences between outright owners and owners with mortgages are not statistically significant in England or Germany. Expectations about cross-national differences formulated in H 2.3 are further discussed in Section 9.1.2.

### 6.2.3 *Situational Conditions of Decision Making*

H 3.1 states that a) individuals that relocate long distances will have less improvement in room stress than individuals relocating short distances, but I expect that b)

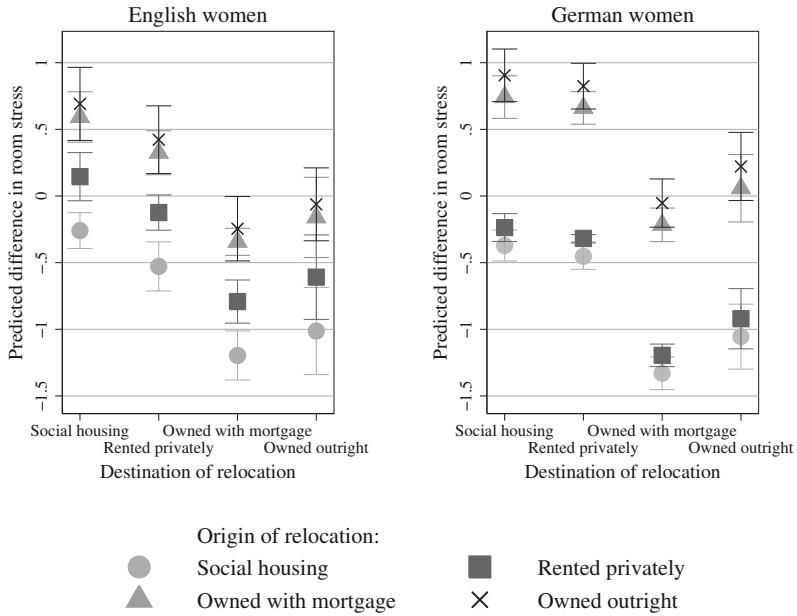
<sup>25</sup> For women, social housing:  $F(1, 19556) = 6.49, p = 0.011$ ; for women, rented privately:  $F(1, 19556) = 28.76, p = 0.000$ ; for women, owned outright:  $F(1, 19556) = 3.86, p = 0.049$ ; for men, social housing:  $F(1, 17596) = 3.37, p = 0.066$ ; for men, rented privately:  $F(1, 17596) = 22.15, p = 0.000$ ; for men, owned outright:  $F(1, 17596) = 3.06, p = 0.080$ .

<sup>26</sup> English women:  $F(1, 4826) = 11.97, p = 0.001$ ; English men:  $F(1, 4301) = 7.01, p = 0.008$ .

<sup>27</sup> German women:  $F(1, 14729) = 8.84, p = 0.003$ ; German men:  $F(1, 13294) = 0.79, p = 0.373$ .

<sup>28</sup> Due to space restrictions I only report findings for women. The predicted room stress values for men are very similar.

<sup>29</sup> All independent variables except relocation variables shown in Table 6.3 are included. In addition the lagged housing tenure from  $t - 1$  is included.



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

Note: Based on linear OLS regression models with dependent variable change in room stress and all covariates shown in Table 6.3; whiskers indicate 95 %-confidence interval; only movers.

**Fig. 6.4** Predicted changes in room stress by tenure of origin and destination after relocation, women

the effect of distance is stronger regarding neighbourhood quality than regarding room stress. H 3.2 stated that individuals improve the quality of their locations less on average, if they relocate involuntarily compared to voluntarily. This is due to the constrained search process for involuntary relocations. A new location has to be found quickly and individuals may be more likely to relocate to the next best location instead of considering several locations and choosing the best one. In Table 6.6, I present models testing these hypotheses with regard to room stress.<sup>30</sup> To capture involuntary relocations, I include subjective reasons for relocating into the models. I consider the reasons ‘notice given by landlord’, ‘housing costs too high’ and ‘partnership dissolution’.<sup>31</sup> It can be assumed that individuals’ choices to relocate or to

<sup>30</sup> In this and subsequent sections of the chapter, a general relocation variable is used instead of the differentiated relocation types.

<sup>31</sup> The reason ‘housing costs too high’ cannot clearly be identified in the BHPS data is because the question asked about size and cost: ‘Wanted smaller/cheaper accommodation’.

stay are limited in these cases. I contrast involuntary relocations with voluntary relocations of various distances, i.e. relocations that are not motivated by one of the three reasons for involuntary relocation. Distances of relocations are only available after 2000 in the SOEP and I drop earlier years from the analysis in the present subsection.

Voluntary relocations reduce room stress for almost all groups and distances of relocations on average (cf. Table 6.6). Only relocations that are longer than 30 km do not significantly affect room stress for women and men in England. Relocations have similar effects on room stress irrespective of their distances. I observe only two significant differences between coefficients: First, women in England that relocate between 1 and 5 km reduce their room stress more than women that relocate more than 30 km.<sup>32</sup> Second, women in Germany that relocate between 1 and 5 km reduce their room stress significantly more than women that relocate less than 1 km.<sup>33</sup> Men also increase their room stress the most if they relocate between 1 and 5 km, but there are no significant differences compared to other coefficients. Relocations between 1 and 5 km may provide access to a broader variety of housing than shorter relocations, but at the same time these relocations are too short to substantially disrupt individual social networks and, thus, may be especially attractive for movers that only want to improve their housing situations. All in all, the distance of relocations has little impact on the change in room stress associated with relocation in most cases. Thus, H 3.1 can partly be rejected.

In contrast to voluntary relocations, involuntary relocations are mainly associated with increases in room stress (cf. Table 6.6). Individuals that state that they relocated because of a union dissolution increase their room stress in both countries. For example, German women increase their room stress by 0.4 rooms more than stayers on average if they relocate due to a union dissolution. This findings is in accordance with earlier evidence of the negative effect of relocations that are associated with union dissolution presented in Section 6.2.1. Individuals that relocate after they receive a notice from their landlords significantly increase their room stress in England compared to stayers. English women and men increase their room stress by 0.4 rooms on average. In Germany, involuntary relocations due to termination of the rent contract do not affect average room stress of movers. Neither German women nor men change their room stress significantly in these cases. However, relocations after termination of the rent contract reduce room stress significantly less than voluntary relocations for women in Germany, but not for men.<sup>34</sup> These differences across countries may be due to stronger legal protection of tenants in Germany. The gender difference may be driven by groups of single women such as single mothers

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<sup>32</sup>  $F(1, 3450) = 5.26, p = 0.022$ .

<sup>33</sup>  $F(1, 12081) = 7.59, p = 0.006$ .

<sup>34</sup> I test jointly whether involuntary relocations are different from voluntary relocations of all distances for German women:  $F(4, 12081) = 3.45, p = 0.008$ ; German men:  $F(4, 10816) = 1.16, p = 0.327$ .

that are more vulnerable to terminations of the rent contract than single men. Relocations that are motivated by housing costs that were too high at the former location also increase room stress on average in both countries. In England, women and men increase their room stress by 0.4 (women) and 0.5 (men) rooms respectively if they have to relocate from their former location as they can no longer pay the housing costs. In Germany, the effect of these relocations is smaller. Women and men increase their housing stress by 0.1 to 0.2 rooms on average. These findings support H 3.2 and the findings are also in accordance with past research showing the negative effects of involuntary relocations (e.g. Kleinhans 2003).

**Table 6.6** Fixed-effects models of room stress for voluntary and involuntary relocations

	<b>Model 6.7 England</b>		<b>Model 6.8 Germany</b>	
	Women	Men	Women	Men
Voluntary relocation				
< 1 km	-0.192** (-2.79)	-0.203** (-2.80)	-0.160*** (-6.46)	-0.192*** (-7.05)
1 < 5 km	-0.241*** (-4.71)	-0.213*** (-3.89)	-0.254*** (-9.14)	-0.259*** (-8.52)
5 < 30 km	-0.142* (-2.37)	-0.199** (-3.16)	-0.226*** (-6.51)	-0.240*** (-6.52)
30+ km	0.015 (0.15)	-0.064 (-0.60)	-0.236*** (-4.90)	-0.235*** (-4.85)
Involuntary relocation				
Separation	0.481*** (3.33)	0.803*** (4.50)	0.368*** (7.50)	0.375*** (6.55)
Notice given	0.391** (2.98)	0.348** (2.62)	-0.014 (-0.20)	-0.104 (-1.19)
Housing costs	0.397*** (3.45)	0.497*** (3.87)	0.146*** (3.54)	0.175*** (3.67)

Data: BHPS 11-18, SOEP v26 waves 18-25 (individual level, unweighted)

Note: Linear fixed-effects regression model, dependent variable: room stress, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates presented in Table 6.3 except relocation variables.

### 6.2.4 Immigrant Households and Room Stress

Ascribed statuses such as ethnicity can cause discrimination in the housing market and, thus, immigrants may be constrained in their relocation behaviours. Not only immigrants themselves, but also individuals living with immigrants in a common

household may suffer from this discrimination. Therefore, I measure the immigrant status at the household level (cf. Section 4.5.2 for a detailed description of the variable). Under the assumption that immigrants have similar preferences to natives, I hypothesise that immigrant households reduce their room stress less than natives if they relocate due to discrimination. I also expect first generation immigrant households to differ to a greater degree from natives than second generation immigrant households (H 4.4). To support this hypothesis, I should find a negative interaction effect of residential relocations and first and second generation immigrant households. I also should find first generation immigrant households to reduce their room stress less than second generation immigrant households in case of residential relocations. If immigrant households are constrained by discrimination, I should also find a negative interaction between income and immigrant status with regard to room stress. Immigrants who possess the same economic resources as natives who do not make it to high quality locations are presumably facing some discrimination from gatekeepers at those locations.

I test these expectations in Model 6.9 and Model 6.10 in Table 6.7. The main coefficients for household income show the effect of changes in income on room stress of individuals in native households. For women and men in native households in both countries, increases in income significantly reduce room stress on average. In the fixed-effects regression models it is not possible to include the time-constant main effect for first and second generation immigrant households (cf. Section 4.6.1).<sup>35</sup> The interaction terms of income and immigrant status for women in England indicate no significant differences between natives, first and second generation immigrant households. For English men, first generation immigrant households reduce their room stress significantly less than natives with increasing incomes. Male second generation immigrant households do not differ with respect to the effect of income on room stress from individuals in native households. For Germany, I find female first and second generation immigrant households to reduce their room stress significantly less than natives with higher income. In fact, testing the combined main and interaction effect shows that women's room stress in immigrant households is not significantly affected by changes in income.<sup>36</sup> This is also true for men in first generation immigrant households in Germany.<sup>37</sup> Men in second generation immigrant households reduce their room stress significantly on average if their incomes increase.<sup>38</sup> Thus, I find evidence for Germany that individuals in immigrant households are constrained by discrimination in their housing situations. Under the assumption of similar preferences, individuals in immigrant households

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<sup>35</sup> Native individuals may leave immigrant households, but it can be expected that this is a very small group of individuals and I do not further examine this group.

<sup>36</sup> First generation:  $F(1, 14727) = 0.02, p = 0.902$ ; Second generation:  $F(1, 14727) = 0.31, p = 0.577$ .

<sup>37</sup>  $F(1, 13294) = 2.40, p = 0.122$ .

<sup>38</sup>  $F(1, 13294) = 4.09, p = 0.043$ .

that increase their incomes cannot use these resources to reduce their room stress as much as natives. I do not find evidence for discrimination in England.

**Table 6.7** Fixed-effects models of room stress by immigrant status

	<b>Model 6.9</b> <b>England</b>		<b>Model 6.10</b> <b>Germany</b>	
	Women	Men	Women	Men
Household income (log)	-0.080*** (-3.30)	-0.125*** (-4.89)	-0.037*** (-6.20)	-0.057*** (-7.46)
Income*1 <sup>st</sup> gen. immigrant	0.008 (0.44)	0.049* (2.21)	0.039** (2.98)	0.030 (1.78)
Income*2 <sup>nd</sup> gen. immigrant	-0.035 (-1.34)	0.028 (1.36)	0.046** (3.14)	0.021 (1.20)
Relocation	-0.105*** (-4.12)	-0.075** (-2.66)	-0.136*** (-10.70)	-0.164*** (-11.24)
Relocation*1 <sup>st</sup> gen. immig.	-0.067 (-0.92)	-0.147* (-2.02)	-0.100*** (-4.00)	-0.072** (-2.72)
Relocation*2 <sup>nd</sup> gen. immig.	-0.047 (-0.53)	-0.126 (-1.38)	-0.165*** (-3.99)	-0.156*** (-3.63)

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

Note: Linear fixed-effects regression model, dependent variable: room stress; unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include covariates presented in Table 6.3.

The main effect for relocations shows that women and men in native households in both countries significantly reduce their room stress if they relocate. For English women, I do not find a significant interaction of relocation and immigrant status. Individuals in first and second generation immigrant households are as likely as English women in native households to reduce their room stress with residential relocations. Men in first generation immigrant households in England reduce their room stress by about 0.1 rooms more on average than English men in native households. Men in second generation immigrant households in England do not change their room stress significantly from men in native households in case of relocation. Individuals in immigrant households in Germany reduce their room stress significantly more than Germans in native households, if they relocate. This is true for women and men in first as well as second generation immigrant households. For example, women in first generation immigrant households reduce their room stress by 0.1 rooms more on average if they relocate compared to women in native households. These findings reject H 4.4 with regard to changes in room stress. Contrary to my expectations, individuals in immigrant households reduce their room stress not less than individuals in native households if they relocate — in Germany they reduce their room stress even more than individuals in native households.

### 6.2.5 Structural Conditions in Housing Markets

Up to now, only individual and household level variables have been considered. I now extend the analysis by considering regional characteristics and structural conditions in the housing markets.<sup>39</sup> Most indicators on housing markets in England are only available after 1999. I drop earlier years from the analysis in the present section. Individuals are clustered in housing markets. In the panel model, this clustering is difficult to take into account in a straightforward manner and, thus, the estimated standard errors for variables at the housing market level may be underestimated. Instead, I estimate an alternative multi-level model with random intercepts at the individual and housing market level to yield unbiased standard errors for the housing market variables. The membership in certain housing markets is not constant over time, however, because individuals may relocate between different housing markets. Hence, individuals can be clustered in more than one housing market in the observation period. This kind of data structure can be accommodated by multiple membership multi-level models (Browne, Goldstein and Rasbash 2001; Windzio 2008). In multiple membership models the membership in different units is weighted by the time which respondents are exposed to the respective unit (cf. Section 4.6.2 for more details on these models). The multiple membership multi-level model is reported in Table A.6 in the appendix. I only highlight general characteristics of the model and differences to the panel regression model here.

According to the fixed-effects panel regression reported in Table 6.8, women that have relocated at some point in the past between the Southeast of England and the rest of England live in 0.6 rooms greater room stress on average than the same individual before the relocation. English men's room stress does not change significantly if they relocate between the Southeast and the rest of England. Neither German women nor men live in significantly different room stress, if they have moved between East and West Germany. The degree of urbanisation does not seem to have a substantial effect on average room stress. Individuals that relocate between rural, urban and metropolitan areas do not live in more or less crowded dwellings comparing years before and after the relocation. The findings are broadly similar in the multi-level model (cf. Table A.6).

I consider three indicators that further describe the structural conditions in the regional housing market: share of owned dwellings, number of new constructions and the population balance over the last five years (cf. Section 4.5.2). In the fixed-effects panel regression model presented in Table 6.8, I find only a few structural conditions to be relevant for explaining changes in room stress. In Germany, individuals are more likely to reduce their room stress if the share of owned dwellings in their regional housing markets increases — either for the reason that individuals relocate

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<sup>39</sup> Housing markets refer to the geographical unit of counties (*Kreise und kreisfreie Städte*) in Germany. Germany is divided into 413 counties. In England, housing markets also refer to the geographical unit of 88 counties (cf. Section 4.3.3).



**Table 6.8** Fixed-effects models of room stress with housing market variables

	<b>Model 6.11</b>		<b>Model 6.12</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Southeast ENG/East GER	0.594*	0.430	-0.072	-0.127
	(2.33)	(1.86)	(-0.70)	(-1.19)
Urbanisation (ref: rural)				
Metropolitan	-0.003	-0.008	-0.161	-0.035
	(-0.02)	(-0.04)	(-1.81)	(-0.39)
Urban	-0.077	-0.221	-0.022	0.035
	(-0.49)	(-1.44)	(-0.38)	(0.55)
Relocation	-0.101***	-0.084*	-0.157***	-0.176***
	(-3.30)	(-2.49)	(-10.96)	(-11.33)
Owned dwellings	-0.017	-0.009	-0.008***	-0.009***
	(-1.60)	(-0.91)	(-4.97)	(-5.09)
New constructions	-0.005	-0.008	0.000	0.002
	(-1.07)	(-1.45)	(0.13)	(0.54)
Population balance	0.006	0.002	0.004*	0.003
	(1.78)	(0.50)	(2.56)	(1.38)
Observations	22,041	19,177	73,054	64,507
Individuals	3,614	3,197	12,415	11,089
With change in outcome	2,670	2,347	8,259	7,362
LL Null-model	-23,706.53	-21,094.39	-78,672.00	-69,764.12
LL	-22,908.90	-20,488.56	-75,438.67	-67,160.68
within R <sup>2</sup>	0.07	0.06	0.08	0.08

Data: BHPS 10-18, ONS various years, SOEP v26 waves 17-25 (individual level, unweighted), INKAR 2010

Note: Linear fixed-effects regression model, dependent variable: room stress, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates shown in Table 6.3.

to a different housing market or because the conditions in the housing market itself change over time. If the share of owned dwellings increases by 1 percentage point, the average room stress for individuals falls very slightly but significantly. Individuals relocating from the housing market with the lowest share of owned dwellings (8.3 per cent) to the market with the highest share (88.6 per cent) would reduce their room stress by about 0.8 rooms on average in Germany. In England, the share of owned dwellings does not affect room stress according to the fixed-effects model. The findings from the multi-level model diverge from the fixed-effects model. According to the former, the share of owned dwellings affects individuals' levels of room stress in England. Women and men that live in housing markets with a higher share of owned dwellings have a lower room stress after controlling for average individual room stress over time. Differences between the multi-level model and the fixed-effects model seem to be due to smaller standard errors in the multi-level

specification. Larger standard errors in the fixed-effects regression models result mainly from the smaller effective sample size of these models, as only individuals with change in the outcome and independent variables are used to draw inference. These findings give support to H 4.2 about the positive effect of average regional housing quality on individuals' room stress. In housing markets with a higher share of high quality housing, individuals have more opportunities to relocate to better locations. This confirms earlier findings for the Netherlands (Feijten and Mulder 2005).

The number of new constructions has no effect on changes in room stress. Thus, increases in the supply of housing does not seem to cause changes in the average room stress in a housing market. This finding is also supported in the multi-level model. The population balance over the last five years is an indicator for the demand side in the regional housing market. In the fixed-effects specification, only German women are significantly affected by the population balance. Their room stress increases very slightly, if over the last five years more people moved into the region or were born relative to the number of people that died or left the region. Changing the population balance from the minimum in Germany (-26.82 persons per 1,000 inhabitants) to the maximum (31.02 persons per 1,000 inhabitants) would increase the room stress by about 0.2 rooms. In the multi-level model, the coefficients of the population balance for all groups are very similar to the fixed-effects model, but again the standard errors are smaller. Therefore, according to the multi-level model, English women, German women and German men are all significantly affected by the population balance in their room stress. The more the population grows in a region, the more likely individuals experience room stress. These findings do not clearly support or reject H 4.1 about the effects of changes in the regional supply and demand of housing on room stress. There seem to be some support for the part about demand: A positive change in population growth is associated with positive changes in room stress. The part about supply can be rejected as a positive change in number of constructions is not associated with negative changes in average room stress.

The estimation of the random term of the multi-level model shows substantial variation of intercepts between individuals (cf. Table A.6). Thus, after conditioning for all covariates, individuals still differ significantly in levels of time-constant average room stress. I also find significant variation of intercepts between housing markets in Germany. There seems to be unobserved heterogeneity in housing markets that causes divergence in average regional room stress. For example, regional variation in the average household structure or typical dwelling size may be captured here. I do not find significant variation of intercepts between housing markets in England. Thus, conditioned on the independent variables, the average regional room stress does not vary significantly between markets in England.

### 6.3 Summary

I found individual life course conditions to be important in explaining room stress changes. First, relocations in general reduce room stress, but the effect of relocations varies by life course stage and associated life course events. Relocations of couples and relocations to form a couple household reduce room stress more than other types of relocations. Married couples experience especially low room stress. Union dissolutions increase room stress. The presence of children reduces room stress in the long run, while childbearing initially increases room stress. Thus, in the growing-family phase individuals may experience higher room stress, but subsequent relocations reduce room stress. The positive effects of stable couples' relocations and the negative effects of relocations associated with union dissolutions fade out over time as individuals adapt their housing situations. Transitions in the job trajectory do not cause changes in room stress. These findings are evidence that with regard to room stress, outcomes of residential relocations are contingent upon life course events and stages. Their outcomes are shaped by individuals' life courses. Disparities result between life course stages such as the pre-family phase and the family phase and from adverse life events such as union dissolution.

At the same time, outcomes are co-determined by individuals' resources. Household income has a strong effect on room stress. First, changes in income are negatively associated with changes in room stress. Thus, individuals that increase their household incomes are also likely to reduce their room stress on average. Second, the contingent event of residential relocations is shaped by individual resources. At least for stable couples, relocations reduce room stress more with greater household income. In Germany, economic resources moderate the way that families with children can adapt their housing situations. Individuals that have the necessary resources to purchase property and relocate into ownership reduce their room stress more than individuals that stay within the rental sector. Social housing is associated with the highest room stress in both countries. Stratification of room stress by tenure is stronger in Germany than in England. My findings clearly show disparities in the effect of relocations on room stress dependent on individual resources. Individuals with high economic resources and individuals that can purchase their own homes reduce their room stress to a much greater degree than individuals without these resources. For individuals that lack these resources, relocations negatively affect the housing situation and increase room stress.

Structural conditions in the housing market have little effect on average room stress of individuals. The regional degree of urbanisation is not associated with room stress. The demand in the regional housing market is weakly associated with room stress. Individuals are in higher room stress on average, if they are in housing markets with above average population growth compared to housing markets with lower population growth. Changes in the supply of housing in the market do not affect average room stress. I found some evidence that the share of owned dwellings in a

market is negatively associated with average room stress, but the findings were not clear.

Individuals in households with immigrants in England are not significantly different from individuals in native households in their room stress. In Germany, individuals in immigrant households are in higher room stress on average than individuals in native households in a cross-sectional perspective. For Germany, I found some evidence that individuals in immigrant households are not able to transform income increases into lower room stress and this may indicate discrimination in the housing market. However, if individuals in immigrant households relocate in Germany, they reduce their room stress even more than natives. I conclude that structural conditions have only a weak impact on room stress of individuals. Disparities in changes in room stress are relatively independent from conditions in the housing market. Only in housing markets with above-average population growth, do individuals have a harder time to reduce their room stress levels. Disparities in room stress between migrants and natives in Germany are reduced through residential relocations.

I found some evidence for the importance of situational conditions of decision making. First, involuntary relocations increase room stress on average. Thus, individuals that have to relocate and are restricted in their search process relocate to more crowded dwellings than individuals that are less restricted in their search on average. I find almost no support for a stratification of relocation outcomes by the distance of relocation. Individuals that relocate only 1 to 5 km reduce their room stress the most, but differences compared to shorter and longer relocations are only small. I did not test for intra-household differences and gender roles with regard to room stress.

# Chapter 7

## Neighbourhood Quality and Residential Relocations

Individuals' dwellings are located in certain neighbourhoods, which constitute an important characteristic of the residential location (cf. Section 3.3.1). Local neighbourhoods are complex social entities that can provide important resources and opportunities for their residents. Ideally, neighbourhoods are places of social interaction with neighbours, provide essential goods and services, as well as safe and healthy environments. Neighbourhoods are stratified by the amount of opportunities and resources that they offer and this may affect their residents' life chances. Living in less resourceful neighbourhoods with fewer opportunities is associated with negative outcomes for the residents in various areas such as health, education and employment. Individuals may relocate to better neighbourhoods to increase life chances, and, in general, voluntary relocations can be expected to improve neighbourhood quality. However, past research shows that this path is not open to all and following from the theoretical framework described in Section 2.3, systematic differences in the outcomes of residential relocations across the population can be expected.

In order to investigate different outcomes I first examine descriptive evidence in Section 7.1. Next, I use multivariate methods to formally test the hypotheses (Section 7.2). First, I examine the effect of individual life course conditions (Section 7.2.1). Second, I scrutinise inequalities that result from unequal economic resources and disparities between housing tenures (Section 7.2.2). Third, I test for the effects of distances of relocations and involuntary relocations on changes in neighbourhood quality (Section 7.2.3). Fourth, potential inequalities in changes in neighbourhood quality for individuals in immigrant households and native households are analysed in Section 7.2.4. Fifth, the effect of structural conditions in regional housing markets is considered (Section 7.2.5). In Section 7.3, I summarise my findings.

My measures of neighbourhood quality are based on additional data sources that are linked to the BHPS and SOEP data sets. I use the Indices of Multiple Deprivation (IMDs) for England and the Microm data set for Germany to construct the neigh-

bourhood quality measures. I describe the construction of these measures in detail in Section 4.5.1.3. A higher value on these measures indicates better neighbourhoods. Data from respondents in the SOEP cannot be linked to information at the neighbourhood level prior to 2000, and, thus, the sample in the present chapter is more restricted than in the previous analyses, as the observation period is limited to the years 2000 to 2008.<sup>1</sup>

## 7.1 Descriptive Results

I now turn to the descriptive analysis of neighbourhood quality in England and Germany. I present descriptive results that show how my objective neighbourhood quality measure is related to subjective perceptions of neighbourhood quality in Germany to validate the quality measure that has not been used in prior research (Section 7.1.1).<sup>2</sup> Next, I show summary statistics about changes in neighbourhood quality over individuals' life courses (Section 7.1.2). In Section 7.1.3, I describe average changes in neighbourhood quality after residential relocations for particular groups of movers.

### *7.1.1 Objective and Subjective Neighbourhood Quality in Germany*

Table 7.1 summarises the general neighbourhood quality measure, which is an 'objective' measure of quality, by subjective satisfaction measures for Germany in 2004. The subjective measures are based on questions about the perceived neighbourhood quality asked in the SOEP in 2004. Clearly, those respondents that report certain problems with their neighbourhood are living in objectively worse neighbourhoods compared to those not reporting the respective problems. This difference is especially strong regarding safety in the neighbourhood. Those feeling unsafe live in neighbourhoods with a 0.36 standard deviation lower level of quality on average than those that feel safe. In Table 7.2, the subjective evaluation of the last relocation of the household is compared with the change in objective neighbourhood quality. The subjective measures are based on respondents' self-reported satisfaction with their present dwelling compared to the last one and these measures are surveyed every wave. In general, I find subjective changes in neighbourhood quality to correspond to objective changes in quality with regard to the general neigh-

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<sup>1</sup> I report descriptive statistics for all variables in the appendix in Table A.4 for England and Table A.4 for Germany.

<sup>2</sup> The English neighbourhood data has been used repeatedly in the past (e.g. Rabe and Taylor 2010).

bourhood and environmental conditions. For example, those that report a subjective improvement of neighbourhood quality also improve their objective neighbourhood quality by 0.25 standard deviations on average. On the contrary, those reporting a subjective deterioration of neighbourhood quality also live in objectively worse neighbourhoods that have -0.60 standard deviations lower quality compared to the last location.

Not all subjective measures correspond with the objective measure, though. Those that report a deterioration of their contacts to neighbours do not change their objective neighbourhood quality significantly different from those that report no change. This may indicate that contact with neighbours is not closely associated with the general quality of the neighbourhood. In low- as well as high-quality neighbourhoods, residents may interact socially with their neighbours. In addition, those respondents that report a deterioration in their access to public transportation compared to their last location increase their objective neighbourhood quality by 0.45 standard deviations on average. The last finding indicates an important caveat in interpreting subsequent findings for Germany. The neighbourhood quality index that I constructed is not necessarily measuring the availability of infrastructure facilities that may be important for some residents. For example, less wealthy households without cars may need public transportation in their neighbourhoods to organise their everyday life. Wealthier households with cars may not use public transportation and, thus, are not affected by a lack of transportation in the neighbourhood.

**Table 7.1** Average neighbourhood quality by subjective neighbourhood evaluation in 2004, Germany

Subjective evaluation	Average neighbourhood quality	
	Yes	No
Feel unsafe	-0.36	0.03
Green spaces lacking	-0.23	0.08
Noise is a problem	-0.11	0.10
Air pollution is a problem	-0.11	0.10
No visits with neighbours	-0.10	0.06

Data: SOEP v26 wave 21 (household level, cross-sectionally weighted), Microm 2010

Note: Difference: \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%.

Therefore, in interpreting subsequent results for Germany, it must be kept in mind that the neighbourhood index only measures certain characteristics of the neighbourhood. On average, the neighbourhood quality measure will have a higher value in purely residential, suburban areas with high shares of long-time residents. Mixed urban areas with a high turnover of residents will be mostly measured as ‘bad’ neighbourhoods. These objective neighbourhood quality may not always be congruent with subjective neighbourhood quality, e.g. younger individuals may prefer

to live in objectively ‘worse’ neighbourhoods in urban areas. Future research may validate my findings by using additional subjective quality indicators.

**Table 7.2** Average change in neighbourhood quality by change in subjective neighbourhood evaluation, Germany

Subjective evaluation	Average change in neighbourhood quality				
	worsened		no change		improved
Neighbourhood	-0.60	***	-0.02	***	0.25
Environmental conditions	-0.43	***	-0.04	***	0.34
Contact with neighbours	0.02		0.04		0.14
Access to public transportation	0.45	***	0.12	***	-0.19

Data: SOEP v26 waves 17-25 (household level, cross-sectionally weighted), Microm 2010

Note: Differences to no change: \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%.

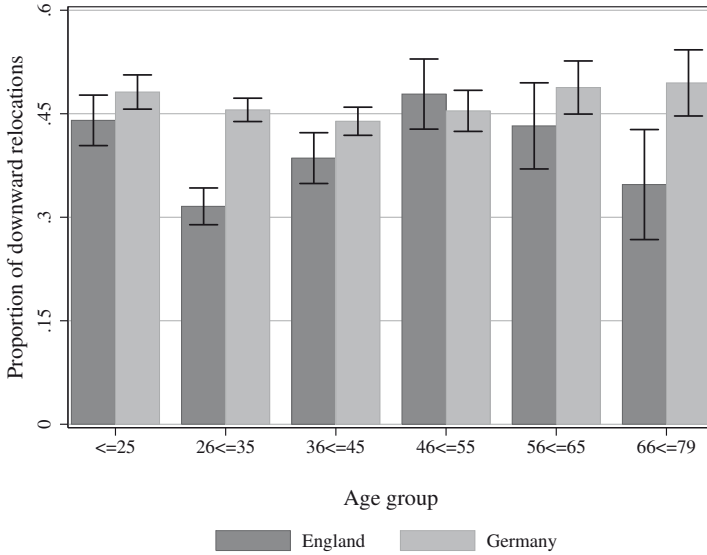
### 7.1.2 *Patterns in Changes in Neighbourhood Quality over the Life Course*

Similar to Section 6.1.2 regarding room stress, I now present statistics to describe variation in neighbourhood quality and changes in neighbourhood quality over parts of the life course. The within-standard deviation of neighbourhood quality in England is 0.226 (CI: [0.225, 0.228]). Slightly more than two thirds of individuals in England differ not more than about 0.2 standard deviations from their individual mean over their observed life course. Variation over the life course is slightly higher in Germany, where the within-standard deviation is 0.271 (CI: [0.270, 0.272]). However, due to the different construction of the neighbourhood quality variable and the much smaller geographical and population size of neighbourhoods in Germany, these differences may mainly be a statistical artefact. The between-deviation is considerably higher than the within-deviation and close to 1 for both countries as a result of the standardisation of the neighbourhood quality measure.<sup>3</sup>

Figure 7.1 shows the risk of relocating into worse neighbourhoods. The proportion of downward relocations is relatively stable across age groups in Germany at 46 per cent. In England, I observe the youngest age group to have a relatively high risk of relocating into worse neighbourhoods with about 44 per cent. Those aged 26 to 35 are considerably less likely to relocate to worse neighbourhoods and the risk

<sup>3</sup> England: between-SD = 0.983, CI: [0.967, 1.000]; Germany between-SD = 0.970, CI: [0.961, 0.979]. The between-deviation is not exactly 1, since the within-deviation has been extracted from the data.





Data: BHPS waves 10-18, SOEP v26 waves 17-25 (household level, cross-sectional weights)  
 Note: Whiskers indicate 95 %-confidence interval of proportion.

**Fig. 7.1** Proportion of downward relocations (neighbourhood quality) by age group

increases for the next two age groups before it decreases at late life. Thus, I observe more of a uniform risk of relocating to worse neighbourhoods in Germany than in England. In all age groups except those aged 46 to 55, German movers are more likely to relocate into worse neighbourhoods than English movers.

### 7.1.3 Average Changes in Neighbourhood Quality After Relocations by Groups

Table 7.3 shows the average neighbourhood quality as well as the average change in neighbourhood quality for those who relocate broken down by several covariates that are measured at the first observation after the relocation. For Germany and England, the average neighbourhood quality for the whole population is close to 0, due to the standardisation of the variable.<sup>4</sup> The average change in neighbourhood quality associated with a relocation is 0.07 standard deviations in Germany. This change is quite small, but significantly different from 0 at the 95 per cent confidence

<sup>4</sup> The mean of the standardised variable is not exactly 0, as the results are weighted.

level. For England, movers do not change their neighbourhood quality on average. Thus, relocations in England tend to be horizontal rather than vertical with regard to neighbourhood quality. About 8 per cent of movers in England and 13 per cent of movers in Germany reduce their neighbourhood quality by at least 1 standard deviation. About 13 per cent of movers in England and 17 per cent of movers in Germany increase their neighbourhood quality by at least 1 standard deviation.

In both countries, I find strong differences in average neighbourhood quality by region. Individuals in Southeast England live in 0.48 standard deviations higher neighbourhood quality than those in the rest of England on average. This difference may be driven by the higher average economic resources in the South-east (Anyadike-Danes 2004). East Germans live in -1.03 standard deviations lower neighbourhood quality on average than individuals in West Germany. This difference is striking, because the purchasing power variable, which is used to construct the neighbourhood quality measure for Germany, has been standardised separately for East and West Germany controlling for average differences in economic resources. Residential stability is slightly higher in West than in East Germany. The difference between East and West Germany is mainly driven by much higher prevalence of donations, which is used as a proxy for social and economic capital, and national newspapers, which is used as a proxy for cultural capital, in West Germany (cf. Section 4.3.2.2 for details on the neighbourhood data). In both countries, there are no significant differences between the regions in the change of neighbourhood quality after relocations. Thus, while I find the average neighbourhood quality to differ by region, relocations' effects on neighbourhood quality do not seem to be conditioned by regional characteristics.

In England, individuals in metropolitan areas live in -1.03 standard deviations lower neighbourhood quality compared to individuals in rural areas on average. Individuals in urban areas live in -0.61 standard deviations lower neighbourhood quality than individuals in rural areas. Relocations that end in rural areas increase neighbourhood quality by 0.09 standard deviations on average, which is significantly more than relocations that end in urban or metropolitan areas. The strong differences in average neighbourhood quality by degree of urbanisation are mainly caused by the higher population density in urban and metropolitan areas compared to rural areas (Adams 1992). The higher population density leads to, for example, more traffic, less green space, and more crime. Rural areas are also characterised by greater residential stability, as individuals are less mobile on average. Residential stability is assumed to improve social networks in neighbourhoods (Sampson and Groves 1989).

In Germany, individuals in metropolitan and rural areas live in significantly lower quality neighbourhoods compared to urban areas. The differences between metropolitan and rural areas are not statistically significant. Relocations that end in all three types of areas improve neighbourhood quality to the same degree on average. The finding that neighbourhood quality in rural areas is lower than in urban areas in Germany is unexpected. Due to the lower population density in rural areas, one

**Table 7.3** Average neighbourhood quality and change in quality by group and country

Group	Average neighbourhood quality and change			
	England		Germany	
	Quality	Change	Quality	Change
Total	-0.01	0.00	0.01	0.07
Region				
Southeast England/East Germany *	0.30	-0.02	-0.82	0.08
Rest	-0.18	0.00 <sup>†</sup>	0.21	0.07 <sup>†</sup>
Urbanisation				
Metropolitan	-0.42	-0.04 <sup>†</sup>	-0.24	0.06 <sup>†</sup>
Urban *	0.00	-0.03	0.19	0.06
Rural	0.61	0.09	-0.22	0.12 <sup>†</sup>
Immigrant in HH				
Yes	-0.08	-0.06 <sup>†</sup>	-0.07	0.06 <sup>†</sup>
No *	0.01	0.01	0.03	0.07
Tenure				
Social housing	-0.78	-0.05	-0.55	-0.06
Rented privately	-0.12	-0.05	-0.25	0.04
Owned with mortgage *	0.10	0.05	0.26	0.26
Owned outright	0.19	-0.03 <sup>†</sup>	0.43	0.27 <sup>†</sup>
Life stage				
Single ( $\leq 35$ years old)	-0.43	-0.22	-0.33	-0.05
Single ( $\geq 36$ years old)	-0.24	0.12 <sup>†</sup>	-0.10	-0.03
Single parent	-0.32	-0.09	-0.26	-0.04
Couple parent *	0.04	0.08	0.07	0.19
Childless couple	0.10 <sup>†</sup>	-0.02	0.10 <sup>†</sup>	0.09
Other	-0.31	0.25 <sup>†§</sup>	-0.10 <sup>†</sup>	0.67 <sup>†§</sup>
Employment status				
Employed *	0.04	0.01	0.04	0.12
Unemployed	-0.58	-0.16	-0.50	-0.04
Inactive	-0.07	-0.02 <sup>†</sup>	0.04 <sup>†</sup>	-0.02
Household income				
1 <sup>st</sup> quintile (lowest)	-0.37	-0.12	-0.33	-0.02
2 <sup>nd</sup>	-0.27	0.04 <sup>†</sup>	-0.11	0.07 <sup>†</sup>
3 <sup>rd</sup> *	-0.09	-0.00	0.06	0.17
4 <sup>th</sup>	0.10	0.01 <sup>†</sup>	0.21	0.08 <sup>†</sup>
5 <sup>th</sup> quintile (highest)	0.37	0.05 <sup>†</sup>	0.46	0.18 <sup>†</sup>

Data: BHPS waves 10-18 (individual level, cross-sectional weights), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, cross-sectional weights), Microm 2010

Note: Change only for movers, characteristics measured after relocation, \* indicates reference category, <sup>†</sup> indicates mean not statistically different from reference category; <sup>§</sup>: N < 100.

would expect to find rural areas to have better neighbourhood quality than urban and metropolitan areas just as in England. Taking a closer look at the indicators that are used in the neighbourhood quality measure for Germany reveals that rural areas have a much lower prevalence of donations and national newspapers than urban and metropolitan areas. The differences in these two indicators seem to drive most of the average differences in neighbourhood quality between areas with different degrees of urbanisation in Germany. The degree of urbanisation variable should be treated with caution, though, as it is measured at the level of counties. Within counties, smaller areas that can be characterised as metropolitan, urban or rural may co-exist.

In both countries, individuals in immigrant households live in significantly lower quality neighbourhoods on average than individuals in native households. In both countries, the difference in neighbourhood quality between the two types of households is roughly 0.1 standard deviations. This is in accordance with earlier findings that showed lower average neighbourhood quality for immigrants in Germany (Drever 2004) and England (Clark and Drinkwater 2002). However, changes in neighbourhood quality after relocations are not significantly different between individuals in immigrant and native households. Once individuals in immigrant households relocate, they seem to improve their neighbourhood as much as individuals from native households in both countries.

Tenants in social housing live in the worst neighbourhoods on average in both countries compared to others. This is in accordance with earlier literature showing that social housing tends to be concentrated in low-quality neighbourhoods in both countries (e.g. for England Fitzpatrick and Pawson 2007; for Germany Häußermann and Siebel 2000). The average neighbourhood quality is higher for private tenants than for social tenants, but is still well below the average neighbourhood quality of owners. The difference between social tenants and outright owners is 0.97 standard deviations in England and 0.98 standard deviations in Germany. In Germany, individuals that relocate into home ownership improve their neighbourhood quality more on average than both rental tenures. Individuals that relocate into ownership with a mortgage in England also improve their neighbourhood quality, but individuals that relocate into outright ownership do not improve their neighbourhood quality.

Singles and single parents live in neighbourhoods with below average quality in both countries. Old singles are better off than young singles and single parents. With the exception of old singles in England, individuals ending their relocation in any of these household types reduce their neighbourhood quality. In contrast, couple parents and childless couples live in above average neighbourhoods in both countries. Couple parents also improve their neighbourhood quality by 0.08 standard deviations in England and by 0.19 standard deviations in Germany after relocations on average. Childless couples improve their quality significantly in Germany, but not so in England. The number of other households is too small to draw reliable conclusions from the data. These findings show that especially couples live in neighbourhoods whose qualities are above average. Couple parents increase their

neighbourhood quality in both countries after relocation and the improvement is markedly higher in Germany than in England.

My findings corroborate what is found in the literature that an increasing concentration of low-income and unemployed individuals live in lower quality neighbourhoods (e.g. for England Meen et al. 2005: 25ff; for Germany Friedrichs and Triemer 2008: 111ff). The unemployed live in neighbourhoods more than half a standard deviation lower in quality than the employed on average in both countries. The inactive live in significantly lower quality neighbourhoods than the employed in England, but not in Germany. The employed improve their neighbourhood quality on average in both countries, while the unemployed reduce their neighbourhood quality through relocations. The inactive in Germany change their neighbourhood quality significantly less than the employed, but in England the difference is not significant. Part of the effect of unemployment on neighbourhood quality is likely to be caused by income losses.

Income has a strong effect on neighbourhood quality according to my descriptive results. The higher the income of individuals, the better their neighbourhood qualities in both countries. Individuals in the lowest income quintile live in neighbourhoods that are 0.37 standard deviations below the general average in England and 0.33 standard deviations below the general average in Germany. The difference between the highest and lowest income quintile in neighbourhood quality is more than 0.70 standard deviations in both countries. While levels of neighbourhood quality are clearly associated with income, changes in neighbourhood quality are not obviously related to levels of income. Individuals in the lowest income quintile in both countries reduce their neighbourhood quality on average if they relocate, while individuals in all other income quintiles at least relocate horizontally, i.e. they do not change their neighbourhood quality. Individuals do not increase their neighbourhood quality more with higher incomes. Improvements in neighbourhood quality seem to be equally likely for most income groups with the exception of the lowest income quintiles.

## 7.2 Multivariate Results

I now turn to the multivariate analysis to provide further evidence regarding the hypotheses.<sup>5</sup> In the multivariate analysis, I again mostly apply fixed-effects regression models with clustered standard errors (cf. Section 4.6.1).<sup>6</sup> Due to the caveats

<sup>5</sup> In contrast to Chapter 6, I was not able to test for cross-country differences in the present chapter, since the data for England and Germany had to be analysed separately due to data protection.

<sup>6</sup> Due to the multi-level structure in my data, I am confronted with a complexly nested data structure observations. Observations are clustered within individuals, neighbourhoods and housing markets. This clustering may bias the estimated standard errors and thereby yield misleading significance tests. I account for the first clustering by estimating robust standard errors that allow

of fixed-effects regression I again refrain from making causal claims in the present analysis and talk about associations between variables instead (cf. Section 4.6.1). Also, the estimated coefficients are only based on those respondents for which a change in the neighbourhood variable is measured, i.e. individuals that change their neighbourhood in the observation period by relocating.

### 7.2.1 *Individual Life Course Conditions*

I present estimation results of fixed-effects regressions on neighbourhood quality in Table 7.4.<sup>7</sup> Model 7.1 for England and Model 7.2 for Germany have an explained within-variance of 9 per cent for women and men.<sup>8</sup> In both countries, the degree of

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for clustering at the individual level. I do not consider the second clustering a problem for the estimation of standard errors, because on average a building sector in the Microm dataset contains only 1.02 interviewed households and a street sector contains on average 1.4 households of the SOEP sample (Dittmann and Goebel 2010). In England, a neighbourhood (LSOA) contains 2.0 households of the BHPS sample in 2000 and 1.7 households in 2008 on average. In Section 7.2.5, I test for the robustness of my results by estimating alternative multi-level models to account for potential bias due to the third clustering.

<sup>7</sup> Similar to my approach in Chapter 6, I ran several diagnostic tests for the full models reported in Table 7.4. 1) I tested whether the more efficient random-effect model would be preferable, but the Hausman test rejected the assumption that the random-effect model is consistent with the fixed-effects estimations for all models. 2) I tested for autocorrelation and heteroscedasticity. Both tests indicated that clustered standard errors should be applied. 3) I analysed the variance inflation factor (VIF) for a pooled OLS regression model to test for multicollinearity. Only the age variables showed a VIF exceeding the common cut-off value of 10. Thus, multicollinearity did not seem to affect the estimation. 4) I tested for a non-response bias by including a lead indicator and a lagged indicator of non-response in my model. The lead indicators of non-response were not significant for women and men in both countries (English women:  $b = -0.018$ ,  $t = -1.35$ ; English men:  $b = -0.009$ ,  $t = -0.66$ ; German women:  $b = 0.001$ ,  $t = 0.12$ ; German men:  $b = -0.003$ ,  $t = -0.46$ ). The lagged indicator of non-response was only significant for English women (English women:  $b = 0.026$ ,  $t = 2.22$ ; English men:  $b = 0.009$ ,  $t = 0.76$ ; German women:  $b = 0.018$ ,  $t = 1.68$ ; German men:  $b = -0.009$ ,  $t = -0.73$ ). English women were in significantly higher quality neighbourhoods, if they did not take part in the last interview. Thus, due to non-response I may slightly underestimate the effect of relocations on neighbourhood quality for English women. The models controlled for non-response showed very similar results to the full models. 5) Finally, I examined influential individual year-observations with large residuals in a pooled OLS regression model. After checking for data inconsistencies, I tested whether excluding the cases changes estimation results. All changes in coefficients were minuscule and therefore I decided to keep the cases in the estimation sample.

<sup>8</sup> I only report the full models here. I tested if each covariate has a significant effect on the model fit in a stepwise procedure using LR tests. A number of variables do not increase model fit significantly. For English women and men, the variables child aged 10 to 17, child moved out, as well as the variables measuring job mobility and job status did not increase model fit (not shown here). For English women, the variables child born and household income also did not increase model fit. For German women and men, the variables child aged 10 to 17, as well as the variables measuring job

urbanisation has the strongest explanatory power and contributes about 7 percentage points to the explained within-variance for English women and men, about 3 percentage points for German women and about 5 percentage points for German men in the full model. The inclusion of the different relocation types increases model fit significantly compared to a model without relocation types, but does not increase the explained variance considerably.<sup>9</sup> All models also include the controls period and region as well as a natural cubic spline specification of age and these are not reported in the tables.<sup>10</sup> The effect of period is minuscule. The effects of region in both countries is similar to earlier descriptive findings. I do not find a significant effect of age in the fully specified model in England.<sup>11</sup> For Germany, on the other hand, age still has a significant effect on neighbourhood quality even in the full model.<sup>12</sup> For German women and men, neighbourhood quality increases strongly up to their 40s and stagnates thereafter.

I include the differentiated types of relocations in the models (cf. Table 7.4).<sup>13</sup> These differentiated types of residential relocations are interactions of partnership status and residential relocation (cf. Section 6.2.1 for more details regarding the interpretation). Most differentiated types of relocations have no significant effect on neighbourhood quality compared to single stayers. Relocations are mostly hori-

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mobility and job status did not increase model fit. For German men, the variable child moved out also did not increase model fit. To provide evidence against some of my hypotheses and to be able to compare effects of variables on neighbourhood quality with effects on room stress, I included all variables in the full models.

<sup>9</sup> Women in England:  $\chi^2(6) = 23.99$ ,  $p = 0.001$ ; men in England:  $\chi^2(6) = 48.45$ ,  $p = 0.000$ . Women in Germany:  $\chi^2(6) = 153.88$ ,  $p = 0.000$ ; men in Germany:  $\chi^2(6) = 164.06$ ,  $p = 0.000$ .

<sup>10</sup> I tested quadratic up to quintic polynomials, as well as natural cubic splines with 3 to 7 knots to model the effect of age. I tested these specifications in models only including age and period. I tested different positions for the function with 7 knots. I compared the AIC values for all specifications and selected the model with the best fit (not shown). For England, a natural cubic spline function with 7 knots at age 22, 32, 39, 46, 54, 63, and 77 offered the best fit for both genders. In Germany, a natural cubic spline function with 7 knots at age 26, 36, 42, 49, 57, 65, and 76 was selected for women. For men, a natural cubic spline function with 7 knots at age 20, 30, 40, 50, 60, 70, and 80 was selected. These specifications are used in all models throughout the chapter.

<sup>11</sup> I test whether all age coefficients are commonly equal to 0. For both genders,  $H_0$  cannot be rejected (women:  $F(6, 3470) = 1.43$ ,  $p = 0.200$ ; men:  $F(6, 3051) = 1.89$ ,  $p = 0.079$ ). The model with age provides a better model fit than without age, however (LR test for women:  $\chi^2(6) = 37.67$ ,  $p = 0.000$ ; men:  $\chi^2(6) = 29.63$ ,  $p = 0.000$ ).

<sup>12</sup> Again, I test that all age coefficients are commonly equal to 0. For both genders,  $H_0$  can be rejected (women:  $F(6, 11853) = 7.64$ ,  $p = 0.000$ ; men:  $F(6, 10617) = 7.57$ ,  $p = 0.000$ ). In addition, the inclusion of age improves the model fit significantly (LR test for women:  $\chi^2(6) = 271.22$ ,  $p = 0.000$ ; men:  $\chi^2(6) = 230.72$ ,  $p = 0.000$ ).

<sup>13</sup> I also estimate the general effect of all types of relocations on changes in neighbourhood quality. For English women  $b = 0.006$  ( $t = 0.47$ ), English men  $b = 0.027$  ( $t = 2.19$ ). German women  $b = 0.045$  ( $t = 5.35$ ), German men  $b = 0.047$  ( $t = 5.09$ ). Including the relocation types instead of a general relocation variable significantly increases model fit for all groups (LR-tests for English women:  $\chi^2(5) = 23.44$ ,  $p = 0.000$ ; English men:  $\chi^2(5) = 32.69$ ,  $p = 0.000$ ; German women:  $\chi^2(5) = 41.56$ ,  $p = 0.000$ ; German men:  $\chi^2(5) = 51.86$ ,  $p = 0.000$ ).

zontal instead of vertical with regard to neighbourhood quality. For English women, no type of relocation significantly affects neighbourhood quality. Even relocations in stable couples, which increase neighbourhood quality for all other subsamples, are not associated with changes in neighbourhood quality. English men increase their neighbourhood quality by about 0.04 standard deviations, if they relocate in a stable couple. No other type of relocation has a significant effect on English men's neighbourhood quality. German women and men relocate to neighbourhoods with about 0.06 standard deviations higher quality if they relocate in a stable couple. For German women and men, relocations in the other category increase neighbourhood quality on average, but the rest of the relocation types do not affect neighbourhood quality.

I do not find evidence for H 1.1 that states that relocations of couples and singles that become couples improve neighbourhood quality more than relocations of singles. None of the coefficients for relocations are significantly different from each other except relocations of older singles and couple relocations in Germany.<sup>14</sup> It is important to keep in mind that neighbourhood quality can only change in the event of residential relocations due to the construction of the neighbourhood quality measure (cf. Section 4.5.1.3). At the same time, certain covariates can only meaningfully change in value if a relocation takes place, e.g. changes from metropolitan to rural area necessarily induce residential relocations.

H 1.4 a) states that individuals reduce the quality of their locations on average if their relocation is associated with a union dissolution. According to H 1.4 b) this effect should be stronger for women than for men and c) should persist over the life course. I do not find a significant effect of relocations associated with union dissolution in the fixed-effects specification. In contrast to the situation regarding room stress, ex-partners that relocate are not more likely to reduce their neighbourhood quality than other individuals. However, the effect of these relocations must be seen in combination with the partnership status variables to grasp the whole effect of relocations into or out of partnerships. Married women in England and Germany live in higher quality neighbourhoods in years in which they are married on average compared to being single, but the same is not true for men in both countries. German women also live in better quality neighbourhoods, if they cohabit compared to living without a partner. The coefficients for cohabiting and being married are not significantly different for women and men in England and Germany.<sup>15</sup> I have to reject H 1.2 stating that married couples live in better neighbourhoods than cohabiting couples for England and Germany. Similar results have been found for the US where transitions to cohabitation and marriage are also not associated with better neighbourhood quality (Sampson and Sharkey 2008). To assess the combined effect of relocations and transitions in the partnership trajectory on neighbourhood quality,

<sup>14</sup> German women:  $F(1, 11853) = 4.23, p = 0.040$ ; German men:  $F(1, 10617) = 6.38, p = 0.012$ .

<sup>15</sup> English women:  $F(1, 3470) = 3.23, p = 0.072$ ; English men:  $F(1, 3051) = 3.69, p = 0.055$ ; German women:  $F(1, 11853) = 0.03, p = 0.857$ ; German men:  $F(1, 10617) = 0.05, p = 0.829$ .



**Table 7.4** Fixed-effects model of neighbourhood quality

	<b>Model 7.1 England</b>		<b>Model 7.2 Germany</b>	
	Women	Men	Women	Men
Urbanisation (ref: Rural)				
Metropolitan	-0.697*** (-7.28)	-0.680*** (-7.37)	-0.452*** (-5.35)	-0.512*** (-5.58)
Urban	-0.408*** (-4.79)	-0.341*** (-4.25)	0.044 (0.51)	0.073 (0.79)
Partnership status (ref: Single)				
Cohabiting	0.021 (0.67)	-0.001 (-0.03)	0.091*** (3.88)	0.039 (1.63)
Married	0.063* (2.45)	0.052 (1.46)	0.087*** (4.50)	0.043 (1.91)
Child aged (ref: No child)				
1 to 9	0.002 (0.18)	0.040** (2.86)	0.035** (2.83)	0.034** (2.72)
10 to 17	0.001 (0.10)	0.002 (0.12)	-0.017 (-1.88)	-0.004 (-0.47)
Family events (ref: No event)				
Child born	0.014 (1.26)	0.005 (0.52)	-0.001 (-0.07)	0.003 (0.23)
Child left	0.013 (1.33)	0.018* (2.07)	-0.005 (-0.64)	0.003 (0.36)
Job events (ref: No event)				
Promotion	-0.001 (-0.12)	-0.002 (-0.30)	0.003 (0.69)	0.000 (0.05)
Demotion	0.007 (0.96)	-0.001 (-0.19)	0.005 (0.88)	0.006 (1.06)
Job status (ref: Inactive)				
Employed	-0.004 (-0.49)	0.019 (1.18)	-0.002 (-0.21)	0.005 (0.66)
Unemployed	0.003 (0.18)	-0.020 (-0.96)	-0.002 (-0.21)	-0.001 (-0.07)
Household income (log)	0.006 (0.55)	-0.009 (-1.03)	0.011 (1.44)	0.015 (1.84)
Housing tenure (ref: Owned with mortgage)				
Social housing	-0.033 (-0.62)	-0.007 (-0.14)	-0.198*** (-6.61)	-0.174*** (-5.48)
Rented privately	0.129** (2.87)	0.086* (1.97)	-0.137*** (-5.82)	-0.123*** (-4.91)
Owned outright	-0.023 (-1.20)	-0.054** (-2.73)	-0.011 (-1.18)	-0.010 (-1.27)

continued overleaf

continued				
	<b>Model 7.1 England</b>		<b>Model 7.2 Germany</b>	
	Women	Men	Women	Men
Relocation type (ref: Stayer)				
Stable single ( $\leq 35$ years)	0.096 (1.49)	0.003 (0.04)	0.052 (1.74)	-0.001 (-0.03)
Stable single ( $\geq 36$ years)	0.016 (0.32)	0.016 (0.25)	0.005 (0.20)	-0.028 (-0.83)
Stable couple	-0.001 (-0.07)	0.042** (2.87)	0.060*** (5.48)	0.062*** (5.43)
Single to couple	-0.015 (-0.31)	0.050 (0.72)	0.056 (1.73)	0.035 (1.04)
Dissolved couple	-0.009 (-0.17)	-0.103 (-1.84)	-0.016 (-0.52)	0.019 (0.55)
Other	-0.009 (-0.23)	0.008 (0.27)	0.052* (2.26)	0.077** (3.22)
Constant	-0.234 (-0.93)	-0.123 (-0.42)	-0.505** (-2.95)	-0.280 (-0.94)
Observations	21,898	19,033	70,824	62,646
Individuals	3,471	3,052	11,854	10,618
With change in outcome	1,266	1,132	3,789	3,374
LL Null-model	1,813.42	1,658.02	-6,383.79	-3,878.76
LL	2,892.40	2,533.15	-2,996.64	-811.10
within R <sup>2</sup>	0.09	0.09	0.09	0.09

Data: BHPS 10-18 (individual level, unweighed), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighed), Microm 2010

Note: Linear fixed-effects regression model, standardised dependent variable: neighbourhood quality, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include covariates period, region, age not shown here.

I test coefficients for these variables together — namely single to couple relocations and cohabiting; single to couple relocations and married; dissolved couple relocations and cohabiting\*-1; dissolved couple relocations and married\*-1. For English women, none of the combined effects is significantly different from 0.<sup>16</sup> English women do not change neighbourhood quality in case of partnership changes that are linked to residential relocations. For English men, a separation of a married couple associated with a relocation significantly reduces neighbourhood quality for

<sup>16</sup> Single to couple and cohabiting:  $F(1, 3470) = 0.01$ ,  $p = 0.916$ ; single to couple and married:  $F(1, 3470) = 0.75$ ,  $p = 0.386$ ; dissolved couple and cohabiting\*-1:  $F(1, 3470) = 0.25$ ,  $p = 0.616$ ; dissolved couple and married\*-1:  $F(1, 3470) = 1.63$ ,  $p = 0.202$ .

the ex-partner. Other combined effects of relocations and partnership changes are not significantly associated with changes in neighbourhood quality.<sup>17</sup>

For German women, all of these combinations are significant.<sup>18</sup> Relocations associated with forming a new couple increase neighbourhood quality, while relocations associated with dissolution of a couple reduce neighbourhood quality on average both for cohabiting and married couples. For German men, none of these combinations is significant.<sup>19</sup> Thus, German men do not experience a significant change in neighbourhood quality, if they relocate and change their partnership status. Considering all this evidence, I argue that the first part of H 1.4 cannot be rejected with regard to neighbourhood quality. Similar results have been found in the US (Crowder and South 2005). Also, German women seem to be affected by union dissolution and associated relocations more negatively than men. This supports the second part of H 1.4 about gender differences for Germany, but not for England where men seem to be affected more strongly than women. Finally, I do not find evidence that the effect of union dissolutions is persisting over the life course for most groups. In a fixed-effects regression in which I compare years in which individuals are not divorced to years in which individuals are divorced, I only find English men to be negatively affected by divorces.<sup>20</sup>

I hypothesised that individuals with children will live in better neighbourhoods than childless individuals on average and that the positive effect of children on neighbourhood quality will increase with income (H 1.3). I find the presence of children aged 1 to 9 to positively affect neighbourhood quality except for English women. On average, English men as well as German women and men live in better quality neighbourhoods in years in which they live together with young children. Older children aged 10 to 17 are not associated with changes in neighbourhood quality for any subsample. The family events of childbirth and a child leaving the household have mostly no effect on neighbourhood quality. Only English men significantly increase their neighbourhood quality in years in which a child left the household. Taken together, the evidence for the first part of H 1.3 is ambiguous. The presence of young children seems to be related to increases in neighbourhood quality, but childbirths are not associated with immediate improvements in neighbourhood quality. Older children do not affect changes in neighbourhood quality.

<sup>17</sup> Single to couple and cohabiting:  $F(1, 3051) = 0.42, p = 0.519$ ; single to couple and married:  $F(1, 3051) = 1.96, p = 0.162$ ; dissolved couple and cohabiting\*-1:  $F(1, 3051) = 2.69, p = 0.101$ ; dissolved couple and married\*-1:  $F(1, 3051) = 6.74, p = 0.010$ .

<sup>18</sup> Single to couple and cohabiting:  $F(1, 10617) = 14.69, p = 0.000$ ; single to couple and married:  $F(1, 10617) = 13.77, p = 0.000$ ; dissolved couple and cohabiting\*-1:  $F(1, 10617) = 8.39, p = 0.004$ ; dissolved couple and married\*-1:  $F(1, 10617) = 7.72, p = 0.006$ .

<sup>19</sup> Single to couple and cohabiting:  $F(1, 10617) = 3.11, p = 0.078$ ; single to couple and married:  $F(1, 10617) = 3.50, p = 0.062$ ; dissolved couple and cohabiting\*-1:  $F(1, 10617) = 0.23, p = 0.633$ ; dissolved couple and married\*-1:  $F(1, 10617) = 0.33, p = 0.568$ .

<sup>20</sup> English women:  $b = -0.030 (t = -0.55)$ ; English men:  $b = -0.142 (t = -2.83)$ ; German women:  $b = -0.042 (t = -1.06)$ ; German men:  $b = -0.018 (t = -0.43)$ .

Sampson and Sharkey (2008) also find a positive association between household size and neighbourhood quality. Other research has shown that childbirth improves neighbourhood quality on average (Rabe and Taylor 2010). Part of the effect of childbirth may be captured by other covariates in my model, e.g. relocations of stable couples or tenure changes.

The second part of H 1.3 stated that the effect of children on neighbourhood quality will increase with income. While all parents may have preferences for high-quality neighbourhoods to raise their children, only those with sufficient income may be able to meet these preferences. I test this part of the hypothesis by interacting income and the number of children in models reported in Table 7.5. The main effect of at least one child aged 1 to 9 in the household indicates the average change in neighbourhood quality if an individual starts to live with a young child and has no household income. This main effect is only significantly different from 0 for English women, which indicates that English women reduce their neighbourhood quality on average if they live together with a young child in the hypothetical case of having no household income. Accordingly, the main effect of at least one child aged 10 to 17 shows the average change in neighbourhood quality, if an older child starts to live in the household. This main effect shows that English women improve their neighbourhood quality on average if they have no income and start to live together with an older child. German women reduce their neighbourhood quality on average, if they have no income and start living with an older child.

**Table 7.5** Fixed-effects model of neighbourhood quality with interactions of income and number of children

	Model 7.3 England		Model 7.4 Germany	
	Women	Men	Women	Men
Child aged				
1 to 9	-0.044* (-2.16)	0.040 (1.39)	0.047 (1.38)	0.050 (1.33)
10 to 17	0.263* (2.00)	0.081 (0.54)	-0.390*** (-3.52)	-0.174 (-1.45)
Household income (log)				
1 to 9*income	0.009 (0.82)	-0.008 (-0.86)	0.003 (0.35)	0.012 (1.44)
10 to 17*income	0.007** (2.58)	-0.000 (-0.01)	-0.002 (-0.38)	-0.002 (-0.44)
	-0.035* (-2.00)	-0.011 (-0.53)	0.050*** (3.41)	0.023 (1.43)

Data: BHPS 10-18 (individual level, unweighed), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighed), Microm 2010

Note: Linear fixed-effects regression model, standardised dependent variable: neighbourhood quality, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates shown in Table 7.4.

The main effect for household income shows no significant effect of changes in income on changes in neighbourhood quality for individuals without children in the household. For English women, I find both interactions' effects to be statistically significant. With increasing income, the presence of young children buffers neighbourhood quality losses for English women. On the contrary, the presence of older children impedes neighbourhood quality improvements with increasing income for English women. In Germany, the presence of older children reduces neighbourhood quality less with increasing income. Income and children in the household are not significantly interacted for men in England and Germany. Thus, I do not find clear evidence for the second part of H 1.3. For women, income moderates the effect of children in the household, but not always in the expected way. As predicted, women in England improve their neighbourhood quality more if they have young children and higher incomes. The same is true for German women with older children. Unexpectedly, the positive effect of older children on neighbourhood quality in England decreases with higher incomes. This may be due to the fact that women with higher incomes are more likely to relocate from less densely populated areas to more densely populated areas once their children are older.

I expect that transitions into unemployment and demotions reduce neighbourhood quality on average, while individuals that become employed or experience a promotion are more likely to improve their neighbourhood quality than individuals that do not experience the respective job mobility (H 1.5). Contrary to my expectations, I find that promotions, demotions and employment status do not have significant effects on changes in neighbourhood quality. Transitions in the job trajectory do not affect changes in neighbourhood quality. Part of the unemployment effect on neighbourhood quality may be captured by the household income, but excluding income from the models does not change the effect size for the unemployment variable (not shown here).

My findings are in contrast to earlier results by Rabe and Taylor (ibid.) which show that the event of unemployment for male partners reduces objective and subjective neighbourhood quality significantly for couples that relocate in England, and by Bolt and Kempen (2010) who find the unemployed to be more likely to relocate to segregated areas in the Netherlands. My different findings may be due to the fixed-effects model specification which only estimates effects for deviations from the individual-specific mean. For example, Sampson and Sharkey (2008) find no effect of employment changes or changes in job prestige on neighbourhood quality in the US in accordance with my findings.

### ***7.2.2 Economic Resources and Housing Tenure***

H 2.1 a) states that individuals with positive changes in income are likely to improve the quality of their neighbourhood by relocating to better areas. In contrast to H 2.1

a), I do not find a significant association between changes in income and changes in neighbourhood quality for any subsample. In years in which individuals have a higher income than in other years, their neighbourhood quality is not higher on average. It is puzzling that the effect of income on neighbourhood quality is so small and insignificant, as neighbourhood quality is expected to be positively associated with land rent, which affects rents and property prices. Higher rents and property prices may only be affordable with higher income.

Even though my findings seem to be counter-intuitive, they are consistent with past research. While the level of income has been found to be positively associated with improvements in neighbourhood quality (South and Crowder 1997a; Crowder and South 2005; Clark, Deurloo and Dieleman 2006), changes in income are only weakly associated with changes in neighbourhood quality (South and Crowder 1997a; Sampson and Sharkey 2008). Potential reasons for the insignificant income effect may be that, first, individuals want to be sure that the change in income is permanent, before they relocate and burden themselves with the associated costs. Second, individuals may not depend on increases in household income, since they can access mortgages to relocate to better neighbourhoods.<sup>21</sup> Third, income may only be important for certain quintiles of the income distribution, e.g. only high-income individuals may live in significantly better quality neighbourhoods. Fourth, income may not be necessary to relocate to better neighbourhoods for the reason that neighbourhood quality is actually not positively associated with the price of housing in the area.

Table 7.6 presents alternative model specifications which test for these potential explanations. In Model 7.5 and Model 7.6, I present results from a pooled cross-sectional OLS regression with clustered standard errors. Clearly, individuals with higher income live in better quality neighbourhoods. The earlier fixed-effects regression results showed that the *same* individual is not likely to be in a higher quality neighbourhood, if she or he has a higher income compared to years with lower income. The pooled cross-sectional model shows that an individual is in a higher quality neighbourhood compared to *other* (and the same) individuals with lower income. This is evidence that neighbourhood quality is positively associated with the price of housing in the area.

The association of neighbourhood quality and the price of housing in an area is directly supported by results from Model 7.11 and Model 7.12 based again on fixed-effects regressions, which show that the same individual lives in higher quality neighbourhoods in years in which she or he has higher housing costs. The variable housing costs measures mortgage and rent payments. The positive effect of housing costs on neighbourhood quality shows that individuals that pay mortgage may not be as dependent on their current incomes to increase neighbourhood quality as non-mortgage holders. Individuals that anticipate income changes at some point in the

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<sup>21</sup> Individuals may also be wealthy and use their own capital to purchase homes, but wealth is not regularly measured in the SOEP and BHPS and I do not test this explanation.

future may already increase the resources they spend on housing with a mortgage. Depending on access to mortgages in a housing market, individuals may not even expect an increase in their income to take up a mortgage. Housing costs and neighbourhood quality may be endogenous, though, and both explained by unobserved variables such as the presence of high quality dwellings.

Model 7.7 and Model 7.8 are also estimated using fixed-effects regressions. In these models, the income variable is averaged over a three year time window. Hence, the variable measures more lasting income changes than the original income variable. The models show that more lasting income changes are significantly associated with changes in neighbourhood quality for all subsamples except English men. If the average household income over a three year time window increases, neighbourhood quality improves on average. For example, English women live in about 0.03 standard deviations better neighbourhoods, if their log household income averaged over three years increases by 1 unit. This is evidence that not immediate income changes, but more lasting income changes of individuals trigger relocations to better neighbourhoods on average.

Finally, I test for changes in neighbourhood quality by income quintiles in Model 7.9 and Model 7.10. In England, I do not find individuals that change between income quintiles to change their neighbourhood quality significantly different from those staying in the third income quintile. In Germany, I find individuals that enter the lowest income quintile to reduce their neighbourhood quality significantly compared to those staying in the third quintile. Other income groups are not associated with changes in neighbourhood quality. Thus, in Germany immediate income changes seem only to affect neighbourhood quality for the lowest income group. Individuals that change between more affluent income groups do not change their neighbourhood quality on average.

I expect that individuals improve their neighbourhood quality more through relocations if they have higher incomes compared to the same individuals with lower incomes (H 2.1 b)). To test this expectation, I interact income with the various residential relocation types to see whether the returns to relocation vary by income (cf. Table A.9 in the appendix). I only find a significant interaction effect of income and stable couple relocations in Germany. German couples with higher incomes improve their neighbourhood quality more than low-income couples. The impact of other relocation types does not vary by income in Germany. In England, the effects of all types of relocations are independent from changes in income. The relationship between income and neighbourhood quality for stable couple relocations is plotted in Figure 7.2 for women in both countries.<sup>22</sup> For example, at an equalised monthly household income of about PPP-\$ 2,500 the marginal effect of a stable couple relocation on neighbourhood quality is about 0.09 in Germany. This marginal effect is

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<sup>22</sup> For English men, the marginal effects are slightly higher than for English women (not shown here). The marginal effects for German men are almost identical to the effects for German women.

**Table 7.6** Fixed-effects models of neighbourhood quality with alternative income specifications

	England		Germany	
	Women	Men	Women	Men
	<b>Model 7.5<sup>a</sup></b>		<b>Model 7.6<sup>a</sup></b>	
Household income (log)	0.203*** (9.27)	0.190*** (8.38)	0.296*** (17.61)	0.314*** (18.05)
	<b>Model 7.7</b>		<b>Model 7.8</b>	
Average household income (3 years, log)	0.029* (1.97)	-0.001 (-0.07)	0.041** (2.69)	0.038* (2.49)
	<b>Model 7.9</b>		<b>Model 7.10</b>	
Household income (ref: 3 <sup>rd</sup> quintile)				
1 <sup>st</sup> quintile (lowest)	0.001 (0.08)	0.004 (0.33)	-0.016* (-2.05)	-0.020* (-2.51)
2 <sup>nd</sup> quintile	-0.003 (-0.38)	0.005 (0.61)	-0.004 (-0.78)	-0.009 (-1.69)
4 <sup>th</sup> quintile	0.006 (0.70)	0.005 (0.66)	-0.004 (-0.79)	0.001 (0.11)
5 <sup>th</sup> quintile (highest)	0.019 (1.64)	-0.000 (-0.03)	0.003 (0.32)	-0.004 (-0.44)
	<b>Model 7.11</b>		<b>Model 7.12</b>	
Housing costs	0.003* (2.09)	0.006** (3.17)	0.006*** (4.05)	0.005*** (3.75)

Data: BHPS 10-18 (individual level, unweighed), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighed), Microm 2010

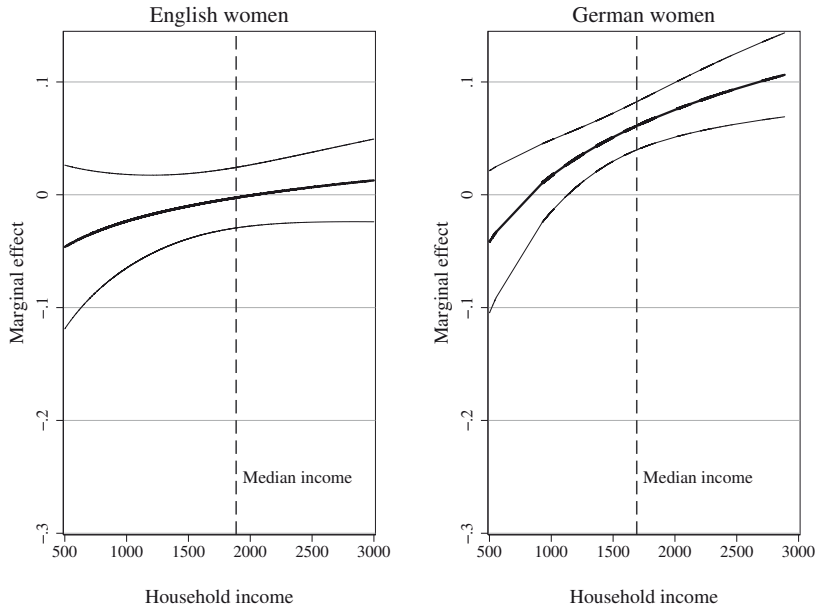
Note: Linear fixed-effects regression model expect <sup>a</sup> cross-sectional OLS, standardised dependent variable: neighbourhood quality, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates shown in Table 7.4 except household income.

statistically significant, which is indicated by the confidence interval that does not include 0.

From Figure 7.2 it is clear that the effect of stable couple relocations on neighbourhood quality increases with income only in Germany. In England no marginal effect is significantly different from zero.<sup>23</sup> With each additional PPP-\$ of income, couples in Germany improve their neighbourhood quality more than couples with less income in case of relocation. Only those with an equalised monthly household income above about PPP-\$ 1,100 improve their neighbourhood quality significantly. Couples with a household income below about PPP-\$ 1,100 do not change

<sup>23</sup> For English men, marginal effects above an income of about PPP-\$ 1,250 are significantly different from 0, but the overall interaction term is not significant.





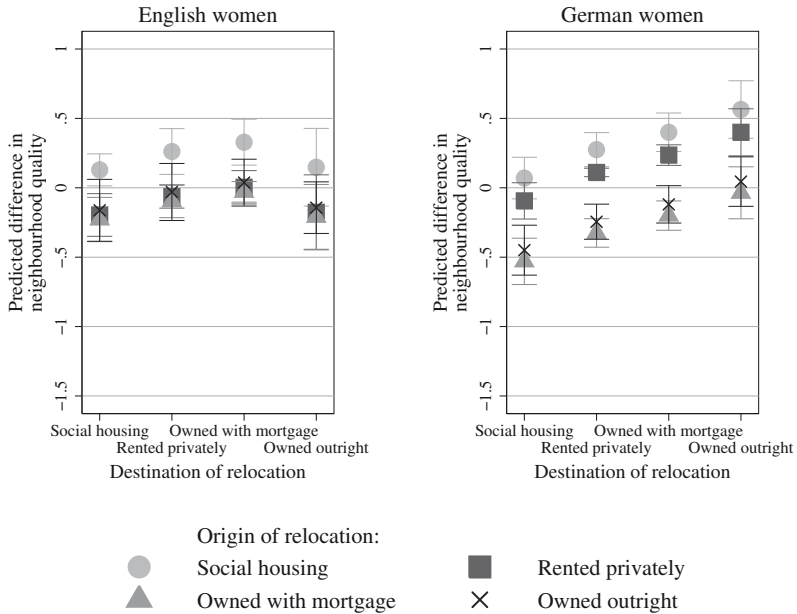
Data: BHPS waves 10-18 (individual level, unweighted), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighted), Microm 2010

Note: Based on linear fixed-effects regression models shown in Table A.9, standardised dependent variable: neighbourhood quality; Thin lines indicate 95 %-confidence interval of marginal effects.

**Fig. 7.2** Marginal effect of stable couple relocation on neighbourhood quality conditional on household income, women

their neighbourhood quality significantly. Low-income couples do not change their neighbourhood quality with residential relocations in Germany. Only for those couples with medium and high household incomes relocations improve neighbourhood quality. This is evidence for the stratification of neighbourhood quality after relocation through the market mechanism in support of H 2.1 b) for Germany. Thus, relocations may widen the disparities in neighbourhood quality for different income groups. At least for stable couples in Germany, the inequality of neighbourhood quality across income groups apparent in the descriptive analysis is widened through relocations (cf. Table 7.3).

In H 2.2, I expect that individuals that relocate to social housing improve their neighbourhood quality the least, relocations to private tenancy moderately improve neighbourhoods and relocations into ownership improve neighbourhood quality the strongest on average. The expectation is confirmed by my model for Germany (cf. Table 7.4). Individuals that own their homes live in significantly better neighbour-



Data: BHPS waves 10-18 (individual level, unweighted), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighted), Microm 2010

Note: Based on linear OLS regression models with dependent variable change in neighbourhood quality and all covariates shown in Table 7.4; whiskers indicate 95 %-confidence interval; only movers.

**Fig. 7.3** Predicted changes in neighbourhood quality by tenure of origin and destination after relocation, women

hoods compared to the same individuals living in other housing tenures. Private tenants live in significantly better neighbourhoods than social tenants.<sup>24</sup> The difference between owning with or without a mortgage is not significant. The housing tenure has the second largest effect on neighbourhood quality after the degree of urbanisation in Model 7.2. For England, H 2.2 has to be rejected based on the fixed-effects regression results. I do not find owners with mortgages to live in significantly different quality neighbourhoods than outright owners or social tenants, and private tenants live in better neighbourhoods than owners on average. Female private tenants live in neighbourhoods with about 0.13 standard deviations (0.09 standard deviations for men) higher quality compared to owners with mortgages in England. Female social tenants live in significantly worse neighbourhoods than private tenants in England,

<sup>24</sup> German women:  $F(1, 11853) = 11.72, p = 0.001$ ; German men:  $F(1, 10617) = 7.10, p = 0.008$ .

but men have a similar neighbourhood quality whether they live in social housing or privately rented accommodations.<sup>25</sup> The findings regarding private tenants in England contradict my expectations and my descriptive findings. It has to be noted that the estimated effect is only based on those relocating into or out of dwellings rented privately. As only 7 per cent of the English sample live in the private rent sector, this group may be very selective (cf. Table A.4).

In Figure 7.3, I show predicted changes in neighbourhood quality for women in case of relocation by tenure of origin and tenure of destination to further test my hypothesis.<sup>26</sup> The predicted values are based on OLS regression models in which change in neighbourhood quality between  $t - 1$  and  $t$  is the dependent variable.<sup>27</sup> The findings presented in Figure 7.3 partly support H 2.2. Individuals that relocate to social housing improve their neighbourhood quality the least on average, individuals that relocate into privately rented dwellings improve their neighbourhood quality more and individuals that relocate into dwellings owned with mortgages improve their quality the most in both countries. Relocations into dwellings owned outright improve neighbourhood quality less than relocations into dwellings owned with mortgages in England, but improve neighbourhood quality more in Germany. The figure also partly provides evidence for H 2.3, as relocations between privately rented dwellings only improve neighbourhood quality in Germany but not in England. Further, relocations from privately rented accommodation to owner dwellings improve neighbourhood quality in Germany, but not in England. These cross-country differences are further discussed in Section 9.1.2.

### 7.2.3 *Situational Conditions of Decision Making*

Based on my theoretical considerations, I assume that relocations' outcomes may be conditioned by the information available to movers.<sup>28</sup> First, information about the new neighbourhood may be too costly to obtain. The farther the new neighbourhood is away, the more expensive information gathering is likely to be. Therefore, H 3.1 states that individuals that relocate long distances will improve their neighbourhood quality less than individuals relocating short distances. On the grounds that neighbourhoods are complex entities, it may be harder to obtain accurate information about a neighbourhood than about the available rooms in a dwelling. Thus, I additionally assume in H 3.1 that the effect of relocation distances is stronger regarding

<sup>25</sup> English women:  $F(1, 3470) = 8.04, p = 0.005$ ; English men:  $F(1, 3051) = 3.16, p = 0.075$ .

<sup>26</sup> The predicted neighbourhood quality for men is very similar.

<sup>27</sup> All independent variables except relocation types shown in Table 7.4 are included. In addition the lagged housing tenure from  $t - 1$  is added to the model.

<sup>28</sup> In this and subsequent sections of the chapter, a general relocation variable is used instead of the differentiated types of relocations.

neighbourhood quality than regarding room stress. Second, if individuals have to relocate involuntarily, they may not have the necessary time to consider several alternative locations and relocate to any available dwelling. In these cases, I expect individuals to be more likely to reduce their neighbourhood quality (cf. H 3.2).

I test for these hypotheses in models that include the distance of voluntary relocations and indicators for involuntary relocations (cf. Table 7.7).<sup>29,30</sup> Voluntary relocations in England have no significant effect on women's changes in neighbourhood quality irrespective of relocation distance compared to stayers. For English men, only relocations that are between 1 and 5 km significantly increase neighbourhood quality by about 0.05 standard deviations. Other voluntary relocations do not affect changes in neighbourhood quality. The effects of different relocation distances are also not significantly different from each other for English women and men. In Germany, voluntary relocations of women improve neighbourhood quality if they are between 1 and 29 km. Relocations shorter than 1 km or farther than 29 km do not change neighbourhood quality compared to staying put. For German men, all relocations that are shorter than 30 km improve neighbourhood quality.

These findings refute H 3.1 for England. The effects of relocations on neighbourhood quality for men are only weakly dependent on the distance of relocations. In general, short-distance relocations as well as long-distance relocations do not improve neighbourhood quality. For Germany, I cannot reject H 3.1 so clearly. The distance of relocations matters for changes in neighbourhood quality. Medium-distance relocations improve quality of neighbourhoods on average, while long-distance relocations do not improve neighbourhood quality in Germany, which is in accordance with my expectations. Very short relocations hardly change neighbourhood quality, which may be explained by the similarity of neighbourhoods that are close to each other. H 3.1 also states that the effect of distance on changes in the quality of locations should be stronger with regard to neighbourhood quality than room stress. My findings support this expectation for Germany. Longer relocation distances seem to increase the costs of information regarding neighbourhoods, but not so much regarding the number of rooms in a dwelling (cf. Section 6.2.3).

I also test for the influence of involuntary relocations on neighbourhood quality. To capture involuntary relocations, I include subjective reasons for relocating into the regression models (cf. Table 7.7). I consider the subjective reasons 'separation', 'notice given' and 'housing costs too high'. Involuntary relocations do not change neighbourhood quality significantly compared to staying put or compared to relocating voluntarily for women and men in England. Individuals who responded that their relocations were due to separation, termination of their rent contracts or

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<sup>29</sup> The relocation distance is not available for Germany for the year 2000.

<sup>30</sup> The inclusion of the information covariates significantly increase the model fit compared to a model only considering a simple relocation measure (LR test for English women:  $\chi^2(7) = 22.55$ ,  $p = 0.001$ ; English men:  $\chi^2(7) = 19.79$ ,  $p = 0.003$ ; German women:  $\chi^2(7) = 133.47$ ,  $p = 0.000$ ; German men:  $\chi^2(7) = 46.31$ ,  $p = 0.000$ ).

**Table 7.7** Fixed-effects models of neighbourhood quality for voluntary relocations by distance and for involuntary relocations

	<b>Model 7.13 England</b>		<b>Model 7.14 Germany</b>	
	Women	Men	Women	Men
Voluntary relocation				
< 1 km	-0.012 (-0.58)	0.030 (1.30)	0.018 (1.34)	0.032* (2.30)
1 < 5 km	0.015 (0.67)	0.047* (2.08)	0.069*** (3.81)	0.076*** (3.75)
5 < 30 km	0.040 (1.45)	0.038 (1.43)	0.105*** (5.17)	0.066** (2.89)
30+ km	-0.002 (-0.04)	-0.004 (-0.10)	0.051 (1.74)	0.009 (0.29)
Involuntary relocation				
Separation	-0.049 (-0.70)	-0.108 (-1.54)	-0.086** (-2.66)	-0.028 (-0.75)
Notice given	-0.022 (-0.35)	-0.007 (-0.11)	-0.084 (-1.48)	-0.061 (-1.01)
Housing costs	-0.067 (-1.10)	-0.009 (-0.18)	-0.018 (-0.63)	-0.011 (-0.33)
Observations	21,879	18,996	65,280	57,725
Individuals	3,471	3,050	11,823	10,590
With change in outcome	1,259	1,119	3,393	3,009
LL Null-model	1,845.65	1,748.61	-2,747.93	-797.88
LL	2,916.71	2,591.45	404.83	2,086.74
within R <sup>2</sup>	0.09	0.08	0.09	0.10

Data: BHPS waves 10-18 (individual level, unweighted), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighted), Microm 2010

Note: Linear fixed-effects regression model, standardised dependent variable: neighbourhood quality; unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates presented in Table 7.4 except relocation variables.

housing costs which are too high are not more likely to reduce their neighbourhood quality than other individuals. This rejects the expectation that individuals may relocate to worse neighbourhoods if they do not have a long search period before their relocation compared to voluntary relocations or stayers.

In Germany, only women who responded that their relocations were motivated by a separation reduce their neighbourhood quality compared to women staying put. Compared with voluntary relocations, all types of involuntary relocations reduce

neighbourhood quality more for German women.<sup>31</sup> German men do not change their neighbourhood quality significantly compared to stayers or voluntary movers. Thus, even if individuals relocate involuntarily, they are not more likely to reduce their neighbourhood quality on average. H 3.2 can be rejected for both countries. Only German women seem to be affected by involuntary relocations — at least to the degree that they improve their neighbourhood quality less than if they would have relocated voluntarily. This particularity indicates that women in Germany are more vulnerable to forced relocations than men or women in England. However, significant effects for German women which are not significant for the other subsamples may also be due to the considerably larger sample of German women compared with German men and English women and men. All in all, there is only moderate evidence that information about potential neighbourhoods of destination is relevant to predict variation in neighbourhood quality changes.

### ***7.2.4 Immigrant Households and Neighbourhood Quality***

I hypothesise that individuals in immigrant households improve the quality of their neighbourhoods through relocations less than individuals in native households (H 4.4). I test for the effect of immigrant status on neighbourhood quality by interacting the relocation event with the immigrant status, thereby allowing the event to have heterogeneous effects on the respective groups. Due to the smaller sample compared to the analysis of changes in room stress, I do not differentiate first and second generation immigrant households in the present analysis. H 4.4 is supported if I find a negative interaction effect of immigrant status and relocation. This would indicate that individuals in immigrant households improve their neighbourhood quality less through relocation than individuals in native households.

Table 7.8 shows estimation results from a fixed-effects regression testing for the effect of immigrant status on neighbourhood quality outcomes in England and Germany. The main effect of household income shows the effect of income changes on changes in neighbourhood quality for individuals in native households. Income changes are not associated with neighbourhood quality changes in any subsample. This finding is similar to the results from the general model presented earlier in Section 7.2.2 due to the high share of natives in the samples. The interaction term between household income and immigrant status indicates no significant interactions. The effect of income for individuals in immigrant households is not statistically different from the effect for individuals in native households. This is in contrast to findings regarding room stress (cf. Section 6.2.4). There it was shown that some

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<sup>31</sup> I tested for each type of voluntary relocation, if the coefficient is significantly different from all distance categories of voluntary relocations. Test for separation:  $F(4, 11822) = 6.73, p = 0.000$ ; for notice given:  $F(4, 11822) = 4.96, p = 0.001$ ; for housing costs:  $F(4, 11822) = 4.96, p = 0.001$ .

individuals in immigrant households reduce their room stress less than individuals in native households with increasing income. However, if the models are run separately by immigrant status, I find that changes in income significantly and positively affect changes in neighbourhood quality for individuals in immigrant households in Germany (not shown here).<sup>32</sup> I do not find differences in England when estimating models separately by immigrant status.

The main effect for residential relocations indicates the average change in neighbourhood quality for individuals in native households in case of relocations. Again, the estimated coefficients are quite similar to the ones presented before. Men in native households in England, and women and men in native households in Germany all increase their neighbourhood quality on average, if they relocate. Women in native households in England do not change their neighbourhood quality significantly if they relocate. With the exception of English women, all individuals in immigrant households improve their neighbourhood quality less after relocations than individuals in native households, but the differences by immigrant status are not significant. Relocations affect individuals in immigrant and native households similarly in both countries. These findings reject H 4.4. With regard to neighbourhood quality, immigrant households do not seem to be discriminated against in the housing market if they relocate to a new neighbourhood.<sup>33</sup> My findings are in contrast to results from the US that consistently show a race gap in changes in neighbourhood quality where especially African Americans are improving their neighbourhood quality less than other ethnic groups (Crowder and South 2005; South, Crowder and Chavez 2005; Sampson and Sharkey 2008). This may indicate that discrimination and structural inequalities between ethnic groups are stronger in the US than in England and Germany.

The findings should be treated with caution, though. Individuals in immigrant households live in worse neighbourhoods on average in both countries (cf. Table 7.3). This may mainly be due to systematic differences between immigrant and native households. For example, about 37 per cent of immigrant households in Germany reside in metropolitan areas, compared to only 30 per cent of native households.<sup>34</sup> Part of the differences between immigrant and native households may be driven by the former more often living in metropolitan areas with lower average neighbourhood quality. However, the apparent disparities may also be caused by past discrimination and as long as immigrant households do not improve their neighbourhood quality *more* than natives, these disparities will not diminish nor will the effects of previous discrimination become evident in longitudinal regression models.

<sup>32</sup> Estimated coefficients of household income (log) for women in immigrant households: 0.042 ( $t = 2.44$ ); women in native households: -0.001 ( $t = -0.09$ ); men in immigrant households: 0.051 ( $t = 2.89$ ); men in native households: 0.007 ( $t = 0.73$ ).

<sup>33</sup> The estimated effects of relocations are similar, if the models are estimated separately by immigrant status (not shown here).

<sup>34</sup> Test of interdependence of immigrant status and degree of urbanisation:  $\chi^2(2) = 401.51$ ,  $p = 0.000$

In addition, the number of relocations among individuals in immigrant households is relatively small.<sup>35</sup> At the same time the group of immigrants is very heterogeneous. Thus, a range of effects for subgroups of immigrant households may make the estimation of an average effect across all subgroups difficult, i.e. the average effect may hide strong effects for specific immigrant groups.<sup>36</sup> For example, Lersch (2013) finds Turkish immigrants in Germany to improve their neighbourhood quality less than German natives and other immigrants when relocating. Finally, the hypothesis relies on the assumption that immigrants and natives have similar preferences. Preferences may be heterogeneous and immigrants may prefer to live close to co-ethnics. Future research should investigate potential differences in preferences. Thus, the results that I present are restricted in their degree of generalisability due to the limitations of the data with regard to immigrant status. I reject H 4.4 based on the presented results. Further research is necessary to validate this.

**Table 7.8** Fixed-effects models of neighbourhood quality by immigrant status

	<b>Model 7.15</b>		<b>Model 7.16</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Household income (log)	0.007 (0.65)	-0.007 (-0.76)	0.010 (1.40)	0.015 (1.80)
Income*immigrant	-0.006 (-1.25)	-0.009 (-1.27)	0.005 (0.68)	-0.002 (-0.22)
Relocation	0.004 (0.30)	0.029* (2.19)	0.047*** (5.09)	0.050*** (4.95)
Relocation*immigrant	0.012 (0.36)	-0.012 (-0.35)	-0.008 (-0.44)	-0.014 (-0.72)

Data: BHPS 10-18 (individual level, unweighted), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighted), Microm 2010

Note: Linear fixed-effects regression model, standardised dependent variable: neighbourhood quality; unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates presented in Table 7.4.

<sup>35</sup> In Germany, 1,118 women and 1,017 men in immigrant households relocated at least once in my observation window. In England, only 217 women and 209 men in immigrant households relocated at least once.

<sup>36</sup> I do not further differentiate the very heterogeneous group of immigrants, due to the small sample size of immigrants in the data. A differentiation by first and second generation immigrants, by visible or invisible ethnic differences, or by ethnic origin may provide further insights in differences within the group of immigrants.



### 7.2.5 *Structural Conditions in Housing Markets*

H 4.1 postulates that individuals are less likely to improve their neighbourhood quality if they are in housing markets with high demand for dwellings and individuals are more likely to improve their neighbourhood quality if they are in housing markets with high supplies of dwellings. In H 4.2, I expect that individuals are more likely to improve their neighbourhood quality if they are in housing markets with many high-quality locations. I use panel regression models to test these hypotheses, then I turn to multiple membership multilevel regression models to control for the clustering in various housing markets at the end of the section (cf. Section 4.6.2 for more details on these models).

Before testing the hypotheses, I discuss the findings regarding the degree of urbanisation which has the strongest effect on neighbourhood quality in England and after East Germany the second strongest effect in Germany in the full model presented earlier (cf. Table 7.4). The strong difference in average neighbourhood quality between urban and rural areas is supported elsewhere (Adams 1992; Ham and Feijten 2008; McCulloch 2012). After including the housing market variables, the effect of degree of urbanisation is clearly reduced (cf. Table 7.9). Thus, important differences between metropolitan, urban and rural areas are captured in the additional housing market variables. The inclusion of the share of owned dwellings changes the effect size of metropolitan areas the strongest. The effect of urban areas on neighbourhood quality changes only slightly after inclusion of additional housing market variables.

Controlling for the housing market covariates, relocating from rural to metropolitan areas in Germany on average reduces neighbourhood quality by about 0.19 standard deviations for women, which is not statistically different from 0, and 0.28 standard deviations for men. Germans living in urban areas have a slightly but not significantly higher neighbourhood quality than if they live in rural areas. In England, individuals in metropolitan and urban areas live in lower average neighbourhood qualities than the same individuals in rural areas. For example, English females live in 0.45 standard deviations lower quality if they are in metropolitan areas compared with rural areas. This is initial evidence for the importance of the regional context in neighbourhood quality outcomes.

The share of owned dwellings in the housing market as a proxy for high-quality locations has a strong effect on neighbourhood quality outcomes. With each percentage point increase in owned dwellings in the housing market, the average neighbourhood quality increases by about 0.01 standard deviations for women and men in Germany. In England, the neighbourhood quality improves by about 0.03 standard deviations for women and 0.02 for men.<sup>37</sup> Thus, by relocating from a housing market with 40 per cent owned dwellings (minimum in England) to a housing market

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<sup>37</sup> Differences between England and Germany should not be overstated, as the variable share of owned dwellings is constructed differently in both countries (cf. Section 4.5.2).

with 84 per cent (maximum in England), the average neighbourhood quality of a English women increases by 1.32 standard deviations. The effect is larger in England than in Germany and may indicate that local opportunities in England are more closely associated with the prevalence of ownership in the area, while in Germany areas without a high share of ownership do not necessarily have a low neighbourhood quality. The latter may be due to the overall lower share of owned homes in Germany. H 4.2 is clearly supported for both countries. Living in a housing market with more home ownership is associated with higher average neighbourhood quality. In a similar way, Kearns and Mason (2007) show that the share of owners in a neighbourhood is positively associated with the quality of the neighbourhood.<sup>38</sup>

Bailey and Livingston (2008) find individuals in tight housing markets to be less likely to leave deprived neighbourhoods. In contrast, I find that a growing population in the housing market over the last five years is positively associated with neighbourhood quality for all subsamples except English men. Thus, a higher demand on the housing market improves neighbourhood quality. This refutes the first part of H 4.1 stating that neighbourhood outcomes are better in housing markets with low demand. One possible explanation for this finding may be reverse causality. Housing markets with high average neighbourhood quality are more attractive for individuals outside the housing market. The population in the housing market grows through inward-relocations and, thus, I find a positive association between the two variables.

The number of newly constructed dwellings in the housing market has no significant impact on neighbourhood quality in all samples except for English women. The second part of H 4.1 must be rejected. This may be due to several factors. First, newly constructed dwellings may not be associated with good neighbourhood quality, since social networks between the new occupants must grow over time. Second, new dwellings within urban and metropolitan areas may not necessarily be constructed in good neighbourhoods, but rather on vacant plots that can be scattered throughout the city. Third, the number of new dwellings may be significant only in interaction with the demand side of the housing market. For example, the number of new dwellings may be important only in a housing market with high demand due to a positive population balance. Therefore, I tested for an interaction effect of the number of new constructions and the population balance in Germany and England. The interaction effects were not significant for women and men in both countries (not shown).

The findings from the fixed-effects panel models and the multiple membership multi-level models (reported in Table A.10 in the appendix) are similar regarding the housing markets variables. The housing market variables' coefficients are almost identical. The standard errors in the multi-level model are estimated to be much smaller. This is due to the larger effective analytic sample in the multi-level

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<sup>38</sup> The share of owners in a market has also been found to affect transition into ownership positively (Flippen 2010).

**Table 7.9** Fixed-effects models of neighbourhood quality with housing market variables

	<b>Model 7.17</b>		<b>Model 7.18</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Urbanisation (ref: rural)				
Metropolitan	-0.446*** (-4.20)	-0.471*** (-4.22)	-0.193 (-1.64)	-0.282* (-2.21)
Urban	-0.372*** (-4.37)	-0.321*** (-4.03)	0.101 (1.19)	0.110 (1.20)
Relocation	0.000 (0.01)	0.023 (1.91)	0.043*** (5.16)	0.046*** (5.02)
Owned dwellings	0.028*** (4.39)	0.023*** (3.98)	0.006** (2.71)	0.005* (2.26)
New constructions	0.004* (2.02)	0.001 (0.36)	0.000 (0.38)	0.001 (0.80)
Population balance	0.006** (2.85)	0.002 (1.03)	0.007*** (7.38)	0.006*** (6.84)

Data: BHPS 10-18 (individual level, unweighted), IMD 2004 & 2007, ONS various years, SOEP v26 waves 17-25 (individual level, unweighted), Microm 2010, INKAR 2010

Note: Linear fixed-effects regression model, standardised dependent variable: neighbourhood quality, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates presented in Table 7.4.

regression model, because individuals without change are also included in the analysis. This causes the effect of the population balance for men in England to become significant. The interpretation of the effect of the share of owned dwellings and the population balance does not change from the panel regression model. For Germany, the effects of metropolitan and urban areas are significantly different from rural areas in the multi-level model. Individuals in metropolitan areas live in lower average neighbourhood quality and individuals in urban areas live in higher average neighbourhood quality compared to rural areas. In general, taking into account the clustering of individuals in housing markets does not change the interpretation of my data substantially.

The variance estimation for the random intercepts at the level of housing markets indicates that there is considerable variance between markets after controlling for the degree of urbanisation and housing market variables (cf. Table A.10 in the appendix). For example, about 20 per cent ( $\approx 0.145/[0.145 + 0.523 + 0.052]$ ) of the unexplained variance of neighbourhood quality for English women in the model is between housing markets. Potential covariates that may reduce the unexplained variance at the level of housing markets could be the vacancy rate, average rent level or share of social housing in the market. Further research should investigate the effects of these variables. The considerable share of unexplained variance between housing markets indicates that it is necessary to control for the clustering of indi-

viduals within housing markets, but even more important is the clustering at the individual level. Around 70 per cent of the unexplained variance in all models are at the individual level and 10 per cent of the variance is specific to individual-year observations.

### 7.3 Summary

With regard to neighbourhood quality, relocations are mostly horizontal and relocations themselves have only a small effect on changes in neighbourhood quality. Conditions of relocations cause important disparities in neighbourhood quality outcomes. I find that individual life course conditions are relevant to explain changes in neighbourhood quality. In both countries, stable couples are more likely to improve their neighbourhood quality through relocations than any other group of movers with the exception of English women who do not change neighbourhood quality at all if they relocate. There is evidence that relocations that are associated with union dissolution reduce neighbourhood quality. The presence of young children seems to be associated with higher neighbourhood quality, but childbirths are not associated with immediate improvements. The unemployed are in lower average neighbourhood qualities on average, but do not change their neighbourhood quality significantly less than the employed if they relocate. I do not find other transitions in the job trajectory to be important in explaining neighbourhood quality changes. Disparities in neighbourhood quality outcomes after relocations may result from these processes. First, individuals live in worse neighbourhoods in early life and improve their neighbourhoods substantially only when forming partnerships and families in Germany. In England, singles also improve their neighbourhood quality. Individuals at least temporarily reduce their neighbourhood quality after union dissolution. Second, disparities exist between individuals that are employed and unemployed, but these average differences are not traced in particular changes in neighbourhood quality.

All in all, I find strong support for the importance of economic resources, but the link between economic resources and neighbourhood quality is not straightforward. Cross-sectional evidence shows that neighbourhood quality is strongly associated with household income. At the same time, I find immediate changes in income to explain little variation in neighbourhood quality changes. More persisting changes in household income as well as housing costs are associated with changes in neighbourhood quality. I find that relocating stable couple families improve their neighbourhood quality more in Germany if they have more income. I do not find a significant interaction of income and relocations in England. In Germany, a clear stratification of neighbourhood quality by housing tenure is observed with owned dwellings being located in better neighbourhoods on average than rented dwellings. In England, living in owned dwellings is not associated with better neighbourhood

quality on average. Hence, disparities in neighbourhood outcomes result from different investment in locations that depend partly on individual economic resources, but also on access to external resources in the form of mortgages. Relocations are increasingly beneficial with growing income for couples in Germany. In Germany, relocations into owned dwellings strongly improve neighbourhood quality. Thus, relocations widen disparities in neighbourhood quality between groups with different access to economic resources.

I find clear evidence for the importance of structural conditions for neighbourhood quality changes at the level of housing markets. The regional degree of urbanisation has a strong effect on average neighbourhood qualities. More densely populated areas are associated with lower average neighbourhood quality. I find the average quality of locations in the housing market to affect average neighbourhood outcomes. Supply and demand of dwellings do not have expected effects on neighbourhood quality. I find only weak evidence that individuals in immigrant households are structurally constrained in their relocations to better neighbourhoods in Germany, but no evidence for constrained behaviour of individuals in immigrant households in England. I conclude that structural conditions cause disparities in relocation outcomes, because they offer different opportunities for movers. Individuals that relocate into rural areas in England or rural and urban areas in Germany are much more likely to improve their neighbourhood quality than individuals relocating into metropolitan areas. Relocations in housing markets with high shares of owned dwellings improve neighbourhood quality more than relocations in markets with low shares of owners.

I find only weak or no evidence for the importance of situational conditions of decision making to explain neighbourhood quality changes. In England, short-distance relocations as well as long-distance relocations do not improve neighbourhood quality on average. For Germany, the distance of relocations matters for changes in neighbourhood quality and short- as well as long-distance relocations do not improve neighbourhood quality while medium-distance relocations improve neighbourhood quality. Involuntary relocations are not found to affect neighbourhood quality significantly with the exception of relocations after union dissolutions for German women.

## Chapter 8

# Long-Distance Relocations and Subsequent Employment of Dual-Earner Couples

Long-distance relocations are often occupationally motivated and individuals are assumed to relocate to places that offer job opportunities to increase their life-time earnings (e.g. Becker 1995: 53). Individuals in dual-earner couples are constrained in their mobility, because both partners' careers have to be considered in the decision of whether and where to relocate. 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 emerge at relatively random times (Mincer 1978). Therefore, long-distance relocations have divergent effects on subsequent employment of both partners. In this chapter, I examine the potential difference in occupational returns between partners in dual-earner couples by analysing whether both partners maintain employment after long-distance relocations (cf. Section 4.5.1.4 for a detailed description of the dependent variables).

Long-distance relocations are assumed to have a stronger effect on subsequent employment than short-distance relocations, since the distance to the old place of work will increase substantially after long-distance relocations in most cases and individuals usually prefer to limit their commuting (e.g. Boyle, Feng and Gayle 2009). I treat relocations across borders of Local Authority Districts (LADs) in England and relocations across borders of counties in Germany as long-distance relocations (cf. Section 4.5.1.1 for more details). In contrast to earlier chapters, I differentiate West and East Germany in the present analysis to test H 5.3 which states that the negative effect of long-distance relocations on women's careers is largest in West Germany, moderate in East Germany and smallest in England. This hypothesis is motivated by the cross-country differences in gender relations described in Section 4.1.4. I use the term 'contexts' to refer to these three institutional and cultural settings.

The sample for the main part of the present analysis is more restricted than in previous chapters. First, I only consider stable couples in which one partner is the head of the household. In stable couples both partners live together in the same household

at  $t$  and  $t + 1$ . The potential bias resulting from focussing on stable couples is discussed in Section 8.2.3, where I do not find substantially different results controlling for this selectivity. Second, since I focus on dual-earner couples, I only include couples in which each partner works more than 10 and less than 81 hours per week at  $t$ .<sup>1</sup> I exclude individuals that work less than 11 hours on average, because I consider their employment as minor for the economic situation of the couple.<sup>2</sup> I exclude individuals with more than 80 work hours per week, as in the SOEP these cases are treated as implausible and are given missing values. Third, I analyse couples in which both partners are at least 20 years old and not older than 55 years to only include individuals in their prime working age. I exclude self-employed individuals and individuals with a second job, due to problems measuring their work hours and labour income. After all these operations, my sample consists of 2,093 unique English couples which contribute 20,507 individual-year observations, 3,661 West German couples which contribute 27,859 individual-year observations and 1,512 East German couples which contribute 13,374 individual-year observations to the sample.<sup>3</sup>

In contrast to earlier chapters, overtime changes in individual outcomes of relocations are of minor interest in the present chapter. Instead, my aim is to show which average inter-individual differences in the effects of relocations on subsequent employment exist between women and men. In the following, I first describe the average proportion of partners from dual-earner couples that leave employment after long-distance relocations for different groups of couples in univariate analyses (Section 8.1.1). In the multivariate section, I analyse determinants of leaving employment after relocations in couples using actor-partner interdependence models (APIMs; Section 8.2). I summarise my findings in Section 8.3.

## 8.1 Descriptive Results

In general, couples are found to be less mobile than singles in the literature and couples are especially unlikely to relocate over long distances (e.g. Clark, Deurloo and Dieleman 2000).<sup>4</sup> Table 8.1 shows that only about 2 per cent of couples relocate over long distances in England, West and East Germany in a given year on average. Annual mobility rates are significantly lower for dual-earner couples compared to male-breadwinner couples in Germany, but not in England. The term dual-earner

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<sup>1</sup> For the descriptive analysis I also include single-earner couples as a reference category.

<sup>2</sup> I test whether further restricting the sample to respondents working at least 30 hours a week affects my results and it does not (Section 8.2.3).

<sup>3</sup> I report descriptive statistics for all variables for England in Table A.11, for West Germany in Table A.12, and for East Germany in Table A.13 in the appendix.

<sup>4</sup> See also Chapter 5.

couples refers to couples in which both partners work between 11 and 80 hours a week. One of the causes for less frequent long-distance relocations among dual-earner couples may be the problem of finding adequate new jobs for both partners after relocations. Since 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, i.e. they stay even though they would receive positive returns from relocating (Nisic 2010). Couples in England are more likely to relocate long distances on average than couples in Germany. This is especially apparent in the share of couples that experience at least one long-distance relocation in the observation period. Due to the limited observation window, this information gives only a rough indication of expected lifetime mobility. About 13 per cent of all couples in England relocate at least once, compared with only 8 per cent of couples in West Germany and 9 per cent of couples in East Germany.

**Table 8.1** Mobility rates and number of observed long-distance relocations by type of couple

Group by context	Share of all couples	Relocations each year	Relocate at least once	Number of observed relocations
	in per cent of couples			
England				
All couples	100.0	2.3	13.2	552
Labour participation				
Male-breadwinner	17.5	2.8	11.8	105
Dual-earner	51.7	2.3	15.2	292
West Germany				
All couples	100.0	1.6	8.0	596
Labour participation				
Male-breadwinner	30.5	1.7	7.5	188
Dual-earner	38.1	1.3	8.0	231
East Germany				
All couples	100.0	1.6	9.2	187
Labour participation				
Male-breadwinner	22.1	2.2	14.4	46
Dual-earner	48.2	1.2	7.2	83

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

Note: Only long-distance relocations. Female-breadwinner couples omitted due to small number of cases.

The present analysis deals with dual-earner couples only. Both partners work at least 11 and not more than 80 hours in about 52 per cent of couples in England, 38



per cent of couples in West Germany and 48 per cent of couples in East Germany. The last column in Table 8.1 indicates the small number of long-distance relocations that 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 such as long-distance relocations (cf. Section 4.3.1). 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 relocations and to profit from the benefits of panel data, most of the multivariate analysis is run on pooled samples of English, West and East German couples.

About 40 per cent of long-distance relocations of dual-earner couples in England are job-motivated for at least one partner (Table 8.2). The share of job-motivated long-distance relocations is even higher in West (49 per cent) and East Germany (62 per cent). These shares are much higher than the share of all occupationally motivated relocations irrespective of distance. For example, only 16 per cent of all relocations of (single- and dual-earner) stable couples in England and 11 per cent in Germany are occupationally motivated. For England, the data allows differentiation between couples which relocate only for the career of one partner or which relocate for the careers of both partners. Only 5 per cent of mover couples relocate for the career of the female partner, while 21 per cent relocate for the male partner's career. In these cases, the other partner can be considered a tied mover, if she or he relocates for the sake of her or his partner's career and negative outcomes for their own careers may be expected (Taylor 2007). Another 14 per cent of dual-earner couples relocate over long distances for both partners' careers in England. Thus, for a high share of long-distance movers, labour market outcomes may be the motivation to relocate in the first place and long-distance movers may be selective in the way that only those individuals relocate that expect positive returns from relocations. This potential selectivity in long-distance movers is further addressed in Section 8.2.3.

### ***8.1.1 Leaving Employment for Movers***

Table 8.3 shows the average proportion of individuals leaving employment for women and men for all dual-earner couples by mover status in England, West and East Germany. The term movers only refers to individuals that experience a *long-distance* relocation. The term stayers refers to individuals that do not relocate, or that relocate only within their county or LAD of origin. I test for statistical differences in each category by gender and by mover status. Table 8.3 shows the average rate of individuals leaving employment until  $t + 1$ , conditional on being employed at  $t$ . Among stayers, women in dual-earner couples are significantly more likely to leave employment until  $t + 1$  and become inactive, unemployed, or enter education

**Table 8.2** Job-motivated long-distance relocations in dual-earner couples

Group by context	Share of job-motivated relocations in per cent	Number of couples
England		
Total	39.7	105
Only for woman job motivated	5.0	23
Only for man job motivated	20.6	59
For both partners job motivated	14.1	23
West Germany <sup>a</sup>		
Total	49.4	116
East Germany <sup>a</sup>		
Total	62.2	22

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

Note: Only long-distance relocations.<sup>a</sup>: In the SOEP, individual motivations for relocations are not observed.

than men. About 4 per cent of English, female stayers leave employment while only 2 per cent of English men do so. In West Germany, 4 per cent of women and 3 per cent of men in dual-earner couples leave employment until  $t + 1$  on average. Leaving employment for women and men is twice as likely in East Germany compared with West Germany. In England and West Germany, long-distance movers are more likely to leave employment, but the differences by mover status are only statistically significant for women. For English 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 relocation. This share is significantly higher compared to the share of English, male movers that leave employment. In West Germany, about 10 per cent of female long-distance movers are no longer employed after a relocation. I do not find a significant difference in the proportion leaving employment after relocations between West German women and men.

In East Germany, women are slightly but not significantly more likely to leave employment after long-distance relocations compared to stayers. For men in East Germany, the opposite is true and only 2 per cent of long-distance movers leave employment, while 6 per cent of stayers are no longer employed at  $t + 1$ . This may indicate that East Germans are more likely to relocate to maintain employment than West German and English movers which is also apparent in the higher share of East Germans that relocate long distances due to occupational reasons (cf. Table 8.2). Indeed, before a relocation the regional unemployment is twice as high in East Germany ( $M = 18.3$ ,  $SD = 0.69$ ,  $N = 37$ ) compared to West Germany ( $M = 9.31$ ,  $SD = 0.29$ ,  $N = 150$ ). At the same time, East Germans ( $M = -1.52$ ,  $SD = 1.67$ ,

$N = 21$ ) relocate to regions with relatively lower unemployment rates compared to their previous location than West Germans on average ( $M = -1.29$ ,  $SD = 0.43$ ,  $N = 84$ ).<sup>5</sup> This may indicate that East Germans relocate to better opportunities in the labour market. However, the case numbers for these descriptive statistics are small, because regional unemployment rates are only available after 1998 in Germany.

**Table 8.3** Average proportion leaving employment by mover status

Gender by context	Proportion leaving employment	
	Stayer	Mover
England		
Women	0.04***	###
Men	0.02	0.05
West Germany		
Women	0.04**	#
Men	0.03	0.05
East Germany		
Women	0.08*	0.11 <sup>§</sup>
Men	0.06	0.02 <sup>§</sup>

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

Note: Only dual-earner couples. Difference between women and men: \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%. Difference between stayer and mover: ### significant at 0.1% two-tailed, ## significant at 1%, # significant at 5%. <sup>§</sup>:  $N < 100$ .

These findings show that long-distance relocations of dual-earner couples seem to be more disruptive for women's careers than for men's careers and the findings are in accordance with past literature (e.g. Taylor 2007). While men continue to work in the same job or change to a new job quickly, e.g. as they relocate after having received a job offer in the new location, a considerable share of women seem to leave employment after long-distance relocations. For women in dual-earner couples, relocations seem to be speculative, i.e. they often do not have a job offer before the relocation. This supports the argument that men are mostly leading spouses, i.e. couples relocate for men's careers, and women are often trailing spouses, i.e. they follow their partners, in dual-earner couples. Women may also initially not work after a long-distance relocation, as according to traditional gender roles women are more likely to be responsible for setting up the new household, e.g. by furnishing the new dwelling and buying home appliances (Belch and Willis 2002).

While women have a higher immediate probability of leaving employment in England and West Germany if they experience a long-distance relocation, they are

<sup>5</sup> It may be expected that East-to-West relocations contribute to this difference, but I only observe 9 dual-earner couples that relocate from East to West Germany (and 7 couples that relocate from West to East Germany).

not more likely to remain out of employment at the second interview after a relocation took place (Table 8.4). This is in accordance with past literature that shows that the negative effect of long-distance relocations on women's employment is only temporarily (e.g. Clark and Withers 2002). In East Germany, women that experience a long-distance relocation are slightly more likely to have left employment until  $t + 2$  than stayers, but the difference is not statistically significant. These findings show that at least for England and West Germany the disruptive effect of long-distance relocations on employment of women is only temporary. While initially being not employed at the new location, women take up employment again soon after. Nevertheless, this short-term interruption may contribute to, inter alia, discontinuous female work histories that are associated with worse long-term outcomes regarding labour market attachment, career advancement and pension rights compared to continuously employed women (Taylor 2007).

**Table 8.4** Average proportion leaving employment until  $t+2$  by mover status

Gender by context	Proportion leaving employment until $t+2$	
	Stayer	Mover
England		
Women	0.07***	0.06
Men	0.03	0.03
West Germany		
Women	0.06***	0.06
Men	0.04	0.05
East Germany		
Women	0.09	0.12 <sup>§</sup>
Men	0.08	0.08 <sup>§</sup>

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

Note: Only dual-earner couples. Difference between women and men: \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%. Difference between stayer and mover: ### significant at 0.1% two-tailed, ## significant at 1%, # significant at 5%. <sup>§</sup>:  $N < 100$ .

## 8.2 Multivariate Results

I now further analyse leaving employment after relocations using multivariate regression methods to control for third variables that may confound the descriptive results. I present a general APIM of leaving employment in Section 8.2.1 (cf. Section 4.6.3 for a detailed description of APIMs), before testing for differences between England, West and East Germany (Section 8.2.2). Finally, I check the

robustness of my findings by addressing potential weaknesses of my modelling strategy (Section 8.2.3). All continuous independent variables in the multivariate analysis are mean-centred.

### 8.2.1 *Gross Effect of Long-Distance Relocations*

Table 8.5 shows estimation results for the logistic regression APIM with the dependent variable leaving employment.<sup>6</sup> Model 8.1 is a general model, in which I estimate a gross effect of long-distance relocations that is constrained to be equal for England, and West and East Germany. For a parsimonious presentation of results, the separate coefficients for women and men are presented in columns 2 and 4, but they are estimated in one pooled model. In column 3 and 5, I additionally report average marginal effects (AMEs; cf. Section 4.6.3). I test for each pair of AMEs, to see if significant gender differences exist. Gender differences are indicated with the number symbol ‘#’. The substantially interesting independent variable measures the occurrence of long-distance relocations. Including the long-distance relocation variable significantly increases model fit.<sup>7</sup>

The model indicates that women’s odds of leaving employment are about 3.3 ( $\approx e^{1.200}$ ) times higher in England, and West and East Germany on average, if they relocate long distances compared to staying. This is significantly different from having no effect at the 99.9 per cent confidence level. The AMEs show that for women with average population characteristics the probability to leave employment is about 3 percentage points higher if they relocate a long distance compared to staying. For women, long-distance relocations have the second largest effect on women’s chances to leave employment in the model after having a continuous work history. For men the odds of leaving employment after long-distance relocations are about 1.9 ( $\approx e^{0.649}$ ) times higher compared to stayers and this is significantly different from having no effect. Men’s probability to leave employment is about 2 percentage points higher if they relocate a long-distance compared to staying. In comparison to other variables in the model, relocations have only the fifth largest effect on the chances to leave employment for men. The difference between women and men in the effects of long-distance relocations is only marginally significant.<sup>8</sup> Thus, I find both women and men to have a higher probability to leave employment after long-distance relocations than stayers. The negative effect seems to be stronger for

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<sup>6</sup> I estimate all multilevel logistic regression models in this chapter with 5 integration points, where the number of integration points increases precision but also computation time, which is extensive for the APIMs. I re-estimated the main Model 8.1 using 20 integration points. Results did not differ substantially between the two estimations and AMEs changed at most in the second decimal place.

<sup>7</sup> LR test:  $\chi^2(2) = 44.07, p = 0.000$ .

<sup>8</sup>  $\chi^2(1) = 2.89, p = 0.089$ .

**Table 8.5** Actor-partner interdependence model of leaving employment until  $t + 1$ 

	<b>Model 8.1</b>				
	Pooled sample				
	Women		Men		
	<i>b</i>	AME		<i>b</i>	AME
Age	-0.110*	-0.003*		-0.253***	-0.007***
	(-2.06)	(-2.06)		(-3.58)	(-3.57)
Age <sup>2</sup> /100	0.167*	0.005*		0.367***	0.010***
	(2.45)	(2.44)		(4.32)	(4.30)
Married (ref: Cohabiting)	0.249*	0.007*	##	-0.170	-0.005
	(2.19)	(2.19)		(-1.26)	(-1.26)
Child aged (ref: No child)					
0 to 4	0.338**	0.009**	#	0.044	0.001
	(3.26)	(3.24)		(0.29)	(0.29)
5 to 10	0.051	0.001		0.323**	0.009**
	(0.59)	(0.59)		(2.84)	(2.83)
Owner	-0.185*	-0.005*		-0.175	-0.005
	(-2.24)	(-2.23)		(-1.70)	(-1.70)
Education (ref: Intermediate)					
Basic	0.091	0.002		0.067	0.002
	(0.96)	(0.96)		(0.57)	(0.57)
Higher	-0.020	-0.001		-0.133	-0.003
	(-0.20)	(-0.20)		(-0.94)	(-0.94)
Continuous work history	-1.418***	-0.038***		-1.934***	-0.052***
	(-8.33)	(-8.03)		(-6.33)	(-6.20)
Occupational position (ref: Professional/manager/technician)					
Skilled non-manual	0.331***	0.009**		0.232	0.006
	(3.68)	(3.64)		(1.39)	(1.39)
Skilled manual	0.828***	0.022***		0.661***	0.018***
	(6.43)	(6.27)		(5.20)	(5.10)
Partly & unskilled pos.	0.828***	0.022***		0.731***	0.020***
	(6.28)	(6.12)		(3.91)	(3.87)
Time with employer (years)	-0.034***	-0.001***		-0.047***	-0.001***
	(-5.17)	(-4.95)		(-7.76)	(-7.32)
Permanent position	-0.860***	-0.023***		-0.971***	-0.026***
	(-9.35)	(-8.71)		(-7.78)	(-7.41)
Work hours	-0.011**	-0.000**	#	-0.029***	-0.001***
	(-2.87)	(-2.85)		(-4.13)	(-4.09)
Partner: Age	-0.005	-0.000		0.086	0.002
	(-0.09)	(-0.09)		(1.24)	(1.24)
Part.: Age <sup>2</sup> /100	-0.010	-0.000		-0.097	-0.003
	(-0.14)	(-0.14)		(-1.11)	(-1.11)

continued overleaf

continued				
<b>Model 8.1</b>				
Pooled sample				
	Women		Men	
	<i>b</i>	AME	<i>b</i>	AME
Part.: Education (ref: Intermediate)				
Basic	0.038	0.001	0.244	0.007
	(0.40)	(0.40)	(1.96)	(1.96)
Higher	-0.043	-0.001	0.145	0.004
	(-0.40)	(-0.40)	(1.13)	(1.13)
Part.: Continuous work hist.	-0.342	-0.009	-0.511*	-0.014*
	(-1.25)	(-1.25)	(-2.17)	(-2.16)
Part.: Occupational position (ref: Professional/manager/technician)				
Skilled non-manual	-0.036	-0.001	0.053	0.001
	(-0.28)	(-0.28)	(0.48)	(0.48)
Skilled manual	0.074	0.002	0.031	0.001
	(0.77)	(0.77)	(0.19)	(0.19)
Partly & unskilled pos.	0.033	0.001	0.359*	0.010*
	(0.20)	(0.20)	(2.08)	(2.07)
Part.: Time with employer	-0.000	-0.000	0.003	0.000
	(-0.08)	(-0.08)	(0.38)	(0.38)
Part.: Permanent position	0.081	0.002	-0.007	-0.000
	(0.65)	(0.65)	(-0.06)	(-0.06)
Part.: Work hours	0.008	0.000	0.014**	0.000**
	(1.48)	(1.48)	(2.76)	(2.74)
Long-distance relocation	1.200***	0.032***	0.649*	0.017*
	(6.85)	(6.68)	(2.53)	(2.52)
Constant	-3.815***		-4.258***	
	(-12.35)		(-9.88)	
Random effects				
Variance Intercepts	0.776***		1.264***	
	(5.28)		(5.70)	
Covariance Intercepts		0.462***		
		(3.89)		
Observations		50,540		
Individuals		11,663		
Couples		5,320		
LL		-7,343.64		

Data: BHPS waves 1-18, SOEP v26 waves 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 women's and men's AMEs: ### 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 and region.

women than for men, but my model does not provide evidence for a significant difference by gender.

These effects are controlled for individuals' human capital, occupational positions, family statuses, regions, country-specific period effects, and characteristics of their partners. In addition to these factors, the decision to relocate may be associated with individuals' attachment to the labour market (Taylor 2007). That is to say that respondents with low labour market attachment may be more likely to relocate and, at the same time, may be more likely to leave employment. To control for this, I consider whether respondents have a continuous work history which I interpret as an indication for high labour market attachment (cf. Section 4.5.2). For women and men, this variable has the largest effect on leaving employment until  $t + 1$ . Respondents with a more continuous work history, i.e. respondents that have spent more time in employment since they left education, have a much lower probability to leave employment.

The findings also take into account unobserved, time-constant individual differences in the likelihood to leave employment and the correlation of these characteristics between partners by including random intercepts and allowing correlation of these intercepts in couples. The model presented with these random effects offers a better fit than a model without random effects.<sup>9</sup> I find statistically significant variance of intercepts between individuals. This shows that time-constant unobserved individual 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. The significant correlation may be an indication of homogeneity and common fate. By not taking unobserved characteristics of individuals and couples into account, the effects of long-distance relocations on women are slightly overestimated. A binary logistic regression without random effects estimates women to have a 4 percentage point higher probability to leave employment if they relocate compared to staying, while for men the AMEs are similar in both model specifications. The gender difference in the logistic regression model without random effects is also not statistically significant.<sup>10</sup>

The other variables in the model behave as expected and I do not further discuss them 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.<sup>11</sup> I only find few significant gender differences in the AMEs. Married women are more likely to leave employment than cohabiting women, while married men are not significantly more likely to leave employment than cohabiting men. Young children increase the risk of leaving em-

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<sup>9</sup> LR test:  $\chi^2(3) = 122.34, p = 0.000$ .

<sup>10</sup>  $\chi^2(1) = 2.91, p = 0.088$ .

<sup>11</sup> Including the partner variables does not increase model fit significantly (LR test:  $\chi^2(22) = 20.49, p = 0.553$ ).



ployment for women, but not for men. Men that work longer hours reduce their risk to leave employment to a greater degree than women that work longer hours.

The findings from Model 8.1 support H 5.1 which states that partnered women that relocate are negatively affected in their career compared to women staying put. The findings show that women are indeed more likely to leave employment if they relocate compared to staying. This is also true for men and is in accordance with past literature about job-motivated relocations (Taylor 2007). The findings provide only weak support for H 5.2 about gendered outcomes of long-distance relocations. While women's chances to leave employment increase more after long-distance relocations compared to men, the null hypothesis that this difference is equal to 0 cannot be rejected. As I control for human capital and past employment history of respondents, these results contest the human capital model. These findings do not yet allow direct support of one or another of the theoretical explanations for gender differences and do not allow differentiation of the effects of long-distance relocations in England, and West and East Germany. These extensions are addressed in the next sections.

**Table 8.6** Actor-partner interdependence model of leaving employment until  $t + 2$

	Model 8.2			
	Pooled sample			
	Women		Men	
	<i>b</i>	AME	<i>b</i>	AME
Long-distance relocation	0.298 (1.35)	0.006 (1.35)	0.026 (0.08)	0.001 (0.08)

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

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 women's and men's AMEs: ### significant at 0.1% two-tailed, ## significant at 1%, # significant at 5%; model also includes all covariates shown in Table 8.5.

In Section 8.1.1 in the descriptive results, I show that while some groups of movers are more likely to leave employment immediately after a relocation, at the second interview after a relocation movers are mostly not more likely to leave employment than stayers. These descriptive results are corroborated by the multivariate results for Model 8.2 presented in Table 8.6. Model 8.2 includes the same independent variables as Model 8.1, but the dependent variable is leaving employment until  $t + 2$  instead of leaving employment until  $t + 1$ . The model shows no statistically significant effects of long-distance relocations between  $t$  and  $t + 1$  on being out of employment at  $t + 2$ . The effects for women and men are also not significantly

different from each other.<sup>12</sup> Thus, the finding in past literature that employment disruptions after long-distance relocations are mostly temporary is supported by my analysis.

In Section 3.4.2 women's relative resources in the couple was described as a potential explanation for gendered outcomes of relocations. I test this explanation by allowing the effects of long-distance relocations to vary between couples in which female partners earn at least 50 per cent of the couples' annual labour incomes and couples in which female partners earn not more than 25 per cent of the couples' labour incomes. Couples in which female partners earn more than 25 per cent but less than 50 of the couples' labour incomes are the reference category. None of the interaction effects are significantly different from 0 (not shown here). Thus, neither women nor men in couples in which she earns at least 50 per cent or not more than 25 per cent of the couples' annual labour incomes have a significantly higher chance to leave employment after long-distance relocations than women and men in couples in which she earns more than 25 but less than 50 per cent of the labour incomes.

In previous research it has also been suggested that gender role attitudes may be causing unequal employment outcomes after relocations. I test whether women in egalitarian couples are less adversely affected by relocations than women in non-egalitarian couples. The models are estimated separately by country, because the gender role attitudes variables are constructed differently from the BHPS and SOEP data (cf. Section 4.5.2). In England, the variable egalitarian couple is coded 1 if both partners agree that both partners should contribute to the household income and coded 0 otherwise. In Germany, the variable egalitarian couple is coded 1, if the male partner is responsible for at least one third of the time that the couple spends on housework and childcare on a regular Sunday and coded 0 otherwise.<sup>13</sup> West and East Germany are not further differentiated, since the case number of long-distance relocations differentiated by West and East Germany and by egalitarian and non-egalitarian couples would be too small to gain reliable estimates. The interaction effects of long-distance relocations and egalitarian couples do not differ significantly from 0, but the effects' directions are as expected. English and German women in egalitarian couples are less likely to leave employment after long-distance relocations than women in non-egalitarian couples. English and German men in egalitarian couples are more likely to leave employment after long-distance relocations than men in non-egalitarian couples. The measures of gender role attitudes need to be further improved to corroborate these findings.

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<sup>12</sup> Test of AMEs:  $\chi^2(1) = 0.23$ ,  $p = 0.630$ .

<sup>13</sup> The variable for Germany is based on previous work by Jürges (2006). Time use on a Sunday may be a weak proxy for gender role attitudes, however. For example, men may be likely to spend 'quality time' with their children on a Sunday, while not contributing substantially to childcare on weekdays. Unfortunately, the SOEP does not offer any more direct attitudinal measures. The measures may be also difficult to compare across countries, as it can be expected that gender-equal attitudes may be more likely than gender-equal behaviour.

## 8.2.2 Institutional Context

In H 5.3, I expect that gender differences will be strongest in West Germany, moderate in East Germany and weakest in England.<sup>14</sup> In Model 8.3 in Table 8.7, I test this hypothesis by interacting long-distance relocations with dummies for West and East Germany. The main effect for long-distance relocations shows the difference in log odds of leaving employment between movers and stayers in England. For women and men in England the chances to leave employment are higher, if they relocate over a long distance. The difference between women and men in England is not statistically significant.<sup>15</sup> The main effect for West Germany shows that West German stayers are less likely to leave employment than English stayers, but only for women the coefficient shows a significant difference. In contrast, East German stayers are more likely to leave employment than English stayers, but the coefficients are not significantly different from 0.

None of the interaction terms is statistically significant at conventional levels. However, the interaction for relocations and East Germany is marginally significant and negative for women and men, i.e. movers in East Germany are less likely to leave employment than movers in England. The non-significance of these coefficients may be mainly due to the low case number of movers. For West Germany the coefficients are so small that even with moderately larger case numbers they may not turn significant. The marginal effects in the lower panel in Table 8.7 show that relocations in East Germany do not increase the probability for women to leave employment. In West Germany, the probability of leaving employment for women that relocate a long distance is about 4 percentage points higher than for those not relocating. Men in West and East Germany do not have a higher probability of leaving employment, if they relocate. The AMEs for English women indicate that their probability of leaving employment is 8 percentage points ( $z = 3.39$ ) higher after long-distance relocations compared to staying (AMEs not shown in table). For English men, the probability is increased by 4 percentage points ( $z = 1.69$ ). Thus, I cannot support H 5.3 about cross-country differences in the effects of long-distance relocations. While women in East Germany seem to be less likely to leave employment in accordance with my expectations, English women are not less likely to leave employment than West German women on average.

I use Model 8.3 to predict the probability of leaving employment for women and men in England, East and West Germany grouped by their mover status holding all other variables at their means. The predictions are only based on the fixed part of the model and are presented in Figure 8.1. In all three contexts, female stayers have a higher predicted probability to leave employment than male stayers, but the difference is only significant in England. Women that relocate have a much higher probability to be out of work than female stayers in England and West Germany.

<sup>14</sup> This section partly builds on (Lersch 2013, forthcoming).

<sup>15</sup> Test of AMEs:  $\chi^2(1) = 2.16, p = 0.142$ .

**Table 8.7** Actor-partner interdependence models of leaving employment until  $t + 1$  by context

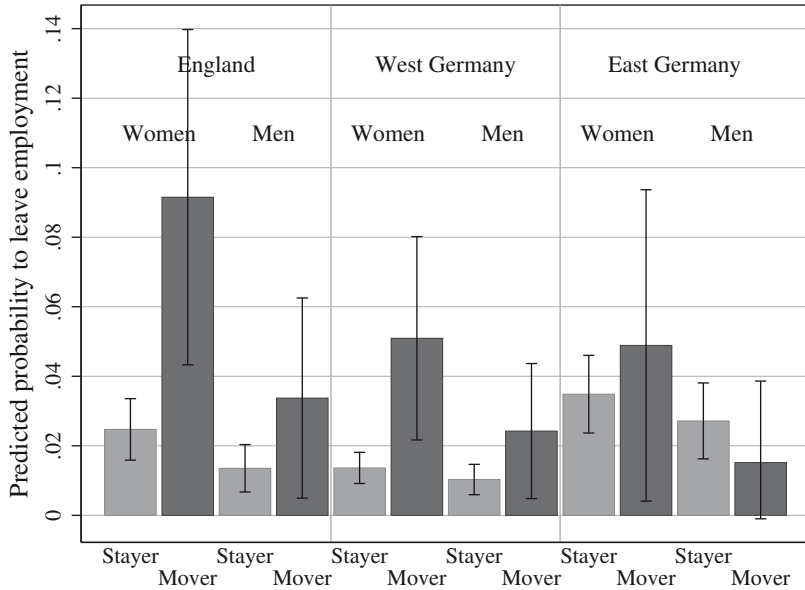
<b>Model 8.3</b>		
Pooled sample		
	Women	Men
<i>b</i>		
Long-distance relocation	1.380*** (5.50)	0.934* (2.40)
West Germany	-0.660* (-2.37)	-0.277 (-0.69)
West*Relocation	-0.024 (-0.06)	-0.065 (-0.12)
East Germany	0.300 (1.06)	0.709 (1.75)
East*Relocation	-1.027 (-1.92)	-1.530 (-1.76)
AME of relocation at...		
West		
No	0.067*** (3.49)	0.032 (1.58)
Yes	0.038** (2.63)	0.022 (1.36)
East		
No	0.065*** (4.22)	0.035 (1.92)
Yes	0.013 (0.62)	-0.022 (-0.96)

Data: BHPS waves 1-18, SOEP v26 waves 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%; model also includes all covariates shown in Table 8.5.

About 1 in 11 English women in dual-earner couples that relocate a long-distance are predicted to leave employment, while only about 1 in 50 female stayers are predicted to leave employment in England. In West Germany, about 1 in 100 women in dual-earner couples that do not relocate leave employment, but about 1 in 20 women that relocate are predicted to leave employment. In East Germany, I do not observe significant differences in the predicted probabilities to leave employment between female movers and stayers. In both groups, about 1 in 25 women are predicted to leave employment. For men, the probability to leave employment does not differ significantly between stayers and movers in England, West or East Germany.

Figure 8.1 also shows differences in the predicted probability of leaving employment across countries. Among female stayers, women in East Germany are most



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

Note: Prediction based on Model 8.3 in Table 8.7; whiskers indicate 95 %-confidence interval. Negative values of confidence intervals are constrained to 0.

**Fig. 8.1** Predicted probabilities for leaving employment by context, gender and relocation status

likely to leave employment, followed by women in West Germany and England. These differences reflect general variation in the economic situation, labour demand, and job mobility across the three contexts. Against my expectations, female movers in England have the highest predicted probability to leave employment, while female movers in West and East Germany have a similar and lower predicted probability to leave employment. However, due to the wide confidence intervals of all three predictions, one cannot be sure that the differences are not just pure chance. It may be expected that at least the difference between England on the one hand and West and East Germany on the other hand may turn significant, if the case number of long-distance relocations would be higher. Nevertheless, the findings again do not support H 5.3. Cross-country differences are further discussed in Section 9.1.4.

### 8.2.3 Robustness Checks

I perform a number of additional analyses to test the robustness of my findings. I only describe the main findings here without showing full estimation results. First, in the descriptive results I show that a high share of long-distance relocations are motivated by occupational reasons and, thus, only those respondents may select into relocations that expect to receive positive returns from relocating. For example, individuals may have unobserved skills that make them more likely to receive a job offer at a new location and because individuals know about these skills, they are more likely to relocate. I test for potential selection into the group of movers by estimating two-stage regression models separately for women and men in both countries, since the selection into relocations may be different for these subgroups.<sup>16</sup> In the first stage, I estimate pooled probit models with the dependent variable long-distance relocation to retrieve Inverse Mills' Ratios (IMRs) which can be used in a second step to control for selectivity (Brüderl 2000: 621; cf. for an application to relocations: Taylor 2007).<sup>17</sup> To gain reliable estimates, I include an identifying variable in this equation that is the number of household members, which affects the likelihood to relocate over a long distance but not the probability to leave employment at  $t + 1$ . In a second step, I run random-effects panel regression models with the same covariates as reported for Model 8.1 and include the IMRs as additional regressors to control for positive or negative selection into relocations. The signs of the coefficients of IMRs in the second stage equation can be interpreted as the direction of correlation between unobserved heterogeneity in the first and second equation.

For men, the coefficients of the IMRs are statistically insignificant. However, for English men, the coefficient for relocations is no longer significant after controlling for selection into relocations, while the effect size does not change. For German men, the coefficient for long-distance relocations does not change. For women in both countries, I find well-estimated, negative coefficients for the IMRs. That is to say, that women that are more likely to relocate over long-distances due to unobserved characteristics are less likely to leave employment. For example, these unobserved characteristics may be related to women's motivation to pursue a career. Correcting for this selection reduces the effect sizes of long-distance relocations on leaving employment for women, but the key findings do not change: women in dual-earner couples are more likely to leave employment after long-distance relocations compared to stayers.

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<sup>16</sup> I cannot differentiate West and East Germany due to the small number of observed relocations in East Germany.

<sup>17</sup> The IMR  $\lambda$  is the ratio of the probability density function over the cumulative distribution function of a distribution:  $\lambda(\cdot) = \phi(\cdot)/\Phi(\cdot)$  (Cameron and Trivedi 2010: 560f).

Second, I only consider stable couples in the present analysis, i.e. couples that live in the same household at  $t$  and  $t + 1$ .<sup>18</sup> It may be expected that partners that would be especially negatively affected by long-distance relocations rather break up with their partner or form a second household, i.e. they become a living-apart-together couple (LAT). My estimates for the relocation variable may be biased if unobserved characteristics are correlated with long-distance relocations and the decision to continue living in the same household. I run multi-level bivariate probit models separately by gender and context to test whether this selection process may affect my coefficients for long-distance relocations. The bivariate probit model is one way to handle associations across equations by allowing the error terms in both equations to be correlated (Brüderl 2000: 635). Here, the first equation models whether individuals leave employment (outcome equation) and the second equation models whether individuals still live together in a common household at  $t + 1$  (selection equation). In the selection equation, I additionally include the variable ever divorced to facilitate identification of the equation system. The effects of long-distance relocations on leaving employment are robust in the model controlling for selectivity and the main results hold: Women in England and West Germany are more likely to leave employment after relocations, women in East Germany and men in West and East Germany are not significantly more likely to leave employment after relocations. Due to the small number of dual-earner couples that separate, the estimation of the selection equation is hampered and especially the estimation of the random effects proves problematic. Due to the small case number, the model does not converge for English men.

Third, both partners may be affected by exogenous shocks in the regional labour market that make them lose their job and relocate to a different region. These unobserved shocks may bias my estimates for the long-distance relocation variable. I attempt to control for such shocks by estimating an alternative model in which I include the regional unemployment rate in the year before individuals may leave employment. I measure the regional unemployment rate at the level of counties in Germany and LADs in England. I do not include this variable in the general model, since regional unemployment rates are only available after 1998 for England. In addition, regions add another level of data and as individuals may change regions over time, modelling these data becomes very complicated. For the present analysis, I simply add the regional unemployment rate as an additional characteristic at the level of couples to the model, but the standard errors for the regional unemployment rate are likely to be underestimated as I do not account for the clustering of observations in counties and LADs.

The results show that the regional unemployment rate has a positive effect on the probability to leave employment at  $t + 1$ , but only men are statistically significantly

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<sup>18</sup> I exclude 1,002 individual-year observations from the analytic sample on the grounds that these individuals do not live together with the same partner at  $t$  and  $t + 1$ . In 261 of these cases, at least one partner relocates a long-distance between  $t$  and  $t + 1$ .

affected by the regional unemployment rate. Men's probability to leave employment increases by 0.1 percentage points with a 1 percentage point increase in the regional unemployment rate. Adding the control regional unemployment rate does not substantially alter the estimated effect of long-distance relocations on the probability to leave employment. Women and men both remain more likely to leave employment after long-distance relocations than stayers after adding the regional unemployment rate to the model. The sizes of the coefficients change, however; and the AMEs for women are smaller, while the AMEs for men are larger than reported in Table 8.5. The difference between women and men is reduced and remains statistically non-significant.

Fourth, my analytic sample includes respondents with a wide range of working hours. I re-estimate Model 8.1 and restrict the sample to all those dual-earner couples in which both partners work between 30 and 80 hours a week. Thus I exclude respondents with more than 10 and less than 30 working hours — mainly women — and this makes the analytic sample more homogeneous. The estimation results show that the effect of long-distance relocations for this more homogeneous sample is very similar to the results presented before. Women's probability to leave employment is 3 percentage points higher if they relocate a long-distance compared to stayers. Men's probability of leaving employment is 1 percentage point higher. Both AMEs are only marginally different from the AMEs presented in Table 8.5. Thus, respondents that work longer hours are slightly less likely to leave employment after long-distance relocations, but the difference is very small and does not affect my interpretation of the data.

For a final robustness check, I use the euclidean metric between individuals' locations to identify long-distance relocations.<sup>19</sup> As my variable of long-distance relocations only measures whether respondents relocate across administrative borders of counties and LADs, this proxy may not adequately capture long-distance relocations and may also be not directly comparable across countries due to the different size of administrative units. Instead, I now consider the actual distance of individuals' relocations and a binary relocation variable that takes the value 1, if respondents relocate at least 50 km (cf. Section 4.5.1.1). The average distance of relocations across administrative borders is 45.78 km (median: 14.22 km) in England and 45.04 km (median: 13.47 km) in Germany. Thus, relocations across administrative borders seem to be comparable in distance across countries. Only 23 per cent of the relocations across administrative borders are relocations farther than 50 km and I observe only 112 relocations of dual-earner couples that are farther than 50 km. This may indicate that relocations across administrative borders may not increase commuting distance to a degree that leads individuals to change their places of work after a relocation.

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<sup>19</sup> I only use data from 2000 onwards, as the geo-coded addresses are only available for the SOEP starting in 2000. For this reason, I use the proxy variable long-distance relocation for the main analysis.



I re-estimate Model 8.1 using the relocation farther than 50 km variable instead of the relocation across administrative borders variable as the independent variable. The alternative model shows that women and men are significantly more likely to leave employment if they relocate farther than 50 km. Women's probability to leave employment is 5 percentage points higher if they relocate farther than 50 km. This change in probability is slightly larger compared with relocations across administrative borders. This may be due to the fact that relocations across administrative borders are mostly shorter than 50 km and may not make a change in the work place necessary. Similarly, I also find a higher AME for men when comparing the effect of relocations farther than 50 km with the effect of relocations across administrative borders. The former type of relocations increases the probability to leave employment for men by 6 percentage points, while the latter type of relocations only increases the probability by 2 percentage points. The effect of relocations longer than 50 km for men is also slightly higher than for women, but the coefficients are not significantly different.

These additional findings regarding relocations that are farther than 50 km have two implications for the general interpretation of my findings. First, the results that I present regarding relocations across administrative borders are likely to underestimate the effect of long-distance relocations on the probability of leaving employment. Due to the fact that most of the relocations across administrative borders are relatively short, the presented effects may be smaller than expected when only analysing 'true' long-distance relocations. Second, the alternative model indicates that the effects for relocations across administrative borders may over-estimate gender differences. Thus, long-distance relocations may have less clearly gendered effects on the chances to leave employment, if only 'true' long-distance relocations would be considered. However, relying on earlier literature that repeatedly showed gendered effects of long-distance relocations, the smaller gender difference in relocations that are farther than 50 km may be also due to the very small number of relocations. Results should be interpreted cautiously due to this small number of relocations.

### 8.2.4 *Changes in Wage Rates*

To examine employment outcomes of relocations for those that stay in employment, I analyse immediate effects of long-distance relocations on wage rates at  $t + 1$  and medium-term effects until  $t + 2$ . I use simultaneous equation models to control for the selection into employment.<sup>20</sup> The models show that long-distance relocations

<sup>20</sup> The substantially interesting equation regresses log wage rates at the next interview on long-distance relocations controlled for demographic characteristics, human capital, occupational position, employment status and the work history. The equation allows the intercept to vary across individuals. The second equation models the probability of respondents to provide valid information regarding wage rates at  $t + 1$ . This selection equation additionally includes variables measuring the

do not have an impact on wage rates of partners in dual-earner couples on average at  $t + 1$  and  $t + 2$  (not shown here). After a relocation, the wage rates of movers do not differ significantly from the wage rates of stayers. If women manage to maintain employment or find a new position right after a relocation, their wage rates are not adversely affected by the relocation compared to wage rates of women that do not relocate.

The findings regarding women are similar to previous research that shows that the negative effect of long-distance relocations on female careers is mainly due to a reduction in labour participation but not due to changes in wage rates for those that maintain employment (e.g. Jacobsen and Levin 1997; LeClere and McLaughlin 1997; Boyle, Feng and Gayle 2009). The findings for men contrast with earlier research including all men that finds significant positive returns of long-distance relocations regarding wage rates (e.g. Böheim and Taylor 2007). This indicates that men in dual-earner couples may be more constrained in their relocation behaviour than other men and, thereby, are less able to relocate to better job offers.

### 8.3 Summary

In the present chapter, I test the theoretical expectations regarding determinants of disparities in relocation outcomes focusing on gender differences in occupational returns to long-distance relocations. I find that long-distance relocations have disruptive effects for women's and men's careers in England and West Germany. Long-distance movers are more likely to leave employment than stayers on average. Thus, I can support H 5.1 about the negative effect of long-distance relocations on women's employment at least for these two contexts. However, neither female nor male long-distance movers have lower average wage rates after a relocation compared with stayers. If women maintain employment, they are not adversely affected in their career measured through the hourly wage rate. These findings show that long-distance relocations of dual-earner couples of which a large share are occupationally motivated do not necessarily yield immediate positive returns regarding employment. This is in contrast to past findings regarding positive average returns for all couples and singles. This may indicate that dual-earner couples are constrained in their mobility and disparities between individuals in dual-earner couples and other couples result.

The negative effect of long-distance relocations on employment is only temporary and at the second interview after a relocation, female movers are as likely to be

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presence of children aged 0 to 4 and 5 to 10 in the household and variables measuring the partner's occupational position. These variables are assumed to affect the respondents' supply of labour, but not the 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 relocations is different for women and men in both countries based on the findings that I presented before.

employed as female stayers. Thus, I find some evidence that disparities in relocation outcomes occur between women and men in dual-earner couples in accordance with H 5.2, but disparities are smaller than expected. If women maintain employment, their returns of relocations in wage rates are not different from men. Female movers are also able to enter employment again soon if they left immediately after long-distance relocations. Nevertheless, even short disruptions of the career may have negative long-term effects, e.g. with regard to pension rights.

For the effects of long-distance relocations in the context of England, West and East Germany, I find gender differences to be strongest in England against my expectations in H 5.3. In England, the difference in the effects of long-distance relocations on leaving employment is marginally significant between women and men, where women are more likely to leave employment. In West and East Germany, differences between women and men are weaker. In West Germany, only women are more likely to leave employment after long-distance relocations. In East Germany, neither women nor men are significantly more likely to leave employment after long-distance relocations. The implications and possible explanations for these unexpected findings are further discussed in the next chapter in Section 9.1.4.

Due to the small number of observed long-distance relocations, the statistical power in my analysis is limited and the standard errors were relatively large in the analysis. Effects that may have a substantial impact on individuals may have not turned out to be statistically significant due to these large standard errors. Therefore, the findings in the present chapter should be treated with caution and further validations with hopefully larger samples are necessary. A further limitation of the present chapter is due to the proxy for long-distance relocations. In Section 8.2.3, I showed that many relocations across administrative borders cover only short distances and, therefore, my analysis may underestimate the effect of long-distance relocations on labour market outcomes. At the same time, gender differences may be overestimated.

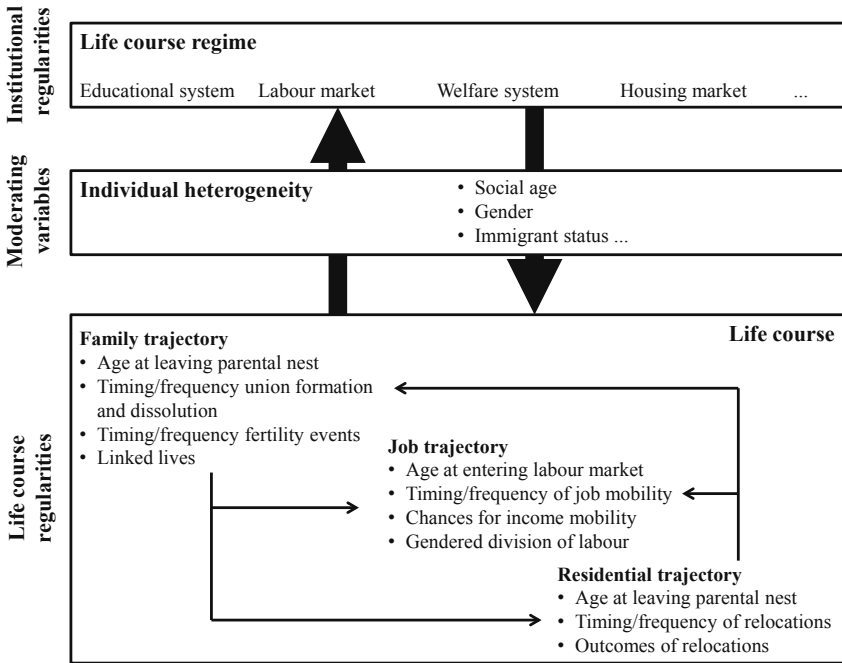
## Chapter 9

# Outcomes of Residential Relocations and Structural Conditions: England and Germany Compared

Individuals' life courses are embedded in geographical places, historical times and institutional settings, and individual agency is always conditioned by opportunities and constraints resulting from this embeddedness. In life course research, mostly the institutions of the education system, the labour market and the pension system have been analysed in the way they "channel individuals to varying extents from participation in one to participation in the next institution according to a country's specific institutional regime" (Krüger 2003: 36). The term life course regime is used to describe these "temporal structures of relatively high stability for structuring life courses" (Wingens and Reiter 2011: 190). Life course regimes generate particular regularities and uniformity in individuals' life courses without being deterministic (ibid.: 191). These life course regimes have been mostly studied in their effects on individuals' job and family trajectories in the past (e.g. Leisering and Schumann 2003; Schaeper and Falk 2003).

The basic idea of the present chapter is that what is true for the job and family trajectories of individuals is also true for their residential trajectories. The "steering mechanisms" (Diewald and Mayer 2009: 6) of life course regimes also generate regularities and uniformities in individuals' residential trajectories and channel individuals through particular residential locations at particular times in their lives. Figure 9.1 provides the general intuition about the links between life course regimes and regularities in individuals' residential trajectories: Institutional features of life course regimes, e.g. in the labour market, affect the occurrences, timings, durations and outcomes of life events and stages. Institutional features do not affect individuals homogeneously, but are moderated by individual heterogeneities, e.g. gender (Diewald and Faist 2012). Different life course trajectories are interrelated. Thereby, institutional features that affect one trajectory may also indirectly affect other trajectories.

The aim of the present chapter is to identify institutional features in life course regimes and characteristics of typical family and job trajectories that generate regu-



**Fig. 9.1** Life course regimes and residential trajectories

larities in residential trajectories in England and Germany. These regularities of residential trajectories may generate particular disparities in outcomes of relocations between individuals and also over time for the same individuals. Regularities are revealed through the typical characteristics of residential trajectories in both countries. In the following, these characteristics are compared across countries, and linked to particular institutional features and patterns in family and job trajectories in England and Germany. I draw from the empirical findings presented in the previous chapters to identify such regularities.

To this end, I proceed as follows. In Section 2.3, hypotheses are derived about the effect of contextual constraints and opportunities on individuals' relocations and disparities in their outcomes. These hypotheses are informed by the case description in Section 4.1 that highlights the institutional features of England and Germany with regard to their housing markets, labour markets, welfare systems and gender relations. In Section 9.1, I weigh the evidence for each of my cross-national hypotheses drawing from findings presented in Chapter 6 and Chapter 7. These findings mainly relate to differences in the English and German housing markets, labour markets and welfare systems. Then, I refer to findings presented in Chapter 8 to examine the effect of divergent societal gender relations in England, and West and East Germany

on disparities between women and men in the effects of relocations on employment and wages. Based on the assessment of my hypotheses I sketch the most important features of the life course regimes that affect relocations and residential trajectories in Section 9.2. I conclude in Section 9.3.

Due to the complexity of structural conditions that affect relocations, the present comparison can only touch upon particular differences in the institutional features of both countries that are highlighted in my hypotheses. Using the available information I make an argument about why these differences may be associated with particular observed differences in English and German residential trajectories. Competing explanations based on different sets of institutional particularities may be possible for each hypothesis, but cannot be further tested in the present analysis. To strengthen my argumentation, I refer to the wider literature on differences between life courses in England and Germany and show how my results relate to previous findings (cf. also Section 4.1.3). I also point at potential directions for future research to further analyse cross-national differences. In addition, it has to be stressed that my conclusions in this chapter are based on information from rather small sections (maximum of 18 years) of individual life courses only, as I am using prospective panel data instead of retrospective life history data. I generalise from these observed sections of various individuals to general patterns over the entire life course. This generalisation may be biased by cohort effects.

## **9.1 Institutional Features and Their Effects on Residential Relocations**

In the previous chapters, I examined the effect of residential relocations on several outcomes: room stress, i.e. the number of available rooms divided by the room need; neighbourhood quality, i.e. the quality of individuals' direct local environment at their places of residence; and chances to leave employment (cf. Section 4.5.1 for more details on the dependent variables). In this section, I provide evidence for and against my cross-national hypotheses with regard to these outcomes.

I briefly recapitulate these hypotheses. Due to relatively easy access to home ownership in England, the dominant norm of being a owner, and a higher risk of downward social mobility, I expect that the changes in quality of locations over the life course follow distinct patterns in England and Germany. More concretely, I expect that a) on average improvements in the quality of locations through relocations for young singles and childless individuals are more likely in England than in Germany; b) improvements in the quality of locations through relocations are more likely in the growing-family phase in Germany than in England; and c) downward relocations, i.e. relocations that reduce the quality of locations, are more likely in England than in Germany (H 1.7). In past literature on life course regimes, the

average English life course has been described as less stable than the average German life course (Mayer 2005: 30). Stable means that individuals experience fewer changes over their life courses and changes are homogeneous across individuals. Following this literature, I expect that the quality of location is more stable over the life course in Germany than in England on average, especially in the mid and late life course (H 1.6). Due to the different tenure structure in both countries, I expect housing tenure to affect changes in the quality of locations distinctively in England and Germany. I hypothesise that a) relocations from tenancy to ownership and b) relocations between privately rented dwellings improve quality of locations stronger in Germany than in England and that c) relocations between owned homes improve quality more in England than in Germany (H 2.3).

Since the welfare system is less protective in England and housing is more de-commodified in Germany than in England, I expect changes in the quality of locations as a result of relocations to depend more on income in England than in Germany (H 4.3). Last, I hypothesise that gender inequality in effects of long-distance relocations on careers will be weakest in England, modest in East Germany, and strongest in West Germany on average (H 5.3). This is due to divergence in policies in England and Germany that affect the division of labour between women and men and differences in gender norms between England, and West and East Germany.

### ***9.1.1 Quality of Locations over the Life Course***

The patterns of changes in the quality of locations over the life course and the associations between family and residential trajectories diverge between England and Germany and this supports the assumption that the residential trajectory is affected distinctively by the institutional context in both countries. Firstly, I find support for H 1.7 a) with regard to room stress but not with regard to neighbourhood quality. Concerning room stress, the evidence shows that young singles already relocate to more spacious dwellings in England, but not in Germany, and that the differences between singles and couples are stronger in England than in Germany. These differences may be due to particular patterns in job trajectories. In England, average entry age in the labour market is lower (Schmitt 2012). Early labour market entry may give young singles in England the economic stability and planning security to improve the quality of their locations early in life. Young singles in England may also be able to invest more into housing due to easier access to mortgages (Diamond and Lea 1992: 118ff). H 1.7 a) is not supported with regard to neighbourhood quality however. Young singles in England do not improve their neighbourhood quality if they relocate. This may be due to the fact that young singles may have preferences for metropolitan and urban locations that are associated with a lower neighbourhood quality. This is supported by my descriptive evidence about a lower average neighbourhood quality for young singles.

In contrast to England where singles also improve their locations, improvements in the quality of locations are closely linked to forming or being in a couple in Germany. I find single to couple and stable couple relocations to reduce room stress more strongly in Germany than in England. Relocations of stable couples reduce room stress more persistently in Germany than in England. This indicates that the investment into housing of couples is more long-term oriented in Germany than in England. German couples are more likely to relocate to dwellings that offer more rooms even after future household size increases compared to the pre-relocation situation, while English couples seem to be more likely to adapt to momentary room needs, e.g. anticipating childbirth, and do not relocate to more spacious dwellings. All this is evidence in accordance with H 1.7 b).

My findings are in accordance with past literature that shows that couples in England are more likely to live in home ownership, which offers better quality of locations on average, from the start of their partnerships. This is also due to the social norm of becoming a home owner before marriage. Couples in Germany are more likely to make the transition into ownership during their partnerships and the transition to ownership takes place later in their partnerships than in other countries on average (Clark, Deurloo and Dieleman 1997; Mulder 2006: 294). The idea of building a joint nest for couples may also be stronger in Germany, where couples stay together for longer on average and traditional families based on marriage play a more important role in welfare and family policies, than in England, where unions are less stable and individualistic values are supported by policies (Ostner and Lewis 1995: 184; Bussemaker and Kersbergen 1999: 18; Blossfeld and Drobnič 2001: 43).

My findings show that being in a couple is more important than having children for improvements in the quality of locations in Germany. The presence of children aged 0 to 9 reduces room stress more in England than in Germany, while childbirth is associated with a greater increase in room stress in Germany than in England. This evidence contradicts H 1.7 b). Thus, the event of union formation and the stage of being in a union are more important conditions for improvements in the quality of location in Germany than in England, instead of the growing family phase. This may also be due to the fact that average age at first birth is higher in England than in Germany, while average age at first consensual union is lower in England than in Germany (Ermisch and Francesconi 2000; Konietzka and Huinink 2003; Schmitt 2012). This may indicate that union formation and childbearing are distinct events in England, while they are closer associated in time in Germany and, therefore, I do not find a unique effect of childbirth in Germany separately of being in a couple.

With regard to neighbourhood quality, stable couple relocations improve neighbourhood quality for English men, but single to couple relocations do not increase neighbourhood quality. Similarly, mainly stable couples improve their neighbourhood quality through relocations in Germany. The difference between single to couple and stable couple relocations may again be due to divergent preferences. Couples that move together are mostly in early stages of their life courses and they may have stronger preferences for urban and metropolitan areas with lower neigh-



bourhood quality than stable couples that relocate and which are likely to be in a later life course stage. Young children improve neighbourhood quality on average in Germany, but in England only men improve their neighbourhood quality if at least one young child lives in the household. These findings provide some evidence for H 1.7 b) regarding neighbourhood quality.

Regarding H 1.7 c), I only find evidence for a higher risk of downward relocations in England compared to Germany with regard to room stress. English individuals in all age groups are significantly more likely to increase their room stress if they relocate compared with German movers. This is in accordance with findings from other life course research that shows, e.g., higher risks of downward job mobility in England compared to Germany (Allmendinger and Hinz 1998). The risk of downward relocations is especially high in late life in England compared to Germany. This corresponds with findings regarding stronger variation in room stress changes in late life in England compared to Germany as described below. The higher risk of downward relocations regarding room stress in England may be due to, first, higher chances for downward social mobility (Allmendinger and Hinz 1998; Jarvis and Jenkins 1998: 151). Second, more frequent increases in household size due to higher average fertility in England may increase room stress more often than in Germany.

Concerning changes in neighbourhood quality, English movers are found to be less at risk to reduce their neighbourhood quality than German movers. Thus, H 1.7 c) can only be supported with regard to room stress and has to be rejected with regard to neighbourhood quality. As stated above, the cross-national differences regarding neighbourhood quality may partly be statistical artefacts, but may also be due to genuine differences between neighbourhood quality and other characteristics of residential locations: First, preferences regarding neighbourhoods may be more heterogeneous across the population than preferences regarding rooms in a dwelling and these preferences may override other structural conditions. That is to say that as individuals differ strongly in their preferences for certain neighbourhoods, these divergent preferences already explain a large part of the variation in outcomes of relocations and institutional differences may not play a big role in explaining divergence. Second, neighbourhood quality depends more on the local context than room stress on average, e.g. in metropolitan areas neighbourhood quality is lower on average than in rural areas while the average level of room stress does not differ. Thus, the local environment of relocations will play a larger role in neighbourhood quality changes and may also override structural conditions that affect neighbourhood quality in England and Germany. Third, a potential explanation may be that neighbourhoods in Germany are more heterogeneous than in England. However, this explanation is contradicted by findings about less spatial segregation in Germany compared to England (Musterd 2005).

I find partial evidence for H 1.6 about the stability of life courses only for room stress, but not for neighbourhood quality. The estimated within-individual deviation for room stress is significantly higher in England than in Germany. Thus, individuals

in England are more likely to change their room stress over the observed section of their life course than individuals in Germany. This may be partly due to the higher frequency of transitions in family trajectories in England. These findings fit well with the broader life course literature on the differences between the English liberal market economy regime and the German conservative continental regime. Again, I do not find the same picture regarding cross-national differences in changes in neighbourhood quality. Against my expectation in H 1.6, individuals in Germany show less uniformity of the residential trajectory regarding neighbourhood quality than in England.

### ***9.1.2 Role of Housing Tenure***

The opportunities and constraints that result from institutional particularities in national housing markets affect disparities in outcomes and the timing of relocations in the life course in England and Germany. My findings especially support the assumption that the housing tenure structure in each national housing market influences individuals' outcomes after relocations depending on their tenures of origin and destination. In England privately rented accommodations are only a transitive tenure that most individuals exit to buy property as soon as possible or that is used to bridge the waiting time for social housing (Kemp and Keohan 2001). In Germany, on the other hand, the privately rented tenure offers attractive dwellings (Mulder and Wagner 1998). Relocations between rented dwellings are an integral part of residential trajectories in Germany and individuals can relocate between rented accommodations to improve their qualities of location. In Germany, relocations into ownership are singular events in most life courses, since repeated purchases of property are constrained by conditions in the housing market, e.g. penalties for early repayment of mortgages and once-only subsidies for purchasing homes (Voigtländer 2009). Therefore, individuals in Germany are more likely to use these singular events to increase the qualities of their locations substantially. In England, repeated relocations between owned homes are more common and, thus, transitions between rented and owned accommodations are less significant events, because owners can still trade up their dwellings later in life.

More specifically, I find a similar hierarchy in the quality of locations by housing tenure in both countries in a cross-sectional perspective. Outright owned dwellings are associated with the lowest room stress and the highest neighbourhood quality on average. Tenants in social housing live in the worst neighbourhoods and highest room stress in both countries. Dwellings owned with a mortgage and privately rented dwellings are between the other two tenures regarding room stress and neighbourhood quality, and dwellings owned with a mortgage offer better quality than privately rented dwellings on average.

Turning to the longitudinal findings, the housing tenure variables are important in explaining within-individual change in room stress in Germany, while in England tenure explains only little within-change. The fixed-effects models show that relocations into social housing and privately rented dwellings increase room stress in both countries. Relocating into social housing is associated with stronger increases in room stress than relocations into the private rental sector in England, but there are no significant differences between changes into privately rented dwellings and social housing in Germany. Based on models that take into account the tenure of origin and destination, I test H 2.3. Private tenants in England are found to only change their room stress significantly, if they buy a home. Germans that relocate from rented accommodation into ownership reduce their room stress more strongly than English movers. Germans that relocate within the privately rented sector also reduce their room stress to a greater degree than English movers. English home owners that relocate to another own home reduce their room stress more than German home owners. This is evidence in favour of H 2.3 regarding room stress.

Regarding changes in neighbourhood quality, I find changes to social housing and privately rented dwellings to reduce neighbourhood quality in Germany compared to dwellings owned with mortgages. In contrast, changes to social housing have no effect on changes in neighbourhood quality and changes to privately rented dwellings increase neighbourhood quality on average in England. Findings from models that include the tenures of origin and destination show that relocations between privately rented dwellings only improve neighbourhood quality in Germany but not in England. Relocations between rented accommodations and owned dwellings improve neighbourhood quality on average in Germany but not in England. I find relocations between owned dwellings in England to be horizontal, while in Germany these relocations reduce neighbourhood quality on average. Thus, the expectations formulated in H 2.3 are mostly supported with the exception that neighbourhood quality does not change if movers own before and after the relocation in England.

I only test one hypothesis regarding the housing market in the present study. The importance of the housing market for relocation outcomes clearly goes beyond this one aspect. For example, the housing market has a strong effect on the entry age into home ownership and, thus, affects the timing of important changes in the quality of locations for individuals. In England, the entry age is considerably lower than in Germany and this may explain some of the patterns in individuals' residential trajectories (Freeman 1997: 162). Deviation in room stress changes between individuals in England may be relatively high in their 20s, as some individuals already buy their own properties, while in Germany most individuals in this age group still live in a rented accommodation. Future research is needed to take a closer look at various design features of the English and German housing markets to assess their impact on relocations and relocation outcomes.

### ***9.1.3 Decommodification of Housing***

I find average room stress to be more stratified by income groups in Germany than in England. In England, the highest income quintile has about twice as many excess rooms, i.e. rooms beyond the objective room needs, than the lowest income quintile, while in Germany the highest income quintile has about three times as many excess rooms as the lowest income quintile. Thus, cross-sectional evidence does not show an equalisation of room stress in both countries. Even though I find a strong stratification of room stress by income, most individuals in England and Germany live in very low room stress in a historical perspective, and compared to their objective room needs, individuals in both countries live in objectively sufficiently spacious dwellings. In 2008, only 3 per cent of individuals in England and slightly under 8 per cent of individuals in Germany had a positive room stress, i.e. less rooms available than necessary according to their objective room needs.

In a longitudinal perspective, positive changes in household income reduce room stress more in England than in Germany. English individuals reduce their room stress about twice as much with an increase in income as individuals in Germany. The interaction effect of income and residential relocation of stable couples is also larger for women in England than in Germany. These findings indicate that changes in room stress are more strongly affected by income changes in England than in Germany. The findings support H 4.3 regarding room stress. However, the overall level of income seems to be more important in explaining changes in room stress in Germany than in England, as the level of income is not associated with changes in room stress in England, but the level is positively associated with changes in room stress in Germany. The last findings are in accordance with the general picture of social mobility in Germany drawn by Brückner (2004). The overall level of income, which can be interpreted as an indicator for a particular track in life, is important in explaining changes in room stress, while individual deviations from this track, i.e. current income changes, do not affect room stress strongly. In contrast, the findings for England show that a particular track in life indicated by the level of income is not as relevant as in Germany for explaining changes in room stress. Rather, momentary deviations from this track have stronger effects on room stress changes.

According to my descriptive findings, average neighbourhood quality differs strongly by income quintiles in both countries. The higher the income of individuals, the better their neighbourhood quality and the differences by income quintile are similar in England and Germany. These findings are akin to the results for room stress and again indicate that both welfare systems do not provide equal access to good neighbourhoods. However, I do not find a significant association between changes in income and changes in neighbourhood quality for both countries. While individuals with higher income live in better neighbourhood quality on average, individuals that increase their income do not improve their neighbourhood quality on average. Analyses with alternative measures for economic resources show that there

is a more complex association between resources and neighbourhood quality in both countries. Individuals live in higher quality neighbourhoods in years in which they have higher housing costs. Changes in more permanent income (averaged over three years) are also positively associated with changes in neighbourhood quality. I only find a significant interaction effect of income and stable couple relocations in Germany. German couples with higher incomes improve their neighbourhood quality more than low-income couples. The impact of other relocation types does not vary by income in Germany and I do not find interaction effects of relocations and income to be significant in England. My findings do not support H 4.3 regarding neighbourhood quality.

Overall the findings tentatively support the idea that the stronger de-commodification in Germany weakens the association between changes in income and changes in the quality of locations to some degree. This support is stronger for changes in room stress than for changes in neighbourhood quality. This may be due to the fact that floor space is directly affecting housing costs either because rent increases or due to increases in construction costs and property prices. In most cases, floor space is highly correlated with the number of available rooms in a dwelling. Neighbourhood quality, on the other hand, may not be as closely correlated with land rent. For example, suburban or rural areas have a high neighbourhood quality on average, but at the same time housing costs are lower as these areas are less densely populated. In contrast, urban and metropolitan areas have a low neighbourhood quality on average, but housing costs are high due to the higher population density. Future research may account for the average housing prices in an area to better model the effect of income changes on neighbourhood quality.

My findings regarding changes in income and changes in room stress and neighbourhood quality resonate with other research showing the relative importance of individual resources in English compared to German life courses (Allmendinger and Hinz 1998; Mayer 2005). The “primacy of the market” (Arts and Gelissen 2002: 141) in the English welfare system can also be found in the housing market and links the residential trajectories of individuals more closely with their individual economic resources than in Germany. This also implies that individual misfortune, e.g. union dissolutions, may have stronger immediate negative effects on individuals’ residential trajectories in England than in Germany, and for recovery individuals need to participate in the labour market (Vandecasteele 2011). Indeed, my findings show a more negative initial effect of dissolutions on quality of locations in England than in Germany. However, the negative life event of unemployment does not have significant effects on room stress or neighbourhood quality in either country according to my results.

### ***9.1.4 Gender Relations in England, and West and East Germany***

In H 5.3, I expect gender inequality in effects of long-distance relocations on careers to be smallest in England, modest in East Germany, and greatest in West Germany on average. In Chapter 8, I test H 5.3 and find that England shows the greatest gender inequality in the effects of long-distance relocations on leaving employment, but in general I find no indication of significant differences in the effects of long-distance relocations across countries. Some evidence for gender inequality in West Germany and no evidence for East Germany is found. The difference between the two parts of Germany is in accordance with the theoretical expectations, but the strong gender inequality in England is unexpected. Regarding wage rates of movers and stayers, no gender differences in any of these contexts is apparent.

First, my hypothesis may have underestimated the importance of gender role attitudes in the three examined contexts. More egalitarian attitudes in East Germany compared to the other two contexts may increase the probability for couples to consider both careers in their relocation decisions in this context. Second, my hypothesis may have overstated the differences in gender relations between England and West Germany and may have paid too little attention to the particularities of long-distance relocations of dual-earner couples in both countries. While welfare policies in England do not hinder partnered women to work, they also provide little direct incentive for an equal division of labour. Especially in situations such as before long-distance relocations in which the labour division may be re-arranged and one partner's career has to be prioritised (Pixley and Moen 2003), this institutional context may not be supportive enough for women to maintain their employment and traditional divisions of labour prevail, i.e. women leave employment to accommodate the careers of their partners.

Gender differences may also be intensified through less extensive child care provision in England compared to West and especially East Germany. Mothers, which traditionally are responsible for child care in couples, may therefore spend more time to arrange new external child care after a long-distance relocation in England than in Germany. Only after child care has been arranged, women take up employment at the new location. This argument would be supported by the finding that women in the second year after a relocation are no longer more likely to be out of work compared to stayers. Future research should consider differences between childless couples and couples with young children to further examine this potential cause for cross-national differences.

Dual-earner couples are less prevalent in West and East Germany than in England. Therefore, dual-earner couples in West and East Germany may be a more selective group of couples than in England. Dual-earner couples in Germany may be more egalitarian on average and they may be more likely to consider both partners careers in their relocation decision. The descriptive statistics also show that couples in which she earns at least 50 per cent of the couple's labour income are twice as

frequent in East Germany than in England and West Germany (cf. Table A.13 in the appendix). For these couples, it may be an economic necessity to consider both partners' careers in their relocation decisions. In addition, East German women have more continuous work histories and work longer hours than English and West German women according to the descriptive statistics. These average differences hint at the stronger average labour market attachment of East German women. The frequencies of egalitarian gender role attitudes are not comparable across countries due to the divergent measurement of attitudes and the frequencies of egalitarian couples are very similar in West and East Germany.<sup>1</sup>

Regarding the general differences in the chances to leave employment after relocations irrespective of gender, the institutional features of labour markets may play an important role. Due to the higher job mobility and easier access to new jobs, individuals in England may be more willing to relocate and to give up employment initially, since they are more likely to find new employment soon. This may also explain why men in England are slightly more likely to leave employment after relocations compared to men in West and East Germany. In the latter two contexts, access to new jobs is more difficult and this fact may deter potential movers from relocating if they have no new job offers. This interpretation of the findings would be in accordance with other life course research showing the higher instability of English job trajectories (Mayer 2005). Movers in East Germany may also be more likely to relocate to maintain employment due to the unfavourable labour market conditions in East Germany and, thus, the positive effect of relocations on chances to leave employment is weaker in this context than in England and West Germany.

My findings show that the overall effect of relocations on chances to leave employment depends on the institutional context of relocations. For example, while movers are much more likely to leave employment in England than stayers, movers are just as likely as stayers to leave employment in East Germany. The institutional contexts affect women's and men's life courses differently in England and West Germany, but disparities in outcomes of relocations between women and men are relatively similar in these contexts. Stronger differences are apparent between England and West Germany on the one hand, compared to East Germany on the other hand. In the latter context, institutional and cultural differences translate into more equal outcomes for women and men after relocations. These more equal outcomes may be at least partly driven by economic necessity to maintain two incomes, but are also likely to be a consequence of the more egalitarian gender role attitudes in this context and the stronger labour market attachment of East German women.

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<sup>1</sup> Past research has shown that East Germans have more egalitarian attitudes than West Germans on average (Adler and Brayfield 1996). Again, this may hint at problems with the variable time use as a proxy for gender role attitudes (cf. Chapter 8, Footnote 13).

## 9.2 Life Course Regimes and Residential Relocations

The above tests of the cross-national hypotheses provide insights that help to sketch features of life course regimes and average patterns in family and job trajectories that affect residential relocations and shape regularities in residential trajectories. In the following I elaborate features and patterns in four areas: 1) family trajectories; 2) job trajectories; 3) welfare systems; and 4) housing markets. These four aspects of life course regimes seem to be most influential for residential trajectories and relocations. These aspects also depend on each other (cf. Figure 9.1).

First, life course regimes differ in the way they 'schedule' events in the family trajectory and, thereby, the frequency and timing of events differ across regimes. For example, the average age at leaving the parental nests varies considerably between countries and can be related to differences in welfare systems' degree of individualisation among other factors (Aassve et al. 2002). This variance in the age at the beginning of the independent residential trajectory will shape the following mobility over the life course (Vidal 2011). Fertility events are shaped, *inter alia*, by the compatibility of careers and family responsibilities which relies on the institutions of the labour market and welfare systems (Krüger 2003). The age at first birth as well as the overall number of children will affect the relocation behaviour of individuals and their choices of locations, because families in general prefer better locations for their children (Rowlands and Gurney 2000). Finally, the timing and frequency of union formation and dissolution affects the frequency of relocations and their outcomes. For example, as English individuals form their first consensual unions later than German individuals on average, they already improved their locations as singles, while in Germany improvements come with being in a partnership. A higher frequency of partner events in England increases the frequency of relocation events, the average risk of downward relocations (at least with regard to room stress) and the overall variation in the quality of locations over the life course.

More abstractly, the welfare domain of life course regimes can be distinguished by the degree of being individual-centred or oriented toward family units. For example, the German labour market and welfare system provide family units rather than individuals with income. The normative and monetary importance of families in welfare systems affects the role that the family status plays in relocation decisions and outcomes. The present study shows that being in a partnership and having children has a stronger positive association with improvements after relocations in Germany than in England. Normative concepts about residential locations at particular ages and for particular types of households also vary across life course regimes. This is well researched for the normative age for leaving the parental nest (e.g. Billari and Liefbroer 2007). Research also shows that other relocations are influenced by age norms, e.g. relocations to suburbia for families (e.g. Brun and Fagnani 1994). These norms will shape individual preferences and behaviours regarding relocations. For example, the age norm for relocating to ownership differs strongly between Eng-



land and Germany and makes improvements in housing at an early age more likely in England (Freeman 1997: 162).

Second, institutions of the educational system and the labour market shape the entry age into the labour market, the frequency of job mobility, and the prospects for income mobility. These institutions affect women and men differently and may (re-) produce gendered divisions of labour (Krüger 2003; Leisering and Schumann 2003; Mayer 2005). It is expected that the first job is not only important due to the labour income, but also since an important new life stage begins. Income security may be higher than while being in education and depending on the tenure of the first job an immediate relocation may be less likely than before taking up the first job. Individuals in England may improve their quality of locations earlier in life, because they enter the labour market at younger ages on average. While I do not find direct effects of job mobility on room stress or neighbourhood quality, income mobility clearly impacts relocation outcomes with regard to room stress. Income mobility is more important in England than in Germany for improving room stress through relocations and part of the higher variation in room stress over individuals' life courses in England may be due to the higher average income mobility in England.

Women's and men's life courses in couples are linked and life course regimes affect the degree to which each partner's life course is in accordance with traditional gender roles, e.g. by promoting female labour market participation. Life course regimes shape the way that job trajectories and residential trajectories are intertwined for both genders and, thereby, generate gender disparities in relocation outcomes. My findings clearly support this assumption and show that the institutional and cultural context affects labour market outcomes of women and men in dual-earner couples after long-distance relocations. For example, if dual-earner couples relocate in England, the women are likely to experience a disruption of their careers at least temporarily. This interruption may affect the future job trajectory negatively. Thereby, gender inequalities may be re-produced and in future relocation decisions the female partner may have even less influence. If dual-earner couples relocate in East Germany, such adverse effects are less likely.

Third, the institutions of the welfare system in the life course regime moderate the effect of negative life course events such as union dissolution and unemployment on individuals lives. DiPrete (2002) mentions several dimensions that should be differentiated in this regard: 1) the likelihood of negative life course events in a certain context; 2) the immediate consequences of these events; and 3) the degree to which recovery is facilitated after negative events. Depending on how these features are reflected in life course regimes, negative life course events will have particular impacts on residential trajectories. For example, in England dissolutions are relatively frequent and have immediate strong negative consequences for the quality of locations, broadly speaking. However, individuals recover quickly and individuals reach their pre-dissolution quality of locations again quickly. In the long run, negative effects of dissolutions on the quality of locations will be relatively small in England. Welfare systems also differ in the degree to which individuals' living standards depend

on their market incomes. The more welfare systems decommodify housing, the less the quality of locations will depend on individuals' market incomes. The findings show that the stronger decommodification of housing in Germany reduces the association between income changes and changes in room stress, but not so regarding neighbourhood quality.

Fourth and especially relevant for relocations but hardly examined in life course research, the institutions of the housing market generate uniformity and regularities in residential trajectories. Housing markets provide vacant dwellings or lots with specific layouts and sizes at particular places for given prices. Individuals are constrained in their choices by these vacancies and outcomes of relocations will depend on the quality of these vacancies. At the same time, individuals influence supply with their current demands, but the housing market reacts relatively slowly to changes in the demand side compared to other markets (Mayer 1998: 37). Evidence for the importance of these factors was strong in England and Germany at the regional level, but it can also be expected that the supply of dwellings at the national level affects relocation outcomes, as dwellings have certain regular characteristics within housing markets. For example, dwellings may be more often owned than rented in particular housing markets. In these markets, individuals are more likely to relocate to owned homes than in other markets with lower shares of owned homes, as is the case with England compared to Germany.

Relevant for relocations are also the rules of transactions in the housing market, e.g. rules for repayment of mortgages, and the legal position of market participants. For example, it was shown that the stronger legal protection of tenants in Germany compared to England may affect relocation outcomes after involuntary relocations positively. Markets also differ in the degree to which they are open and non-discriminatory. Regarding the housing market, immigrants are especially vulnerable to discrimination. My findings show that the German housing market is less integrative and immigrants experience divergent changes in the quality of their locations after relocations compared to natives. This is not so much the case in England.

Cohort effects are neglected in the present analysis. With regard to housing the size of cohorts may be especially relevant, as "it is not single individuals but populations which are allocated to and are streamlined through the institutional fabric of society across the lifetime" (Mayer 2003: 466). If housing markets provide a given number of vacancies that fit preferences of certain age groups, the size of particular cohorts will determine the demand for these dwellings while supply changes only slowly due to the particularities of the housing market. The effect of cohort sizes may be less relevant for housing compared with education or mating, because the housing market is less age-specifically structured than for example the educational system. Still cohort size may matter. In addition, particular shared biographical experiences of cohorts, e.g. wars, may have distinct effects on their future relocation behaviour. One more recent experience is the economic crisis beginning in 2008 that will shape the residential biographies of those entering the housing market in Eng-

land around that time, who have already been labelled ‘generation rent’ (National Centre for Social Research 2011).

### 9.3 Summary

To generalise from these two concrete examples, it seems that societies with more general social mobility, i.e. higher job and income mobility as well as more frequent family changes, also exhibit higher rates of residential mobility and more variation in outcomes. These societies also show higher risks of downward relocations. Residential trajectories in England are more volatile than in Germany at least with respect to room stress and labour market outcomes, and this is in accordance with other research on life courses in both countries (Allmendinger and Hinz 1998; Mayer 2005). Thus, the typical residential trajectories in both countries seem to comply with the logic of the general life course regimes of a liberal market regime in England and a conservative continental regime in Germany. This association is intuitive, as relocations are triggered by family changes and transitions in the job trajectory.

So far comparative research providing empirical evidence for this association is rare. The findings presented in the present chapter contribute some additional evidence, but the conclusions about life course regimes and regularities in residential trajectories are preliminary and build on only two country cases and face some data limitations. Due to the complexity of the institutional settings in England and Germany, causal links between institutional design features and observed outcomes cannot be established clearly. The present study shares this limitation with most other cross-national comparative research. To identify causal effects, it may be more promising to use difference-in-difference research designs that allow analysis of the effects of changes in particular institutional characteristics over time within one context (Angrist and Pischke 2009: 227ff). However, as some institutional characteristics do not change or change only incrementally, cross-national research provides the second best alternative to analyse institutional context effects and to test the degree of generality of findings. With regard to the residential dimensions of life course regimes, much more remains to be done in the future to better understand institutional context effects that impact residential trajectories.

Also, it is apparent that only some dimensions of the residential trajectory fit well with the general ideas about uniformity and regularities in life courses in England and Germany. For example, the findings differ strongly from prior findings with regard to neighbourhood quality where I find that German life courses are more volatile than English ones. However, this may also be due to the divergent construction of the neighbourhood quality measures. The similarities between typical residential trajectories in both countries should also not be neglected. Many of my findings show striking similarities between residential relocations and their outcomes in England and Germany.

A final question remains of how these findings may be applied to other countries, e.g. the US. The US is more similar to England than to Germany concerning institutional characteristics that may affect residential trajectories, but also shows important differences compared to England. For example, home owner rates are similar in the US compared to England (United States Census Bureau 2011), but cushioning of negative life course events is weaker in the US than in England and recovery after negative life course events may be quicker in the US (DiPrete 2002). Residential trajectories in the US show divergent regularities compared to England: Residential mobility is much higher. About 15 per cent of the population moved between 2008 and 2009 in the US (Ihrke, Faber and Koerber 2011). Women have been found to be less negatively affected by long-distance relocations in the US than in the whole UK (e.g. Cooke et al. 2009), while immigrants seem to be less integrated in the US housing market than in the UK (Musterd 2005). More cross-national research including England, Germany and other countries should clarify this divergence.

# Chapter 10

## Conclusion

This study aims to answer the research question: Which individual, household and contextual conditions shape the outcomes of relocations over the life course? The main hypothesis is that the outcomes of relocations are systematically stratified. Relocations are not positive life course events per se, but are *contingent* on individual and structural conditions that are further described below. Thereby, relocations differ in their effects on the goal attainment of individuals with regard to their “physical wellbeing and social approval” (Lindenberg 1996: 169). Relocations where individuals move to higher quality places improve wellbeing and increase social approval more than relocations to relatively worse locations. In the present study, the quality of different locations is measured through room stress, neighbourhood quality and risk of leaving employment. These qualities refer to the dwelling, the neighbourhood and the regional labour market respectively. By answering the above research question, the present work contributes innovatively to the literature on residential relocations, social inequality and the life course. More specifically, my analysis extends previous research 1) by treating relocations as contingent life course events that affect social inequality; 2) by providing a more holistic analysis of relocation outcomes; 3) by using panel data and appropriate longitudinal methods; and 4) by adding a cross-nationally comparative perspective.

In this concluding chapter, I provide an answer to the research question by discussing my hypotheses and the empirical evidence (Section 10.1). I acknowledge limitations of my empirical analysis (Section 10.2) and sketch remaining questions for future research (Section 10.3). I then describe selected policy implications of my findings (Section 10.4). I close with some final reflections on the association between residential relocations and social inequality (Section 10.5).

## 10.1 Discussion of Hypotheses and Empirical Evidence

My theoretical framework is rooted in the life course perspective, but also incorporates elements from the institutional approach, the rational choice approach and the behavioural approach. I assume that individuals relocate voluntarily, because transitions in their life courses reduce the fit between their preferences and their respective current locations. They intentionally decide about whether and where to relocate within the limits of their intellectual capacities and available information. Even though the relocation decision is intentional, I assume that the outcomes of relocations are shaped by various conditions which cause some relocations to be more beneficial, i.e. contributing more to individuals' goal attainment than other relocations. I assume that outcomes of relocations are contingent on resources and restrictions at the individual level as well as constraints and opportunities at the structural level. I identify five sets of conditions that I expect to be especially important to explain variation in outcomes of relocations and that I focus on in my empirical analysis: At the individual level, I examine 1) individual life course conditions; 2) economic resources; and 3) situational conditions of decision making. At the structural level, I consider 4) conditions in the housing market; and 5) gendered roles in couples (which also relate to the individual level). I expect some of these conditions to be mediated by the national institutional and cultural contexts. In Table 10.1, I summarise the empirical evidence for the hypotheses that are derived from these sets of conditions.<sup>1</sup> For each hypothesis, I provide keywords which summarise the content of the hypothesis and I indicate whether the hypothesis is supported in my empirical analysis regarding the different outcomes.

First of all, my empirical analysis supports the main hypothesis that residential relocations are contingent life course events. In contrast to previous research that mainly treated relocations as genuinely positive events, my results show strong variation in outcomes of relocations. While many individuals improve the quality of their locations by relocating, individuals differ strongly in their degree of improvement. In addition, a substantial share of movers relocate horizontally, i.e. they do not change the quality of their locations significantly. This is especially the case regarding neighbourhood quality. Residential relocations also have negative outcomes for a considerable share of movers. Hence, it is relevant to analyse the determinants of this variation to explain disparities in the outcomes of relocations.

My findings show the following general tendencies. Events and statuses in the family trajectory and economic resources shape the outcomes of relocations over the life course most substantially. Relocations especially improve the quality of locations, if they are associated with forming a couple or family and if couples relocate. Singles and ex-partners after union dissolution are less likely to improve the quality of their locations. However, relocations of couples are not necessarily equally beneficial for both partners. Women are more likely to be adversely affected in their ca-

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<sup>1</sup> For a more detailed description of these hypotheses cf. Section 2.3.

**Table 10.1** Evaluation of hypotheses

<b>H</b> Keyword	<b>Room stress</b>	<b>Neighbourhood quality</b>	<b>Leave employment<sup>a</sup></b>
<i>Life course conditions</i>			
1.1 Couple	+/-	-	(not tested)
1.2 Married	+	-	
1.3 Children	+	+/-	
1.4 Dissolution	+/-	+/-	
1.5 Job mobility	-	-	
1.6 Stability*Context	+	-	
1.7 Pattern*Context	+	-	
<i>Economic resources</i>			
2.1 Income*relocation	+/-	+/-	(not tested)
2.2 Tenure	+	+	
2.3 Tenure*Context	+	+	
<i>Situational conditions</i>			
3.1 Distance	-	+/-	
3.2 Involuntary relocation	+	-	
<i>Conditions in housing market</i>			
4.1 Demand/supply	+/-	-	(not tested)
4.2 Average quality	+	+	
4.3 Income*Context	+	-	
4.4 Immigrant	-	+/-	
<i>Gendered roles</i>			
5.1 Female tied movers	(not tested)		+
5.2 Gendered outcomes			+/-
5.3 Gend. out.*Context			+/-

Note: + indicates clear support for H, +/- indicates ambiguous findings regarding H, - indicates that H rejected. <sup>a</sup>: Only for dual-earner couples.

reers by long-distance relocations in cultural contexts with more traditional gender ideologies. Furthermore, outcomes are clearly stratified by economic resources and by housing tenure. Individuals improve the quality of their locations more, if they have more resources and if they are able to buy homes. The latter events are turning points in the residential trajectories for most individuals and bring about a strong improvement in the qualities of their locations. With regard to contextual conditions, the impact of the family trajectory on the residential trajectory is mediated by the life course regime and the link between economic resources and quality of locations is weakened by higher decommodification of housing. The tenure structure in the national housing market as well as regional conditions in housing markets are important in explaining outcomes of relocations. I now provide more details regarding these general tendencies with regard to the five sets of conditions and cross-national dissimilarities.

The most important determinants of variation in relocation outcomes are individual *life course conditions*. At which times in their life courses individuals relocate and with whom they relocate with substantially affects outcomes of relocations. In general, couples are more likely to improve the quality of their locations than singles and, on average, the improvement is more lasting for couples than for singles. Individuals with children improve the quality of their locations more than childless individuals. Relocations that are associated with union dissolutions have a negative effect on the quality of locations. Events in the job trajectory are not important for explaining changes in the quality of locations, but unemployed individuals live in lower quality on average. These findings support the idea of interdependent life course trajectories and show the especially close link between the family trajectory and the residential trajectory. The latter trajectory is instrumental and individuals often relocate to accommodate changes in their family trajectories. Such relocations improve the quality of neighbourhoods especially if individuals form a family and build a nest together. On the one hand, this may be due to social norms about appropriate locations for couples and children, their preferences, and risk-averse behaviour of families, i.e. families only relocate if they are confident in improving their locations. On the other hand, this may be due to pooled resources of partners and long-time investment in dwellings, since couples are less likely to relocate again.

Improvements in the quality of locations are more strongly associated with family events with regard to room stress than with regard to the quality of neighbourhoods. This is also true for other explanatory variables, and, in general, my models explain changes in room stress better than changes in neighbourhood quality. This may be the case, because neighbourhood quality is a rather subjective quality that is not adequately captured with 'objective' neighbourhood quality measures as discussed in Section 10.2. Subjective evaluation of the neighbourhood may vary considerably across the life course.

*Economic resources* are important determinants of variation in relocation outcomes. Good locations are scarce and as they are traded in markets, individuals with more economic resources are more likely to purchase better locations and relocate there than individuals with less resources. Thus, economic inequalities are translated into locational inequalities. The more household income couples have, the more they improve the quality of their locations after relocations. Thus, relocations amplify inequalities in the quality of locations for couples. The housing tenure of individuals is closely related to their economic resources and is clearly associated with the quality of locations. Individuals that relocate into ownership improve their locations much more than individuals that relocate into rented accommodations. Social tenants live in the worst quality of locations. Thus, relocations that change the housing tenure of individuals are important turning points in individuals' residential trajectories.

*Situational conditions* of decision making affect variation in relocation outcomes less than other factors mentioned before. Involuntary relocations are associated with less beneficial outcomes, but the negative effects are only moderate. However, my



analysis focussed mainly on voluntary relocations and a more thorough analysis of involuntary relocations may show a higher impact of these events on relocation outcomes. In addition, even those relocations that I treat as being voluntary may differ in their degree of voluntariness, i.e. some relocations may only be motivated by individual preferences while other relocations are motivated by preferences and external conditions. The degree of voluntariness may affect outcomes, but this cannot be tested with the available data. Longer distances of relocations are modestly associated with less positive changes in neighbourhood quality, but distances do not affect changes in room stress. I do not find evidence for local adjustment relocations after long-distance relocations. Thus, most individuals can be expected to evaluate changes in their qualities of location even in situations where search costs are high or the time for a search is limited.

The opportunities and constraints for movers in regional *housing markets* affect disparities in outcomes. The more high-quality locations that exist in a region, the higher are the chances of individuals to improve their locations through relocating. Regional demand and supply of dwellings are less relevant for relocation outcomes. Due to the higher population density in urban and metropolitan areas, relocations to these areas reduce neighbourhood quality compared to relocations to rural areas, on average. This is not the case for room stress, where average room stress does not differ between urban and rural areas. Movers do not face trade-offs for different dimensions of their qualities of locations in housing markets. That is to say that they do not face deterioration in one quality dimension if they improve another quality dimension. On the contrary, relocation outcomes are mostly complementary and movers improving one dimension of their locations mostly also improve other dimensions. The positive association between improvements in room stress and neighbourhood quality is especially strong.

Immigrants in Germany differ in their relocation outcomes from natives. They are less likely to improve their neighbourhoods through relocations. This may partly be due to restrictions that immigrant movers face in the housing market, e.g. due to discrimination by gate keepers such as real estate agents. Divergence between immigrants and natives may also be caused by differences in their preferences for particular neighbourhoods. However, immigrants do not always have worse relocation outcomes than natives, e.g. relocations reduce inequalities in room stress for immigrants stronger than for natives in Germany.

Disparities in relocation outcomes in dual-earner couples arise due to *gendered roles* of both partners. Women that relocate over long distances are more likely than stayers to leave employment controlling for a wide range of covariates including human capital and employment history in England and West Germany. The negative effect is stronger for women than for men that relocate. The latter are more likely to leave employment only in England. Long-distance relocations do not affect average wage rates in dual-earner couples and there are also no significant gender differences in the effects on wage rates. These findings support the assumption that relocation decisions of households are not solely based on rational utility maximising, but

are likely to be influenced by gendered roles of household members and the subtle power that results from these roles for men. This underlines that intra-household disparities in relocation outcomes should be examined when analysing relocation outcomes. However, direct tests of the impact of gender role attitudes on relocation outcomes do not show significant effects.

While the above findings are similar in England and Germany and show common determinants of relocation outcomes in both contexts, the findings also hint at dissimilarities across *national and cultural contexts*. First, life course conditions have divergent effects on changes in the quality of locations in England and Germany. In accordance with previous, general literature on life course regimes, average residential trajectories in England show more changes within individuals and more heterogeneous changes between individuals regarding room stress. Individuals in England are also more likely than in Germany to experience downward relocations. These findings do not hold regarding neighbourhood quality. English singles are more likely to improve the quality of their locations early in their lives than in Germany, while in the latter context individuals improve the quality of their locations through relocations when they are in couples later in their life courses. Thus, national institutional contexts mediate the way that family trajectories and residential trajectories are linked. While job mobility in general is of little importance for explaining changes in the quality of locations, the effect of job mobility is larger in England than in Germany. This shows the effect of the institutional context of the labour market on relocation outcomes.

Second, the association of the family and the residential trajectories is fundamentally shaped by opportunities in the housing market. Housing markets differ strongly between England and Germany at the national level. Ownership is much more prevalent in England than in Germany and, consequently, turning points from rented to owned dwellings occur earlier in life in England — also for singles. In Germany, these turning points are more closely associated with being in a couple and having children. In Germany, relocations while being in ownership are rare and many individuals improve the quality of their locations while relocating between rented dwellings. In England, repeated relocations between owned homes are not as rare and individuals are likely to trade up their properties over their life courses. The German housing market is more decommodified than the English one and, hence, income is less important in explaining changes in the quality of locations in Germany. This again is in accordance with the wider literature on the liberal market life course regime in England and the conservative life course regime in Germany, where the former regime has a stronger emphasis on free market exchange than the latter regime. Finally, differences between immigrants and natives are less pronounced in the English housing market which may indicate less discrimination against immigrants compared to the German market.

Third, regarding the cultural context of relocations, I find disparities in the effects of relocations on employment for women and men in England and West Germany, but not in East Germany. I argue that this may be due to, first, the more equal gender

role attitudes in East Germany, since individuals are embedded in gendered social structures. Second, East Germans are exposed to more adverse labour market conditions which make relocations to maintain employment more likely. Both arguments show that the cultural context and conditions in the labour market affect the intra-household disparities in relocation outcomes.

The theoretical framework is mostly supported by the findings and the evidence underlines the central role of the life course perspective, since life course conditions are key to understand the outcomes of relocations. Also very helpful in understanding the variation in relocation outcomes are individual resources and restrictions. In addition, the consideration of structural determinants has proven fruitful at the regional level as well as at the national level. These conditions of relocations help to understand “regularities ‘produced’ by institutions and structural opportunities” (Diewald and Mayer 2009: 6), which is the main focus of sociological life course research. However, the theoretical framework leaves space for further improvement especially with regard to the actual decision making of individuals which has been mainly treated as a black-box in the present framework. While certain conditions of the decision making situation, e.g. the search costs, are considered, the motivations, intentions and preferences of individuals are not taken into account. The lack of preferences and intentions in the theoretical framework may partly explain why the predictive power of the framework is smaller for neighbourhood quality than for room stress.

## 10.2 Limitations of the Analyses

Measuring neighbourhood quality presents some empirical hurdles and the analysis in Chapter 7 is limited by the difficulties in comparing the neighbourhood quality measures across countries due to their divergent constructions, and, thus, some of the differences across countries may be statistical artefacts. The data for England and Germany are available for divergently sized geographical units. The neighbourhood units in England are much larger than in Germany. In addition, I exclude changes in neighbourhoods from my analysis by averaging neighbourhood quality over time. Thereby, important processes such as invasion of new residents and succession of old residents are not captured. This is a clear limitation, especially as processes of gentrification, i.e. invasion through high-income residents and succession of low-income households in neighbourhoods, have gained more and more attention in public debate (e.g. Hesselmann 2011). This limitation can only partly be overcome with the available data, because changes in neighbourhood quality cannot be captured adequately with the IMD for England and only after 2004 with the Microm data for Germany.

More generally, my analysis calls into question the relevance of ‘objective’ neighbourhood quality measures based on data such as the IMD or Microm data.

Over the life course, preferences for neighbourhood quality seem to differ strongly. While it was argued in Section 3.3.1 that low ‘objective’ neighbourhood quality may affect residents negatively and independently from their preferences, their overall wellbeing may be not negatively affected if they indeed prefer to live in these areas. Thus, one-catch-all measures based on the social composition of neighbourhoods may not be adequate to capture relevant neighbourhood qualities for individuals over their life courses. More promising may be to use indicators of environmental hazards in the neighbourhood. Causal associations between these ‘objective’ hazards and individuals’ wellbeing independent of their preferences may be stronger than with other neighbourhood characteristics.

An additional problem of commonly used ‘objective’ neighbourhood quality measures is that they are highly negatively correlated with population density. Thus, urban areas have lower average neighbourhood quality than rural areas and this raises the question whether the concept of neighbourhood quality tells us more about the local conditions of individuals’ lives than the categories of urban and rural areas would tell us. In future research, quality measures that take the relative position of neighbourhoods within their local environments into account may be an alternative way to tackle this shortcoming.

Although the BHPS and SOEP offer very rich data, both data sets have severe limitations with regard to the analysis of residential relocations: 1) The number of observed relocations is rather small, especially with regard to long-distance relocations. Therefore the analysis of subgroups of movers is hampered. 2) The small case number of immigrants also makes analysis of this subpopulation problematic especially for England and regarding neighbourhood quality changes. Future research for England could make use of the ethnic boost sample for the Understanding Society Panel, which substitutes the BHPS. 3) The BHPS and SOEP do not provide retrospective life history data with regard to residential locations. The lack of retrospective data does not only limit the analysis of determinants of residential relocations, but may also prevent the identification of important causes for variation in relocations’ outcomes. For example, repeated movers with more experience may be more likely to improve their quality of location if they relocate. The lack of retrospective data also precludes the analysis of complete individual residential trajectories. Instead only generic residential trajectories that are based on observed sections of various individual life courses are analysed. 4) The BHPS and SOEP offer hardly any information about residential preferences and intentions. Thus, these data do offer only limited opportunity for opening the black-box of decision making regarding relocations.

The present analysis treats relocations as events rather than processes as described by Kley (2011). Thus, only individuals that relocate are analysed, but not individuals that consider or even plan a relocation, but do not realise these aspirations. The latter group of respondents is relevant to analyse, since they may receive positive returns from relocating somewhere else, but are not able to realise these returns. This relates to the discussion about the concept of motility “as the capacity

of entities [...] to be mobile in social and geographic space” (Kaufmann, Bergman and Joye 2004: 750). For example, some immigrants may be restricted in their mobility — at least in Germany — and may not be able to improve the quality of their location by relocating to better locations in the same way as natives. Involuntary stayers are also relevant regarding dual-earner couples, as a high share of partners in dual-earner couples can be expected to be tied stayers, i.e. individuals that would receive positive returns from relocation but stay for the sake of their partners’ careers. The SOEP does not allow identification of involuntary stayers, while in the BHPS respondents state their relocation desires and preferences and this additional information may be included in future analyses. However, both data sets offer only limited possibilities to model processes of relocations.

A further limitation of the analysis concerns the question of unequal consequences of certain relocation outcomes for individuals. For example, an increase in room stress of 1 room may have substantially different effects for individuals that spend a lot of time in their dwelling than for individuals that spend only limited time in their dwellings. Similarly, neighbourhood quality changes may be more relevant for individuals that spend more time in their neighbourhoods. Time use data from the BHPS and SOEP may be used to infer some information about the time spent in a dwelling and neighbourhood, but this information is relatively imprecise.

Finally, I refrain from making causal claims based on my empirical evidence. My research design utilises longitudinal data and panel regression methods, which are one step closer to controlling for non-random treatment than cross-sectional methods. Still, unobserved time-varying heterogeneity, e.g. health problems, and self-selection, e.g. due to time trends in particular variables, may bias the coefficients of interest and obscure potential causal relationships. Therefore, I only describe associations between variables and treat these associations as evidence for or against my theoretical model, which is based on assumptions about causal mechanisms. To directly test causal mechanisms to answer specific research questions, more elaborated research designs and econometric methods have to be applied in future research.

### 10.3 Open Questions for Future Research

Some open questions for future research emerge from the above mentioned limitations of the present analysis and from additional considerations. The present work shows that outcomes of relocations vary over the life course and initial analyses of life course patterns indicate distinct changes in the quality of locations in England and Germany. However, the analyses are mainly focused on relocations as isolated events in the residential trajectory of individuals and are limited due to missing life history data on residential trajectories. One avenue for future research is to extend these analyses in time by examining complete life histories of individuals. To do so research may utilise life history data such as the German Life History Study, the

1970 British Cohort Study and the SHARELIFE data to investigate life histories and to examine cohort effects. Especially the SHARELIFE data set promises to be an inspiring data source for cross-national research in residential trajectories. However, the analysis of longer sections of individuals' life courses will come at the costs of having less detailed information about relocations within the trajectory than when using rich panel data, e.g. with regard to individuals' incomes. In this regard, the present analysis complements such life history studies by analysing single events in depth.

A second avenue for future research is to extend the analysis in geographical scope by considering more country cases. My conclusions about structural conditions of relocation outcomes at the national level are only exploratory and based on two countries so far. Further validation of cross-country differences is necessary. At the end of Chapter 9, I briefly consider potential implications of my research for the US. Another interesting country case is Sweden. Both countries have a highly mobile population, but differ in important dimensions of their institutional design from England and Germany, e.g. with regard to their welfare systems. At the same time, both countries offer good data sources, e.g. the Panel Study of Income Dynamics in the US and register data in Sweden, for conducting longitudinal analysis of residential outcomes. It would be interesting to analyse these countries to establish more reliable conclusions about the effects of national institutional contexts on residential relocations and their outcomes, and about divergent residential trajectories over the life course in different national settings.

Third, I do not consider the decision process of movers, intentions to relocate that are not realised and subjective evaluation of outcomes of residential relocations in the present analysis. It would be worthwhile to consider these issues in future research to better understand the individual decision processes and evaluations of locations that lead to particular outcomes within the limits of structural constraints. To this end, survey instruments must be used that explicitly measure relocations as processes (e.g. Kley 2009: 77ff). These instruments are not yet available in large-scale panel data sets, but a part of the analysis of subjective evaluations may be undertaken with the BHPS and SOEP data, e.g. see Section 7.1.1 with regard to subjective neighbourhood evaluation. This extension of the present research would be especially important to better understand disparities in relocation outcomes between natives and immigrants, since the present analysis does not allow differentiation between disparities in outcomes of immigrants that are due to divergent preferences and disparities that are due to different restrictions of relocation behaviours. Additional qualitative data collection may be necessary to fully understand individuals' decision processes and their subjective evaluations. Measuring relocations as processes would also enable researchers to identify individuals that cannot realise their relocation intentions.

Finally, the present analysis may be extended by considering more recent periods. The present analysis ends in 2008 for practical reasons. However, the situation in England may change considerably after the credit crunch following the economic

crisis in 2008. In Germany, the economic crisis did not have the same impact in the housing market, mainly for the reason that there is no German subprime mortgage market. However, numerous German metropolitan areas have seen steady increases in average rents in recent years (Grossarth 2012). These dynamics in local housing markets may have far-reaching consequences for disparities in relocation outcomes due to unequal economic resources of individuals. The effects of these changes in the English and German housing markets may be unveiled by extending the observation window up to the most recent waves of the SOEP and by considering further waves from the BHPS subsample of the Understanding Society Panel.

## 10.4 Policy Implications of Findings

From my findings a number of policy implications can be drawn. I restrict myself to highlight four implications that seem to be especially important. First, my empirical analysis repeatedly underlines that social housing in England and Germany is associated with low quality neighbourhoods and high room stress. Social tenants are excluded from general improvements in room stress in both countries in the last years. These findings are in line with earlier research that shows the increasing marginalisation of social housing in both countries (e.g. Lee and Roseman 1999). Therefore, policy makers should strive to enable social tenants to relocate to privately rented dwellings by allocating sufficient housing benefits to those individuals that are willing to relocate. However, not all social tenants may be willing or able to leave social housing, e.g. because they are discriminated against in the private market or housing benefits are not sufficient to cover rents in the private rental sector in tense housing markets such as in London (Vickery 2012). For these tenants, sufficient numbers of dwellings that meet minimum quality requirements, e.g. at least one room per resident, must be sustained in the social housing sector as a functioning safety net. Thus, policy makers should not further privatise social housing. It also must be a policy goal to invest in the improvement of the existing social housing stock, e.g. to tackle deficits in the built environment. To sustain social housing, to increase the quality of the existing stock and to allocate more housing benefits comes at the costs of increased public spending in times of austerity measures, but investing in the future of social tenants now may save society from long-term costs of adverse health outcomes, lower educational attainments, or exposure to crime of social tenants in increasingly unfit dwellings and bad neighbourhoods.

Second, housing markets are notoriously slow in reacting to changes in the demand structure and adequate dwellings for singles lack in both countries. Singles are in higher room stress than couples and are less likely to change their room stress in cases of relocations. This may mainly be due to inadequate layouts of most dwellings for the needs of singles (e.g. Watson 1986). Neighbourhood quality is lower on average for singles as well, but this may mainly be due to their preferences for

more densely populated areas. Considering the growing share of single households in England and Germany — especially in urban areas — (Statistisches Bundesamt 2012a; Office for National Statistics 2012b), policy makers should promote the construction of dwellings with suitable layouts for singles in good quality neighbourhoods to reduce inequalities between family and non-family households. As being a single is a life course stage and not a permanent status for most individuals, these dwellings should be designed in such a way that they can be flexibly merged to form larger dwelling units that also meet the room needs of larger households. Planning neighbourhoods that mix buildings with multiple rented dwellings, detached owned houses and houses with shared ownership will increase the opportunities of non-traditional families and singles to relocate to better neighbourhoods. Introducing this mix of dwelling types in metropolitan and urban areas may also increase the attractiveness of these areas for families and initiate positive neighbourhood change.

Third, my research shows that immigrants in both countries, but especially in Germany, live in lower quality of locations. In Germany, immigrants reduce their room stress through relocations, but evidence suggests that they cannot improve their neighbourhood quality. First, policy makers should combat any kind of discrimination in the housing market. Second, immigrant households may face similar problems as singles with regard to layouts of dwellings that do not meet their room needs as immigrant households are larger on average and more often multi-generational than native households. Therefore, the construction of flexible rental accommodation with layouts that are suitable for larger families and multi-generational families should be promoted. Again, dwelling units should be designed in ways that they can easily be merged to accommodate larger households. In addition, policy makers should intensify their efforts to improve neighbourhood quality in urban areas with high concentration of immigrants, e.g. by reducing through-traffic, by stimulating local civic initiatives and by allocating loans and funds for the renovation of the built environment. These measures have to be accompanied by strict rent regulation and legal protection of sitting renters to avoid succession processes.

To reduce gender inequalities in labour market outcomes after long-distance relocations for dual-earner couples, policy makers must unequivocally support the equal participation of women and men in the labour market. To this end, goals in the private sphere such as family formation must become reconcilable with goals in one's career for both partners (Diewald 2010: 38). To reconcile partnership and family on the one hand, and occupational mobility requirements on the other hand, several concrete policy recommendations can be made: 1) Some relocations may be avoided by commuting. To facilitate commuting, subsidized public transportation should be expanded. Support for individual transport should be reduced to increase the sustainability of commuting. 2) To mitigate the negative effects of long-distance relocations, only necessary relocations should be promoted and the awareness of potentially negative consequences of relocations for partners should be increased (cf.



also Hofmeister and Schneider 2009). 3) Large companies and public employers should be motivated to run dual-career programs to support employment of trailing male and female spouses. 4) The establishment of second homes as an alternative to relocations of whole households should be supported. To this end, the financial burden of commuting and establishing a second home should be further reduced, e.g. through tax breaks. For families, sufficient public child care has to be made available to help temporarily single parents to reconcile family and paid work. 5) To facilitate long-distance commuting and shuttling over the weekend, employers may introduce more flexible time policies. Allowing workers in the knowledge and service sectors, where attendance at the work place may not be permanently necessary, to work part of the week at home and avoiding meetings on Monday mornings and Friday afternoons for all workers may enable more employees to travel to their partners and families over the weekend.

## 10.5 Final Reflections on Relocations and Social Inequality

Residential locations are an important dimension of social inequality and individuals' places of residence affect their life chances. Places affect individuals beyond other dimensions of social inequality. Individuals living in crowded housing, bad neighbourhoods and stagnating regions can be expected to have worse outcomes regarding, *inter alia*, their health, subjective wellbeing and economic status than the same individuals living in spacious housing, good neighbourhoods and prosperous regions. The residential dimension of inequality is closely associated with other dimensions, foremost economic inequality. Individuals with less economic resources are also likely to live in low-quality places. However, this association is mediated by various factors such as life course conditions, opportunities and constraints in the housing market, and welfare state interventions. Therefore, it is relevant to analyse determinants of inequality in the residential dimension as a distinct aspect of social inequality. To this end, the analysis of residential relocations is paramount as these events lead individuals to live in particular locations.

While previous research has mainly focused on positive effects of relocations, *i.e.* improvements in the quality of locations, the present study shows that the outcomes of relocations are contingent on individual resources and restrictions and structural opportunities and constraints. Improvements in the quality of their locations occur mainly if individuals relocate together with a partner, have children, have high economic resources, buy property or relocate out of urban or metropolitan areas. Deteriorations in the quality of locations are most likely if individuals dissolve their union, have to leave their own home, have few economic resources, or relocate into urban or metropolitan areas. Thus, relocations do not automatically improve individual life chances and a significant share of movers are worse off after their relocations compared to their pre-relocation situations. Looking at between-individual differ-

ences, the present study finds relocations to amplify particular inequalities within households between women and men, between low- and high-income households and between immigrant households and native households. Thus, the effects of relocations on social inequalities can only be grasped if these conditions are taken into account.

However, even in post-industrial societies residential relocations are relatively rare events. Few individuals relocate frequently and a high share of the population relocates not more than once or twice in their lives. On the one hand, this rareness of residential relocations limits the importance of the event at the societal scale. On the other hand, the rareness of the event also increases the importance of each single event for individuals' life courses and may have far-reaching repercussions for their lives. Therefore, it is time for life course scholars interested in social inequalities to take the situatedness of life courses in particular places and changes between these places seriously to better understand residential relocations' effects on individuals' lives. The present analysis makes a further step towards a better understanding of these processes. More steps need to follow.

# Appendix A

## Additional Tables

### A.1 Research Design and Methods

**Table A.1** Recoded and original variable names

Recoded variable name	Original variable name	
	BHPS	SOEP
Residential relocations	Xhhmove, Xmovest	qpader, qhader
Relocations types	Xhhmove, Xmovest, Xmastat, Xsppid	Xage, qpader, qhader, gebjahr, partz00, partnr00
Long-distance relocations	Xlad	qkkz_rek
Room stress	Xhsroom, Xage	room00, gebjahr
Wage rate	Xfimnl, Xjbhrs, Xjbotpd	labgro00, qp4901, qp5501, qp5401, rp5602
Women	sex	sex
Age	Xage	gebjahr
Age of HH members	Xage	gebjahr
Education	Xcasmin	casmin00
Household income (log)	Xhhyneti, Xage	i1110200, gebjahr
Years in residence	Xplnowy4	moveyr00
Life course stage	Xhhtype, Xage	typ2hh00, gebjahr
Child born	Xlwstat, Xrel	qp14221
Child moved out	Xnwstat, Xrel	qp14217
Partners moved together	Xlwstat, Xrel	partnr00, qnetto
Partners moved apart	Xnwstat, Xrel	partnr00, qnetto
Partner died	Xnwstat, Xrel	qnetto, partnr00, partz00
1st/2nd generation immigrant HH	maborn, mabrn, paborn, pabrn, plbornc	migback
Housing costs	Xxphsn	rent00, qh32
Employment status	Xjbstat	lfs00, stib00
Housing tenure	Xtenure	owner00, rsubs00
Partnership status	Xmastat	partz00
Promotion, demotion	Xfimnl, Xjbhrs, Xjbotpd	labgro00, qp4901, qp5501, qp5401, rp5602
Became unemployed	Xjbstat	lfs00
Region	Xregion	qsampreg
Relocation distance	Xdistmov	distance

continued overleaf

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continued

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Recorded variable name	Original variable name	
	BHPS	SOEP
Involuntary relocation	Xmovy1, Xmovy2	qh1001, qh1006, qh1011
Her relative income	Xfiyrl, Xsppid	i1111000, partnr00
Egalitarian couple	Xopfamd	rp0206, rp0209, rp0212
Occupational status	Xjbisco	is8800
Time with employer	Xcjsbgy4	qerwzeit
Permanent position	Xjbterm, Xjbterm1	qp3501
Continuous work history	Xleshm, Xleshem, Xleslen, Xleshst, Xleshsy4, Xleshey4, Xcjsbly, Xjbstat, Xjspno, Xjhstat, Xjhbgm, Xjhendm, Xjhbggy4, Xjhendy4	from <i>pbiospe</i> : zensor, endy, beginy, spelltyp, spellnr; from <i>artkalen</i> : spellnr, spelltyp, begin, end, zensor
Work hours	Xjbhrs	qp4901, qp5501

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## A.2 Setting the Scene: Occurrence and Characteristics of Relocations

**Table A.2** Descriptive statistics, England (Chapter 5)

Variables	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Relocation	0.07	0.25	0.00	1.00	0.07	0.26	0.00	1.00
Southeast ENG/East GER	0.32	0.47	0.00	1.00	0.32	0.46	0.00	1.00
Time in residence/100	0.12	0.12	0.00	0.79	0.11	0.11	0.00	0.77
Urbanisation (ref: Rural)								
Metropolitan	0.40	0.49	0.00	1.00	0.38	0.49	0.00	1.00
Urban	0.35	0.48	0.00	1.00	0.35	0.48	0.00	1.00
Age/100	0.47	0.15	0.18	0.79	0.48	0.15	0.18	0.79
Partnership status (ref: Single)								
Cohabiting	0.12	0.33	0.00	1.00	0.13	0.34	0.00	1.00
Married	0.66	0.48	0.00	1.00	0.73	0.44	0.00	1.00
Child aged (ref: No child)								
1 to 9	0.24	0.43	0.00	1.00	0.23	0.42	0.00	1.00
10 to 17	0.22	0.41	0.00	1.00	0.20	0.40	0.00	1.00
Family events (ref: No event)								
Child born	0.03	0.18	0.00	1.00	0.04	0.19	0.00	1.00
Child left	0.04	0.20	0.00	1.00	0.04	0.19	0.00	1.00
Job mobility (ref: No mobility)								
Promotion	0.15	0.36	0.00	1.00	0.17	0.38	0.00	1.00
Demotion	0.10	0.29	0.00	1.00	0.11	0.31	0.00	1.00
Became unemployed	0.01	0.12	0.00	1.00	0.02	0.16	0.00	1.00
Job status (ref: Inactive)								
Employed	0.57	0.49	0.00	1.00	0.72	0.45	0.00	1.00
Unemployed	0.02	0.14	0.00	1.00	0.04	0.19	0.00	1.00
Dual-earner couple	0.38	0.49	0.00	1.00	0.46	0.50	0.00	1.00
Income (log)	7.30	0.65	0.00	10.96	7.38	0.65	0.00	10.96
Housing tenure (ref: Owned with mortgage)								
Social housing	0.16	0.37	0.00	1.00	0.13	0.33	0.00	1.00
Rented privately	0.07	0.25	0.00	1.00	0.07	0.26	0.00	1.00
Owned outright	0.27	0.44	0.00	1.00	0.25	0.43	0.00	1.00
Room stress	-2.00	1.60	-22.00	4.50	-2.10	1.63	-18.00	4.50

Data: BHPS waves 1-18 (unweighted)

**Table A.3** Descriptive statistics, Germany (Chapter 5)

Variables	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Relocation	0.06	0.24	0.00	1.00	0.06	0.24	0.00	1.00
Southeast ENG/East GER	0.26	0.44	0.00	1.00	0.27	0.44	0.00	1.00
Time in residence/100	0.14	0.14	0.00	0.79	0.14	0.14	0.00	0.79
Urbanisation (ref: Rural)								
Metropolitan	0.21	0.41	0.00	1.00	0.21	0.41	0.00	1.00
Urban	0.47	0.50	0.00	1.00	0.46	0.50	0.00	1.00
Age/100	0.48	0.15	0.18	0.79	0.49	0.14	0.18	0.79
Partnership status (ref: Single)								
Cohabiting	0.09	0.29	0.00	1.00	0.10	0.30	0.00	1.00
Married	0.70	0.46	0.00	1.00	0.77	0.42	0.00	1.00
Child aged (ref: No child)								
1 to 9	0.21	0.41	0.00	1.00	0.22	0.41	0.00	1.00
10 to 17	0.22	0.42	0.00	1.00	0.22	0.41	0.00	1.00
Family events (ref: No event)								
Child born	0.02	0.15	0.00	1.00	0.03	0.16	0.00	1.00
Child left	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
Job mobility (ref: No mobility)								
Promotion	0.11	0.31	0.00	1.00	0.14	0.34	0.00	1.00
Demotion	0.07	0.25	0.00	1.00	0.08	0.28	0.00	1.00
Became unemployed	0.03	0.17	0.00	1.00	0.04	0.20	0.00	1.00
Job status (ref: Inactive)								
Employed	0.52	0.50	0.00	1.00	0.69	0.46	0.00	1.00
Unemployed	0.06	0.23	0.00	1.00	0.06	0.24	0.00	1.00
Dual-earner couple	0.34	0.47	0.00	1.00	0.38	0.49	0.00	1.00
Income (log)	7.25	0.94	0.00	10.85	7.31	0.93	0.00	11.17
Housing tenure (ref: Owned with mortgage)								
Social housing	0.05	0.22	0.00	1.00	0.05	0.21	0.00	1.00
Rented privately	0.50	0.50	0.00	1.00	0.48	0.50	0.00	1.00
Owned outright	0.20	0.40	0.00	1.00	0.20	0.40	0.00	1.00
Room stress	-1.19	1.53	-14.50	5.00	-1.21	1.53	-14.50	5.00

Data: SOEP v26 waves 17-26 (unweighted)

## A.3 Roomstress and Residential Relocations

**Table A.4** Descriptive statistics, England (Chapter 6)

Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Room stress	-1.97	1.62	-22.00	4.50	-2.07	1.65	-18.00	4.50
Southeast England	0.32	0.47	0.00	1.00	0.32	0.46	0.00	1.00
Urbanisation								
Metropolitan	0.40	0.49	0.00	1.00	0.38	0.49	0.00	1.00
Rural	0.25	0.43	0.00	1.00	0.26	0.44	0.00	1.00
Age	46.66	15.50	18.00	79.00	47.40	14.93	18.00	79.00
Immigrant in HH	0.18	0.38	0.00	1.00	0.17	0.38	0.00	1.00
Partnership status								
Cohabiting	0.13	0.33	0.00	1.00	0.14	0.35	0.00	1.00
Married	0.64	0.48	0.00	1.00	0.71	0.45	0.00	1.00
Family events (ref: No event)								
Child born	0.03	0.18	0.00	1.00	0.04	0.19	0.00	1.00
Child left	0.04	0.21	0.00	1.00	0.04	0.21	0.00	1.00
Child aged 0 to 9	0.24	0.43	0.00	1.00	0.23	0.42	0.00	1.00
Employment status								
Employed	0.57	0.50	0.00	1.00	0.72	0.45	0.00	1.00
Unemployed	0.02	0.14	0.00	1.00	0.04	0.20	0.00	1.00
Job mobility								
Promotion	0.15	0.36	0.00	1.00	0.17	0.38	0.00	1.00
Demotion	0.10	0.29	0.00	1.00	0.11	0.31	0.00	1.00
Highest education								
Basic	0.39	0.49	0.00	1.00	0.34	0.47	0.00	1.00
High	0.32	0.47	0.00	1.00	0.39	0.49	0.00	1.00
Household income (log)	7.30	0.66	0.00	10.96	7.38	0.67	0.00	10.96
Tenure								
Social housing	0.17	0.37	0.00	1.00	0.13	0.34	0.00	1.00
Rented privately	0.07	0.26	0.00	1.00	0.08	0.27	0.00	1.00
Owned outright	0.26	0.44	0.00	1.00	0.25	0.43	0.00	1.00
Relocation type								
Stable single ( $\leq 35$ years)	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Stable single ( $\geq 36$ years)	0.01	0.08	0.00	1.00	0.01	0.07	0.00	1.00
Stable couple	0.05	0.21	0.00	1.00	0.05	0.22	0.00	1.00
Single to couple	0.01	0.08	0.00	1.00	0.01	0.08	0.00	1.00
Dissolved couple	0.01	0.08	0.00	1.00	0.01	0.08	0.00	1.00
Other	0.02	0.12	0.00	1.00	0.02	0.13	0.00	1.00

continued overleaf

continued								
Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Distance of relocation								
< 1 km	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
1 < 5 km	0.03	0.17	0.00	1.00	0.03	0.17	0.00	1.00
5 < 30 km	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
30+ km	0.01	0.12	0.00	1.00	0.02	0.13	0.00	1.00
Involuntary relocation								
Separation	0.00	0.07	0.00	1.00	0.00	0.06	0.00	1.00
Notice given	0.01	0.07	0.00	1.00	0.01	0.07	0.00	1.00
Housing costs	0.00	0.07	0.00	1.00	0.00	0.06	0.00	1.00
Population balance	3.98	5.55	-11.58	34.46	4.03	5.56	-11.58	34.46
New constructions	7.28	3.23	0.00	30.97	7.32	3.21	0.00	30.97
Buildings with 1-2 dwellings	69.97	7.49	39.69	83.80	70.24	7.31	39.69	83.80

Data: BHPS waves 1-18 (individual level, unweighted)

**Table A.5** Descriptive statistics, Germany (Chapter 6)

Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Room stress	-1.18	1.55	-14.50	6.00	-1.20	1.54	-14.50	6.00
East Germany	0.26	0.44	0.00	1.00	0.26	0.44	0.00	1.00
Urbanisation								
Metropolitan	0.21	0.41	0.00	1.00	0.21	0.41	0.00	1.00
Rural	0.32	0.47	0.00	1.00	0.32	0.47	0.00	1.00
Age	47.51	15.03	18.00	79.00	48.43	14.21	18.00	79.00
immigrant in HH	0.21	0.41	0.00	1.00	0.22	0.41	0.00	1.00
Partnership status								
Cohabiting	0.10	0.30	0.00	1.00	0.10	0.30	0.00	1.00
Married	0.69	0.46	0.00	1.00	0.76	0.43	0.00	1.00
Family events (ref: No event)								
Child born	0.03	0.16	0.00	1.00	0.03	0.17	0.00	1.00
Child left	0.03	0.16	0.00	1.00	0.02	0.15	0.00	1.00
Child aged 0 to 9	0.22	0.41	0.00	1.00	0.22	0.41	0.00	1.00
Employment status								
Employed	0.52	0.50	0.00	1.00	0.69	0.46	0.00	1.00
Unemployed	0.06	0.24	0.00	1.00	0.06	0.24	0.00	1.00
Job mobility								
Promotion	0.11	0.31	0.00	1.00	0.14	0.35	0.00	1.00
Demotion	0.06	0.24	0.00	1.00	0.08	0.28	0.00	1.00
Highest education								
Basic	0.45	0.50	0.00	1.00	0.45	0.50	0.00	1.00
High	0.16	0.37	0.00	1.00	0.22	0.41	0.00	1.00
Household income (log)	7.25	0.92	0.00	10.85	7.31	0.91	0.00	11.17

continued overleaf



continued								
Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Tenure								
Social housing	0.05	0.22	0.00	1.00	0.05	0.22	0.00	1.00
Rented privately	0.50	0.50	0.00	1.00	0.49	0.50	0.00	1.00
Owned outright	0.20	0.40	0.00	1.00	0.20	0.40	0.00	1.00
Relocation type								
Stable single ( $\leq 35$ years)	0.01	0.08	0.00	1.00	0.01	0.08	0.00	1.00
Stable single ( $\geq 36$ years)	0.01	0.09	0.00	1.00	0.00	0.07	0.00	1.00
Stable couple	0.04	0.21	0.00	1.00	0.05	0.21	0.00	1.00
Single to couple	0.01	0.08	0.00	1.00	0.01	0.07	0.00	1.00
Dissolved couple	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Other	0.01	0.11	0.00	1.00	0.01	0.11	0.00	1.00
Distance of relocation								
< 1 km	0.01	0.12	0.00	1.00	0.01	0.12	0.00	1.00
1 < 5 km	0.01	0.11	0.00	1.00	0.01	0.11	0.00	1.00
5 < 30 km	0.01	0.10	0.00	1.00	0.01	0.10	0.00	1.00
30+ km	0.01	0.07	0.00	1.00	0.01	0.07	0.00	1.00
Involuntary relocation								
Separation	0.01	0.08	0.00	1.00	0.01	0.08	0.00	1.00
Notice given	0.00	0.06	0.00	1.00	0.00	0.06	0.00	1.00
Housing costs	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Population balance	9.17	5.06	1.14	52.46	-0.33	6.85	-26.82	31.02
New constructions	-0.34	6.85	-26.82	31.02	9.20	5.05	1.14	52.46
Buildings with 1-2 dwellings	47.59	21.76	8.30	88.60	47.78	21.71	8.30	88.60

Data: SOEP v26 waves 8-25 (individual level, unweighted)

**Table A.6** Multiple membership multi-level models of room stress with housing market variables

	<b>Model A.3.1</b>		<b>Model A.3.2</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Urbanisation (ref: rural)				
Metropolitan	0.094 (1.78)	0.097 (1.69)	-0.020 (-0.67)	-0.039 (-1.27)
Urban	0.096* (2.35)	0.029 (0.67)	0.015 (0.71)	-0.000 (-0.02)
Partnership status (ref: Single)				
Cohabiting	-0.392*** (-11.32)	-0.198*** (-4.84)	-0.396*** (-21.22)	-0.375*** (-18.42)
Married	-0.556*** (-18.77)	-0.362*** (-9.54)	-0.471*** (-32.92)	-0.368*** (-20.84)
Child aged 1 to 9	-0.255*** (-10.65)	-0.151*** (-5.74)	-0.186*** (-12.69)	-0.167*** (-10.68)
Family events (ref: No event)				
Child born	0.138*** (4.11)	0.188*** (5.57)	0.175*** (7.38)	0.185*** (7.48)
Child left	-0.464*** (-15.77)	-0.472*** (-15.15)	-0.397*** (-18.13)	-0.429*** (-17.17)
Job mobility (ref: No mobility)				
Promotion	0.028 (1.56)	0.048** (2.66)	0.003 (0.27)	0.052*** (4.48)
Demotion	0.017 (0.79)	0.013 (0.59)	-0.010 (-0.65)	0.013 (0.90)
Job status (ref: Inactive)				
Employed	-0.009 (-0.42)	-0.066* (-2.00)	-0.040** (-3.24)	0.013 (0.76)
Unemployed	-0.069 (-1.42)	-0.016 (-0.32)	0.020 (1.04)	0.043* (1.98)
Household income (log)	-0.109*** (-7.91)	-0.116*** (-7.77)	-0.363*** (-32.86)	-0.432*** (-35.69)
Housing tenure (ref: Owned with mortgage)				
Social housing	0.958*** (23.90)	0.994*** (21.55)	1.052*** (38.02)	1.082*** (36.70)
Rented privately	0.444*** (11.55)	0.535*** (12.69)	0.854*** (61.24)	0.913*** (60.76)
Owned outright	-0.077** (-2.78)	-0.066* (-2.20)	-0.089*** (-6.02)	-0.040* (-2.55)
Relocation	-0.108*** (-4.71)	-0.093*** (-3.88)	-0.147*** (-11.11)	-0.148*** (-10.35)

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continued				
	<b>Model A.3.1</b>		<b>Model A.3.2</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Owned dwellings	-0.019*** (-6.14)	-0.016*** (-5.00)	-0.010*** (-16.12)	-0.010*** (-16.15)
New constructions	-0.002 (-0.70)	-0.006 (-1.55)	0.001 (0.68)	0.002 (0.88)
Population balance	0.006** (3.06)	0.003 (1.38)	0.004** (3.03)	0.003* (2.47)
Constant	0.421 (1.36)	1.219*** (3.30)	1.757*** (12.49)	2.446*** (13.68)
Random part variance estimation				
Housing market	0.023 (1.75)	0.011 (1.28)	0.043*** (5.64)	0.034*** (5.36)
Individual	1.560*** (37.71)	1.716*** (35.56)	0.961*** (60.34)	0.967*** (56.82)
Observation	0.599*** (96.15)	0.615*** (89.49)	0.725*** (175.52)	0.727*** (167.25)
Observations	22,041	19,177	73,054	64,507
Individuals	3,445	3,117	9,609	8,846
Housing markets	114	114	441	440
DIC	54,503.662	48,005.484	192,801.725	170,550.153

Data: BHPS waves 10-18, ONS several years, SOEP v26 waves 17-25 (individual level, unweighted), INKAR 2010

Note: Random intercept multiple-membership multi-level model (level 1: individual-years, level 2: individuals, level 3: housing markets), dependent variable: room stress, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include covariates period, age and region not shown here.

## A.4 Neighbourhood Quality and Residential Relocations

**Table A.7** Descriptive statistics, England (Chapter 7)

Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Neighbourhood quality	-0.01	1.01	-3.27	5.41	0.02	0.99	-3.16	5.41
Southeast England	0.32	0.47	0.00	1.00	0.31	0.46	0.00	1.00
Urbanisation								
Metropolitan	0.38	0.49	0.00	1.00	0.37	0.48	0.00	1.00
Rural	0.26	0.44	0.00	1.00	0.27	0.44	0.00	1.00
Age	47.24	15.23	18.00	79.00	48.26	14.75	18.00	79.00
Immigrant	0.16	0.37	0.00	1.00	0.16	0.37	0.00	1.00
Partnership status								
Cohabiting	0.15	0.36	0.00	1.00	0.16	0.37	0.00	1.00
Married	0.62	0.49	0.00	1.00	0.69	0.46	0.00	1.00
Family events (ref: No event)								
Child born	0.03	0.18	0.00	1.00	0.04	0.19	0.00	1.00
Child left	0.04	0.20	0.00	1.00	0.05	0.21	0.00	1.00
Child in HH (ref: No child)								
age 1 to 9	0.24	0.43	0.00	1.00	0.23	0.42	0.00	1.00
age 10 to 17	0.22	0.42	0.00	1.00	0.20	0.40	0.00	1.00
Employment status								
Employed	0.59	0.49	0.00	1.00	0.73	0.44	0.00	1.00
Unemployed	0.02	0.13	0.00	1.00	0.03	0.16	0.00	1.00
Job mobility								
Promotion	0.17	0.37	0.00	1.00	0.19	0.39	0.00	1.00
Demotion	0.10	0.30	0.00	1.00	0.11	0.31	0.00	1.00
Highest education								
Basic	0.34	0.47	0.00	1.00	0.30	0.46	0.00	1.00
High	0.35	0.48	0.00	1.00	0.40	0.49	0.00	1.00
Household income (log)	7.47	0.65	0.00	10.96	7.54	0.66	0.00	10.96
Tenure								
Social housing	0.14	0.35	0.00	1.00	0.12	0.32	0.00	1.00
Rented privately	0.07	0.26	0.00	1.00	0.07	0.26	0.00	1.00
Owned outright	0.29	0.45	0.00	1.00	0.28	0.45	0.00	1.00
Relocation type								
Stable single ( $\leq 35$ years)	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Stable single ( $\geq 36$ years)	0.01	0.08	0.00	1.00	0.01	0.07	0.00	1.00
Stable couple	0.04	0.21	0.00	1.00	0.05	0.22	0.00	1.00
Single to couple	0.01	0.07	0.00	1.00	0.01	0.08	0.00	1.00
Dissolved couple	0.01	0.08	0.00	1.00	0.01	0.08	0.00	1.00
Other	0.01	0.12	0.00	1.00	0.02	0.13	0.00	1.00

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continued								
Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Distance of relocation								
< 1 km	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
1 < 5 km	0.03	0.16	0.00	1.00	0.03	0.17	0.00	1.00
5 < 30 km	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
30+ km	0.01	0.11	0.00	1.00	0.01	0.12	0.00	1.00
Involuntary relocation								
Separation	0.00	0.07	0.00	1.00	0.00	0.06	0.00	1.00
Notice given	0.00	0.07	0.00	1.00	0.00	0.07	0.00	1.00
Housing costs	0.01	0.07	0.00	1.00	0.00	0.06	0.00	1.00
Population balance	4.52	4.18	-11.58	17.16	4.56	4.13	-11.58	17.16
New constructions	7.29	3.23	0.00	30.97	7.32	3.21	0.00	30.97
Buildings with 1-2 dwellings	70.18	7.16	39.69	83.80	70.45	6.97	39.69	83.80

Data: BHPS waves 10-18 (individual level, unweighted)

**Table A.8** Descriptive statistics, Germany (Chapter 7)

Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Neighbourhood quality	-0.00	1.00	-2.53	3.72	0.00	1.00	-2.62	3.72
East Germany	0.25	0.43	0.00	1.00	0.25	0.43	0.00	1.00
Urbanisation								
Metropolitan	0.29	0.45	0.00	1.00	0.29	0.45	0.00	1.00
Rural	0.22	0.42	0.00	1.00	0.23	0.42	0.00	1.00
Age	48.80	14.95	18.00	79.00	49.89	14.26	18.00	79.00
Immigrant	0.19	0.40	0.00	1.00	0.20	0.40	0.00	1.00
Partnership status								
Cohabiting	0.10	0.31	0.00	1.00	0.11	0.31	0.00	1.00
Married	0.67	0.47	0.00	1.00	0.73	0.44	0.00	1.00
Family events (ref: No event)								
Child born	0.03	0.16	0.00	1.00	0.03	0.16	0.00	1.00
Child left	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
Child in HH (ref: No child)								
age 1 to 9	0.20	0.40	0.00	1.00	0.19	0.39	0.00	1.00
age 10 to 17	0.21	0.41	0.00	1.00	0.20	0.40	0.00	1.00
Employment status								
Employed	0.53	0.50	0.00	1.00	0.67	0.47	0.00	1.00
Unemployed	0.05	0.22	0.00	1.00	0.06	0.24	0.00	1.00
Job mobility								
Promotion	0.11	0.31	0.00	1.00	0.14	0.34	0.00	1.00
Demotion	0.07	0.25	0.00	1.00	0.08	0.27	0.00	1.00

continued overleaf

continued								
Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Highest education								
Basic	0.43	0.50	0.00	1.00	0.45	0.50	0.00	1.00
High	0.17	0.37	0.00	1.00	0.23	0.42	0.00	1.00
Household income (log)	7.41	0.51	0.00	10.85	7.47	0.51	0.00	11.17
Tenure								
Social housing	0.04	0.19	0.00	1.00	0.03	0.18	0.00	1.00
Rented privately	0.48	0.50	0.00	1.00	0.46	0.50	0.00	1.00
Owned outright	0.23	0.42	0.00	1.00	0.23	0.42	0.00	1.00
Relocation type								
Stable single ( $\leq 35$ years)	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Stable single ( $\geq 36$ years)	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Stable couple	0.04	0.20	0.00	1.00	0.04	0.21	0.00	1.00
Single to couple	0.01	0.08	0.00	1.00	0.01	0.08	0.00	1.00
Dissolved couple	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Other	0.01	0.11	0.00	1.00	0.01	0.10	0.00	1.00
Distance of relocation								
$< 1$ km	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
$1 < 5$ km	0.02	0.14	0.00	1.00	0.02	0.14	0.00	1.00
$5 < 30$ km	0.02	0.13	0.00	1.00	0.02	0.12	0.00	1.00
$30+$ km	0.01	0.09	0.00	1.00	0.01	0.09	0.00	1.00
Involuntary relocation								
Separation	0.01	0.09	0.00	1.00	0.01	0.08	0.00	1.00
Notice given	0.00	0.05	0.00	1.00	0.00	0.05	0.00	1.00
Housing costs	0.01	0.10	0.00	1.00	0.01	0.09	0.00	1.00
Population balance	-0.34	6.84	-26.82	31.02	-0.33	6.85	-26.82	31.02
New constructions	7.12	4.23	-0.10	36.50	7.14	4.23	-0.10	36.50
Buildings with 1-2 dwellings	47.60	21.77	8.30	88.60	47.78	21.71	8.30	88.60

Data: SOEP v26 waves 17-25 (individual level, unweighted)

**Table A.9** Fixed-effects models of neighbourhood quality with income interactions

	<b>Model A.4.1</b>		<b>Model A.4.2</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Household income (log)	0.003 (0.37)	-0.008 (-1.21)	0.010 (1.51)	0.013 (1.85)
Relocation type (ref: Stayer)				
Stable single ( $\leq 35$ years)	0.273 (1.50)	0.746 (1.10)	0.618 (1.30)	0.155 (0.42)
Stable single ( $\geq 36$ years)	-0.853 (-1.15)	-0.006 (-0.01)	0.284 (0.97)	-0.433 (-1.15)
Stable couple	-0.251 (-1.26)	-0.071 (-0.33)	-0.567** (-2.93)	-0.753*** (-3.80)
Single to couple	-1.198 (-1.82)	0.947 (1.26)	0.711 (1.32)	-0.020 (-0.04)
Dissolved couple	0.014 (0.08)	-0.675* (-2.27)	-0.318 (-1.06)	-0.140 (-0.31)
Other	-0.155 (-0.47)	-0.120 (-0.66)	0.052 (0.31)	0.573* (2.18)
Interaction with income				
Stable single ( $\leq 35$ years)	-0.026 (-1.00)	-0.106 (-1.16)	-0.081 (-1.22)	-0.022 (-0.42)
Stable single ( $\geq 36$ years)	0.120 (1.18)	0.003 (0.05)	-0.039 (-0.96)	0.055 (1.07)
Stable couple	0.033 (1.25)	0.015 (0.52)	0.084** (3.22)	0.110*** (4.10)
Single to couple	0.155 (1.76)	-0.119 (-1.20)	-0.087 (-1.22)	0.007 (0.10)
Dissolved couple	-0.004 (-0.14)	0.075 (1.89)	0.043 (0.99)	0.021 (0.35)
Other	0.021 (0.46)	0.018 (0.73)	0.000 (0.00)	-0.070 (-1.91)

Data: BHPS 10-18 (individual level, unweighted), IMD 2004 & 2007, SOEP v26 waves 17-25 (individual level, unweighted), Microm 2010

Note: Linear fixed-effects regression model, standardised dependent variable: neighbourhood quality, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include all covariates shown in Table 7.4.

**Table A.10** Multiple membership multi-level models of neighbourhood quality with housing market variables

	<b>Model A.4.3</b>		<b>Model A.4.4</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Southeast ENG/East GER	0.491*** (22.68)	0.313*** (12.95)	-0.901*** (-45.15)	-0.837*** (-40.39)
Urbanisation (ref: Rural)				
Metropolitan	-0.463*** (-23.78)	-0.476*** (-23.89)	-0.179*** (-7.04)	-0.272*** (-10.38)
Urban	-0.419*** (-26.02)	-0.370*** (-23.33)	0.120*** (7.55)	0.119*** (6.79)
Partnership status (ref: Single)				
Cohabiting	0.013 (1.10)	0.021 (1.56)	0.091*** (11.55)	0.046*** (5.61)
Married	0.070*** (6.82)	0.085*** (6.59)	0.09*** (12.53)	0.057*** (7.05)
Child aged (ref: No child)				
1 to 9	0.004 (0.49)	0.038** (4.61)	0.028*** (4.67)	0.03*** (4.98)
10 to 17	-0.001 (-0.14)	-0.002 (-0.31)	-0.018*** (-3.37)	-0.005 (-0.98)
Family events (ref: No event)				
Child born	0.015 (1.47)	0.004 (0.38)	0.001 (0.15)	0.002 (0.20)
Child left	0.010 (1.14)	0.009 (1.00)	-0.005 (-0.71)	0.003 (0.32)
Job events (ref: No event)				
Promotion	0.000 (0.01)	-0.003 (-0.60)	0.002 (0.49)	-0.002 (-0.47)
Demotion	0.006 (1.00)	-0.004 (-0.56)	0.005 (0.93)	0.004 (0.82)
Job status (ref: Inactive)				
Employed	-0.003 (-0.49)	0.027** (2.74)	0.002 (0.33)	0.01 (1.64)
Unemployed	-0.005 (-0.33)	-0.018 (-1.17)	-0.005 (-0.76)	-0.005 (-0.68)
Household income (log)	0.013** (3.16)	0.006 (1.30)	0.033*** (7.44)	0.039*** (8.19)
Housing tenure (ref: Owned with mortgage)				
Social housing	-0.120*** (-8.28)	-0.085*** (-5.43)	-0.261*** (-23.75)	-0.245*** (-21.01)
Rented privately	0.095*** (7.62)	0.044** (3.23)	-0.187*** (-28.75)	-0.177*** (-26.29)
Owned outright	-0.011 (-1.20)	-0.047*** (-5.14)	0.004 (0.69)	0.005 (0.81)

continued overleaf



continued				
	<b>Model A.4.3</b>		<b>Model A.4.4</b>	
	<b>England</b>		<b>Germany</b>	
	Women	Men	Women	Men
Relocation	0.002 (0.34)	0.024** (3.34)	0.04*** (8.58)	0.042*** (8.73)
Owned dwellings	0.029*** (25.09)	0.025*** (21.58)	0.005*** (10.73)	0.005*** (9.04)
New constructions	0.004*** (4.31)	0.001 (0.90)	0.001 (1.39)	0.001 (1.08)
Population balance	0.006*** (7.01)	0.002** (2.47)	0.007*** (16.49)	0.007*** (15.24)
Constant	-2.571*** (-22.08)	-2.088*** (-15.03)	-1.071*** (-14.95)	-0.612*** (-6.16)
Random part variance estimation				
Housing markets	0.145*** (5.16)	0.165*** (5.16)	0.167*** (11.84)	0.161*** (11.74)
Individuals	0.523*** (39.93)	0.531*** (36.86)	0.518*** (71.81)	0.522*** (68.26)
Observations	0.052*** (96.56)	0.053*** (89.06)	0.076*** (171.07)	0.072*** (159.52)
Observations	21,898	19,033	70,598	62,408
Individuals	3,471	3,052	11,818	10,579
Housing markets	87	87	413	412
DIC	844.66	988.22	29,963.88	23,246.26

Data: BHPS waves 10-18 (individual level, unweighted), IMD 2004 & 2007, ONS several years, SOEP v26 waves 17-25 (individual level, unweighted), Microm 2010, INKAR 2010

Note: Random intercept multiple-membership multi-level model (level 1: individual-years, level 2: individuals, level 3: housing markets), standardised dependent variable: neighbourhood quality, unstandardised coefficients, t statistics in parentheses; \*\*\* significant at 0.1% two-tailed, \*\* significant at 1%, \* significant at 5%; models also include covariates period, age and region not shown here.

## A.5 Long-Distance Relocations and Subsequent Employment of Dual-Earner Couples

**Table A.11** Descriptive statistics, England (Chapter 8)

Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Leaves employment until $t + 1$	0.04	0.20	0.00	1.00	0.02	0.14	0.00	1.00
Leaves employment until $t + 2$	0.07	0.25	0.00	1.00	0.03	0.17	0.00	1.00
Long-distance relocation	0.03	0.16	0.00	1.00	0.03	0.16	0.00	1.00
Southeast England	0.29	0.46	0.00	1.00	0.30	0.46	0.00	1.00
Age	37.32	8.68	20.00	55.00	39.15	8.65	20.00	55.00
Married	0.79	0.40	0.00	1.00	0.79	0.41	0.00	1.00
Child in HH								
0 to 4	0.17	0.38	0.00	1.00	0.17	0.37	0.00	1.00
5 to 10	0.22	0.42	0.00	1.00	0.23	0.42	0.00	1.00
Owner	0.89	0.31	0.00	1.00	0.89	0.31	0.00	1.00
Education								
Basic	0.22	0.42	0.00	1.00	0.24	0.43	0.00	1.00
Higher	0.38	0.49	0.00	1.00	0.42	0.49	0.00	1.00
Continuous work history	0.82	0.20	0.00	1.00	0.94	0.14	0.00	1.00
Occupational position								
Skilled non-manual	0.49	0.50	0.00	1.00	0.13	0.33	0.00	1.00
Skilled manual	0.05	0.23	0.00	1.00	0.33	0.47	0.00	1.00
Partly & unskilled occupations	0.05	0.23	0.00	1.00	0.05	0.21	0.00	1.00
Time with employer	3.89	4.64	0.00	36.00	4.91	6.03	0.00	40.00
Permanent position	0.96	0.20	0.00	1.00	0.98	0.14	0.00	1.00
Work hours	33.33	11.21	11.00	80.00	45.24	8.60	11.00	80.00
Partner: Age	39.06	8.68	20.00	55.00	37.38	8.68	20.00	55.00
Part.: Education								
Basic	0.24	0.43	0.00	1.00	0.23	0.42	0.00	1.00
Higher	0.42	0.49	0.00	1.00	0.38	0.49	0.00	1.00
Part.: Continuous work history	0.94	0.13	0.00	1.00	0.82	0.20	0.00	1.00
Part.: Occupational position								
Skilled non-manual	0.13	0.34	0.00	1.00	0.49	0.50	0.00	1.00
Skilled manual	0.33	0.47	0.00	1.00	0.05	0.22	0.00	1.00
Partly & unskilled occupations	0.05	0.22	0.00	1.00	0.06	0.24	0.00	1.00
Part.: Time with employer	4.90	6.01	0.00	40.00	3.89	4.65	0.00	36.00
Part.: Permanent position	0.98	0.15	0.00	1.00	0.96	0.21	0.00	1.00
Part.: Working hours	45.08	8.59	11.00	80.00	32.88	11.33	11.00	80.00
Egalitarian couple	0.25	0.43	0.00	1.00	0.25	0.43	0.00	1.00
Her share of couples labour income								
She earns AL 50 %	0.19	0.39	0.00	1.00	0.18	0.38	0.00	1.00
She earns not than 25 %	0.28	0.45	0.00	1.00	0.30	0.46	0.00	1.00
Regional unemployment rate	5.49	2.22	0.70	18.90	5.49	2.22	0.70	18.90

Data: BHPS waves 1-18 (individual level, unweighted)

**Table A.12** Descriptive statistics, West Germany (Chapter 8)

Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Leaves employment until $t + 1$	0.04	0.20	0.00	1.00	0.03	0.16	0.00	1.00
Leaves employment until $t + 2$	0.06	0.24	0.00	1.00	0.04	0.19	0.00	1.00
Long-distance relocation	0.02	0.12	0.00	1.00	0.02	0.12	0.00	1.00
Age	38.34	8.16	20.00	55.00	40.86	8.29	20.00	55.00
Married	0.83	0.38	0.00	1.00	0.83	0.37	0.00	1.00
Child in HH (ref: No child)								
0 to 4	0.09	0.29	0.00	1.00	0.09	0.29	0.00	1.00
5 to 10	0.22	0.42	0.00	1.00	0.22	0.42	0.00	1.00
Owner	0.48	0.50	0.00	1.00	0.47	0.50	0.00	1.00
Education								
Basic	0.40	0.49	0.00	1.00	0.50	0.50	0.00	1.00
Higher	0.12	0.33	0.00	1.00	0.17	0.38	0.00	1.00
Continuous work history	0.75	0.22	0.00	1.00	0.90	0.14	0.00	1.00
Occupational position								
Skilled non-manual	0.40	0.49	0.00	1.00	0.13	0.34	0.00	1.00
Skilled manual	0.11	0.31	0.00	1.00	0.45	0.50	0.00	1.00
Partly & unskilled occupations	0.10	0.30	0.00	1.00	0.06	0.23	0.00	1.00
Time with employer	8.39	7.60	0.00	40.80	12.24	9.63	0.00	42.30
Permanent position	0.74	0.44	0.00	1.00	0.76	0.43	0.00	1.00
Work hours	30.75	10.16	10.06	70.00	40.87	5.35	11.82	80.00
Partner: Age	40.83	8.28	20.00	55.00	38.41	8.20	20.00	55.00
Part.: Education								
Basic	0.50	0.50	0.00	1.00	0.40	0.49	0.00	1.00
Higher	0.17	0.38	0.00	1.00	0.12	0.33	0.00	1.00
Part.: Continuous work history	0.90	0.14	0.00	1.00	0.75	0.22	0.00	1.00
Part.: Occupational position								
Skilled non-manual	0.13	0.34	0.00	1.00	0.40	0.49	0.00	1.00
Skilled manual	0.45	0.50	0.00	1.00	0.11	0.32	0.00	1.00
Partly & unskilled occupations	0.06	0.23	0.00	1.00	0.10	0.30	0.00	1.00
Part.: Time with employer	12.10	9.56	0.00	42.30	8.32	7.62	0.00	40.80
Part.: Permanent position	0.75	0.43	0.00	1.00	0.73	0.44	0.00	1.00
Part.: Working hours	40.88	5.56	10.92	80.00	30.59	10.18	10.06	70.00
Egalitarian couple	0.63	0.48	0.00	1.00	0.63	0.48	0.00	1.00
Her share of couples labour income								
She earns AL 50 %	0.16	0.36	0.00	1.00	0.15	0.36	0.00	1.00
She earns not than 25 %	0.27	0.44	0.00	1.00	0.27	0.45	0.00	1.00
Regional unemployment rate	9.51	3.38	2.40	25.60	9.50	3.39	2.40	25.60

Data: SOEP v26 waves 8-25 (individual level, unweighted)

**Table A.13** Descriptive statistics, East Germany (Chapter 8)

Variable	Women				Men			
	M	SD	MIN	MAX	M	SD	MIN	MAX
Leaves employment until $t + 1$	0.07	0.25	0.00	1.00	0.06	0.23	0.00	1.00
Leaves employment until $t + 2$	0.08	0.27	0.00	1.00	0.07	0.26	0.00	1.00
Long-distance relocation	0.01	0.11	0.00	1.00	0.01	0.11	0.00	1.00
Age	39.27	7.93	20.00	55.00	41.56	8.02	20.00	55.00
Married	0.86	0.34	0.00	1.00	0.86	0.34	0.00	1.00
Child in HH								
0 to 4	0.09	0.28	0.00	1.00	0.09	0.28	0.00	1.00
5 to 10	0.24	0.43	0.00	1.00	0.24	0.42	0.00	1.00
Owner	0.45	0.50	0.00	1.00	0.45	0.50	0.00	1.00
Education								
Basic	0.08	0.27	0.00	1.00	0.16	0.37	0.00	1.00
Higher	0.37	0.48	0.00	1.00	0.24	0.43	0.00	1.00
Continuous work history	0.84	0.16	0.00	1.00	0.91	0.11	0.00	1.00
Occupational position								
Skilled non-manual	0.35	0.48	0.00	1.00	0.09	0.29	0.00	1.00
Skilled manual	0.08	0.28	0.00	1.00	0.54	0.50	0.00	1.00
Partly & unskilled occupations	0.05	0.21	0.00	1.00	0.07	0.26	0.00	1.00
Time with employer	9.32	8.31	0.00	40.50	9.86	9.24	0.00	40.40
Permanent position	0.70	0.46	0.00	1.00	0.73	0.44	0.00	1.00
Work hours	37.63	7.31	10.46	70.85	42.56	5.08	10.31	77.00
Partner: Age	41.59	8.08	20.00	55.00	39.23	7.89	20.00	55.00
Part.: Education								
Basic	0.16	0.36	0.00	1.00	0.08	0.27	0.00	1.00
Higher	0.25	0.43	0.00	1.00	0.37	0.48	0.00	1.00
Part.: Continuous work history	0.91	0.11	0.00	1.00	0.84	0.16	0.00	1.00
Part.: Occupational position								
Skilled non-manual	0.09	0.28	0.00	1.00	0.34	0.48	0.00	1.00
Skilled manual	0.54	0.50	0.00	1.00	0.08	0.28	0.00	1.00
Partly & unskilled occupations	0.07	0.25	0.00	1.00	0.05	0.22	0.00	1.00
Part.: Time with employer	9.74	9.17	0.00	40.60	9.24	8.31	0.00	40.50
Part.: Permanent position	0.72	0.45	0.00	1.00	0.69	0.46	0.00	1.00
Part.: Working hours	42.61	5.28	10.31	77.00	37.61	7.37	10.38	70.85
Egalitarian couple	0.61	0.49	0.00	1.00	0.61	0.49	0.00	1.00
Her share of couples labour income								
She earns AL 50 %	0.34	0.47	0.00	1.00	0.34	0.47	0.00	1.00
She earns not than 25 %	0.12	0.33	0.00	1.00	0.13	0.33	0.00	1.00
Regional unemployment rate	18.77	3.02	10.10	31.40	18.81	3.04	10.10	31.40

Data: SOEP v26 waves 8-25 (individual level, unweighted)

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