Effects of Residential Mobility on Job Mobility over the Life Course

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1 Introduction

A long tradition of studies has analyzed the interdependence between job mobility and residential mobility. According to the neo-classical economic model, people are willing to move if they obtain a higher income or find more suitable jobs elsewhere in regard to their qualifications, given that the financial gain exceeds the migration costs (Sjastadt 1962, Schultz 1964, Todaro 1969, Speare 1971, da Vanzo 1981, de Jong and Fawcett 1981, Linneman and Graves 1983). In this case, unevenly distributed job opportunities in geographical regions trigger migration. Migration is an instrument with which to gain better jobs and avoid commuting costs. More recently, the effects of migration on occupational careers have also been investigated. It was shown that residential mobility can have positive effects on occupational achievement (van Ham 2002, van Ham and Mulder 2005).

These studies usually analyze observed moves and job changes as a function of other life events and structural conditions. Subjective dispositions are not considered in these models and the decision process is treated as a black box. In our paper, we go beyond this restriction and consider not only the actual events but also address relevant aspects of the underlying decision processes. We extend the theoretical framework and the hypotheses regarding the interdependence between residential mobility and job mobility to pre-decisional stages. More precisely, we investigate what impact the mere fact that individuals consider migration as an option for the near future has not only on residential mobility (Kalter 1997, Kley 2010) but also on the motivation for conducting a job search and exhibiting occupational mobility. We assume that the readiness to migrate – however it is justified – can be seen as a propensity to

invest in the occupational career in addition to human capital needed to achieve certain positions. It is probable that migration improves the opportunity structure because the radius of the job market becomes larger with mobility. An extended job search in a larger labor market (i.e. regionally or nationally in scope) can be seen as a cause for broader employment opportunities. Therefore, it is considered that migration might trigger a job search and job mobility, which itself can trigger an actual migration event but it does not necessarily do so. Migration in the case of a successful job search only occurs when an attractive job opportunity is assured elsewhere and migration costs are lower than expected costs of commuting to the new workplace.

Our analysis uses data from a three-wave panel study gathered between 2006 and 2008 in two German towns with respondents aged 18 to 50 years at the time (Kley 2009). Descriptive analyses, based on contingency table analyses, provide initial insight into the correlation between our variables. For the regression analysis, we make use of simultaneous equation modeling by combining hazard rate estimation with probit estimation of panel data (Lillard and Panis 1996). The technique is well suited to address potential endogeneity of job mobility and residential mobility.

We can show that considering to leave town is positively associated with both, residential and job mobility. More concretely, considering moving has effects on a job search and job mobility independently of whether residential mobility took place or not. This result is in accordance with the thesis that mobility intentions may open up many job opportunities, for instance enlarging the job search scope. It may also indicate that those who have ever considered moving may want to go beyond their status quo, which in many cases means changing their current job.

The results represent a further step in explaining the association between job mobility and residential mobility, supporting both commented views. On the one hand, actual residential mobility adds to the reduction of costs derived from workplace mobility or from job mobility, which enlarges the distance between the place of residence and the workplace. On the other hand, we confirm that movers are a selective group of the population, insofar as they are ready to improve their life conditions, particularly their professional career. Once selectively unobserved factors are removed, considering residential mobility as an option still has a positive effect on job mobility. Taking the pre-decisional stages of the migration process into account is an important contribution to understanding the underestimated role of migration as an investment oriented action that improves job chances.

2 Previous research

In their path-breaking work, Blau and Duncan already devoted a whole chapter to the relationship between geographical and social mobility. They were probably the first to introduce the term “geographic motility” into the discussion: “A man’s economic chances are improved by his *motility*, that is, his not being rooted to his place of birth but free to leave it for better opportunities elsewhere” (Blau and Duncan 1967: 250). Motility refers to the

"capacity to move" and, for these authors, "migration is simply an operational measure" of it. They deduce its significance from the empirical evidence that (interregional) migrants are superior to non-migrants in regard to occupational success. Blau and Duncan are well aware of the question of the correct direction of causality and selective migration. They find more evidence for selective migration for individuals with greater potential for occupational achievement but do not rule out that migration can promote the career because it can improve the opportunity structure of occupational mobility for migrants (Blau and Duncan 1967: 259, 274). So, Blau and Duncan assume and show empirically that migration "tends to flow in the direction of greater opportunities" (273). This supports the value of motility and, more specifically, what we are examining – the readiness or intention to move.[1]

An important theoretical contribution, which introduced the space aspect of studying job mobility, was made by Simpson (1992). Even though he was primarily interested in spatial and economic structures of urban areas, his economic approach is of general interest. He investigates the relationship between the spatial structure of urban labor markets, individual labor-market behavior, and the choice of residential location in terms of its distance to the city's center. Relevant for our purposes is that he includes job search theory in his approach.[2]

Conventional job search theory says that actors look for a (new) job when they expect that the benefits from that are bigger than the cost of changing the job including the job search cost (Lippman and McCall 1976). Based on the knowledge of the distribution of wage offers, they choose a wage-level that they at least want to achieve when accepting the new job. Their reservation wage is equal to the marginal expected gain if the first offer with a wage larger than the reservation wage is accepted (Simpson 1992: 54f). With an increasing search cost, the reservation wage declines and the lower the reservation wage the shorter the duration of the search. A spatial component is included, which assumes that searching in distant areas is more expensive, e.g. because of higher traveling costs. This means that actors prefer to focus the search on closer areas. On the other hand, in the case of a long distance search, the reservation wage must go down as the duration of the search does (Simpson 1992: 56, Schwarz 1976: 710).

Simpson extends the model by elaborating the spatial aspect. First, he considers what happens in the case of two different job offers, which are at varying distance from the current place of residence. Generally, actors will choose the one with the lowest cost associated with the job change (Simpson 1992: 71). Second, Simpson argues that skill level is positively related to the spatial radius of a job search – assuming the higher skill levels go along with a larger degree of general, non-enterprise-specific qualifications (comp. Schwarz 1976: 711). The main argument is that highly skilled workers have a restricted labor market if they do not want to lose (too many) of their general skills. The density of adequate job offers is lower. So,

[1] The motility-concept has been elaborated by Kaufmann and co-authors, for example, conceiving it as an asset or a kind of capital in Bourdieu's sense (Kaufman, Bergman & Joye 2004: 751).

[2] For an earlier study, see Linneman and Graves (1983).

they are forced to widen their search radius.[3] Another argument is that "formal search techniques" preferred by highly skilled actors support searching in larger areas (Simpson 1992: 73ff).

Generally, Simpson's approach suggests extending the human capital concept by a spatial dimension (van Ham 2002: 6). By defining residential mobility as an instrument of occupational achievement, Simpson provided a powerful model for the study of the relationship between job access and occupational achievement. Evidence from van Ham's studies supports this approach (2002: p.145). In general, van Ham's multi-level study deals with different aspects of a regional mismatch between the supply and demand of suitable jobs, on the one hand, and individual labor market behavior and workplace mobility, on the other hand – also a major target of Simpson's interest. Workplace mobility means that someone accepts a job at a great distance, which has no migration as a consequence but implies long distance commuting. Van Ham finds that job search behavior depends mainly on individual attributes that indicate chances on the labor market. Education is particularly important. There is only mixed evidence regarding local job market opportunities measured by the regional underemployment (van Ham 2002: 71). The regional level job access – operationalized as a function of the number of suitable jobs accessible within a certain commuting time span in a region (van Ham 2002: 22ff) – and individual level workplace mobility are both instrumental in avoiding underemployment and gaining occupational achievement.

However, van Ham also shows that local access to suitable employment stimulates job mobility whereas it reduces workplace mobility and helps to avoid high spatial mobility[4] costs (van Ham 2002: 98) – and the other way around. Inadequate job accessibility in the area of one's residence amplifies the relevance of the migration option. Finally, van Ham finds evidence for the fact that changing a job and changing the workplace supports a person's career advancement, but only in the long term. Job access at the beginning of a career is very important for the socio-economic status regardless of what workplace mobility is experienced (van Ham 2002: 131). Mulder and van Ham (2005) also focus on occupational achievement and migration history. In line with van Ham's previous results, they argue that there are positive long-term effects of migration on occupational achievement and add that this is more often the case the less people perform a return migration. Additional criteria are the distance of moves and the size of the destinations. In their analysis, Mulder and van Ham find positive short and long-term effects of migration on men's occupational achievement. Moving to larger cities is also supportive.

In an earlier paper, van Ham, Mulder and Hooimeijer (2001) addressed the interrelationship between spatial flexibility and workplace mobility although they do not include subjective measures of spatial flexibility in their empirical models. The authors show the relevance of

[3] As Simpson remarks, this expectation is contrary to what conventional job search theory proposes. However, it is supported by empirical evidence (Simpson 1992: 101).

[4] When we refer to spatial mobility, we mean not only residential mobility but also various kinds of circular mobility like commuting.

the spatial context in terms of labor market opportunities. Age has a negative and educational achievement has a positive effect on workplace mobility in the case of a job change. Interestingly, married men and particularly fathers are not less spatially mobile compared to single men. They explain this with the readiness of those men willing to commute over longer distances.

Commuting has been an issue analyzed in various studies and from different theoretical perspectives (e.g. Simpson 1980, Evers 1989, Kalter 1997, van Ommeren, Rietveld and Nijkamp 1997). Van Ommeren, Rietveld and Nijkamp (1999), who apply a search model to both new jobs and new residences, also focus on potential commuting costs. These might occur or change if the place of one's job or the place of one's residence changes. One or the other takes place if workers find a better match in terms of wage or "place utility" (Wolpert 1965) – net of the upcoming cost of changing jobs and residences: "Job and residential moving behavior and commuting behavior are due to a combination of chance – the arrival of an offer – and a decision-making process – the decision to search with a certain intensity and to accept or reject an offer" (van Ommeren, Rietveld and Nijkamp 1999: 234). The authors employ a bivariate duration model to estimate effects on rates of voluntary job changes and residential moves. They found no significant correlation between job and residence duration conditional on commuting costs and other explanatory variables in their sample. This corroborates their expectation that the commuting costs are related to both as inferred by search theory. In both cases, the commuting distance is positively related to the transition rate. No consideration can be found about what triggers searching for a job or another place of residence.

Mulder and van Ham (2005) also addressed the selectivity of migrants, as those who move are more likely to achieve more in their career due to unobserved characteristics like abilities or lower risk aversion. The interdependence between both outcomes because of unobserved personal aspects has also been addressed to interpret both directions of causality (e.g. Detang-Dessendre 1999, Detang-Dessendre and Mohlo 2002). Applying simultaneous equations for duration models of migration and the exit from unemployment, Detang-Dessendre (1999) postulates that migration impacts on the exit from unemployment but not the other way around. She argues that job-related mobility is closely associated with having found a job. Speculative migration (i.e. to search for a job once at the destination) is very unlikely. Similar results were found in a later study (Detang-Dessendre and Mohlo 2002), in which they specifically investigated the interval of time when the job started before or after migration. They found an independent effect on migration for those with higher levels of education and those who did not study in the town where their parents live, concluding that these individuals have "broader horizons" or a higher readiness to move.

To summarize: Previous studies showed strong links between job mobility and residential mobility, also addressing home-to-work mobility. Empirically, they yield important findings about structural variables (labor market) and individual attributes (e.g. education) and can

show the relevance of commuting costs. Job search models have been applied – more theoretically than empirically though. All studies use objective data and treat the decision processes as a black box. We go a step further by including subjective indicators and actual job search behavior in our analysis, enabling us to look a little closer at the pre-decisional processes of job mobility and residential mobility. In the next section, we introduce some conceptual tools and arguments to develop our main hypotheses, based on a life course approach.

3 Theoretical considerations and main hypotheses

From the life course perspective, transitions between biographical statuses (i.e. job mobility, migration, or family related events) and changing everyday life practices, as well as actions to maintain a specific situation (e.g. the quality of a job, quality of the living environment, a relationship, and parenting), can be understood as instrumental goals for generating subjective well-being (Ormel et al. 1999). The life course, then, can be perceived as a process of individual welfare production. This is embedded in a *multi-level structure* of social dynamics and individual development (Heinz et al. 2009): Cultural and institutional structures, as well as political and economic conditions, determine the constraints and opportunities for social action. The *social context and social networks*, namely the local environment, associations, neighborhoods, the family, and a partnership, influence the scope of contextual and situation-related actions of interdependent actors. Actors can employ different amounts of individual *resources* like time, income, education, physical abilities, cognitive and social competence, health, etc. in various fields of activities (*life domains*). Among those is employment, job mobility, and migration but also family life. People seek a satisfying allocation of resources over their fields of activities to optimize the possibilities for goal attainment. *Psychosocial dispositions* play a particular role here in framing the subjective options to act as personality traits, convictions, internalized values and norms, and situational attitudes. Personal experiences and learning contribute to the development of cognitive maps, which encompass individual scripts of life as subjective 'programs' the life course should follow.

Migration and a career are part of different but interrelated areas in which welfare production can be performed and well-being can be achieved. Generally, individuals decide whether and how to engage in one or the other field and try to attune the activities in different life domains in an appropriate way. In the case of major transitions in the life course, like migration or a job change, a stepwise decision process can be assumed (Heckhausen and Gollwitzer 1987). We propose a three-stage process of decision-making that builds on previously developed models in the case of migration, e.g. by Brown and Moore (1970), Speare et al. (1975), and Kalter (1997). We distinguish between (1) just considering migration as a promising tool to improve one's welfare-status, (2) the transition to planning a particular move, and (3)

realizing the move (Huinink and Kley 2008).[5] In our model, job mobility can be preceded by a job search stage, in that commuting costs are directly accounted. Furthermore, according to the "law of inertia," the time already spent in employment or unemployment has to be considered as a discounting factor.

The focus of the literature on explaining the effect of residential mobility on job mobility derives from the secondary role that has generally been assigned to migration and residential location in contrast to the job career. In fact, the life course literature on migration considers the former as a parallel and subordinated career to the later, because the outcomes of job mobility are achievements or actual representations of life-goals such as social status or economic security (Willekens 1987, Mulder 1993). Empirical research has applied event-history methods that enable analyzing the history and the current situation of each life course and their interdependence over time. In particular, it has been claimed that duration effects like age or the duration of residence are likely to be artifacts of the timing of family formation or job advancement, which are supposed to be the true triggers of residential mobility (Sandefur and Scott 1981, Courgeau 1985, Odland and Shumway 1993). However, the modeling of time inter-dependence between events and statuses is mainly informative of what precedes a status change, and it is not really a precise tool for determining whether migration is used as an instrument for e.g. career advancement. The focus of our study is to investigate the role of migration for job mobility, seeing the career as an important life-goal. In particular, we tackle the relevance of considering a move as the function of the readiness for moving and for job mobility, what other research calls a human capital investment, in contraposition of the selectivity of movers and actual migration as a mere reducing-cost instrument for job mobility.

Considering moving might be induced by unsatisfactory local conditions of living and work, Huinink and Kley (2008) show that the importance of living conditions varies with the life situation or life-course phase. Perceiving regional living conditions in relevant life domains as better elsewhere than at the place one lives triggers considering migration. Kley and Mulder (2010) found that beginning tertiary education and beginning a job are the two key events that trigger the process of migration decision-making in young adulthood, whereas completing school or completing tertiary education are among the most important reasons for considering migration. Entering the planning stage indicates that the decision in favor of changing residence has been made, whereas the decision is driven by the appearance of a concrete opportunity (Huinink and Kley 2008). Not considering but entering the planning stage is interrelated with expecting a job change. Then, the realization of migration is a cost reducing act if the new work place is a distance from the place where someone lives. Considering that migration opens up new options for improving the individual welfare production in many aspects, we focus here on the fact that it can be seen as a propensity to invest in the

[5] Kley (2010) refers to the Rubicon model (Heckhausen and Gollwitzer 1987). She follows a life-course framework on goal formation including a value-expectancy model, as prepared for migration theory mainly by de Jong and Fawcett (1981) and Kalter (1997). In this paper, we do not go into detail with this.

occupational career in addition to the human capital needed to achieve certain positions. It might improve human capital in the sense that it increases the propensity to be mobile if the expected career improvement is large enough. This is a more differentiated look at migration and its interrelationship with job mobility.

Job search activities are expected to take place early in the process of migration decision-making, when people consider moving. Individuals who consider changing their job and perceive migration as a possible option will have a greater search radius. Therefore, their chances of actually finding a new job outside the city boundaries are probably higher than among those who do not consider moving, because the latter are restricting their search to the local labor market. The offer and acceptance of a new job outside of the city boundaries is expected to trigger the decision in favor of migration and entering the planning stage, if the commuting cost exceeds the cost for moving. Making plans for moving should go hand in hand with restricting the search area for housing to a relatively close radius around the new place of work.

Job mobility and residential mobility can both be affected by other life aims or life events, e.g. connected with union formation and family (Kley 2010).[6] In this article, we will not go into detail here to ensure the model is not too complex. However, we try to take this into account by including not only socio-demographic characteristics like age and educational level but also indicators of the living arrangement of the respondents (partner, children) in our model.

Concluding the previous discussion, our core hypotheses are, first, that taking migration into consideration as an option works as a trigger for a job search and job mobility. In regard to the job search, we particularly expect a positive effect of considering a move with searching for a job at a greater distance. Secondly, considering migration should not only be correlated with workplace mobility but also with getting a job (or job mobility). A considerable part of the latter effect should be mediated by a job search, but not all of it. The readiness to move triggers the perception of better opportunities elsewhere, for instance with regard to one's career. Realizing a migration, then, is foremost a consequence of job mobility to avoid commuting and other costs. Thirdly, the correlation between considering moving, a job search, job mobility, and residential mobility should be partly explainable by latent individual dispositions, e.g. because individuals with lower risk aversion are more motivated to become mobile in general. We will test these hypotheses in the following analysis.

[6] When someone is living together with a partner he or she can also experience the case of tied moves, which can be detrimental to one's occupational opportunities (Bielby & Bielby 1992, Boyle et al. 2001, Taylor 2006). Family related moves are preceded by considerations that might trigger a job search. One has to assume that this job search underlies certain regional restrictions, however, given by the requirements that the new location should satisfy the family related needs. Moves motivated by family dynamics are primarily short distance moves and related to a change in the features of housing or environment (Kulu & Milewski 2007). Migration is also a tool to improve conditions of finding a partner or starting a family. Union and family formation itself probably tends to slow down migration rates in the short run. Therefore, it takes place either prior to family formation or after some period of time has elapsed since family formation occurred if changing the place of residence improves the terms of family life (comp. Clark & Davies Withers 2009).

4 Data, Variables, and Methods

4.1 Data

We use data from a three-wave panel study gathered between 2006 and 2008 in two German towns with respondents aged 18 to 50 years at the time (Kley 2009). All data was collected in Computer Assisted Telephone Interviews (CATI). Using the Random Digit Dialing method (Gabler and Häder 2002), stratified samples of people aged between 18 to 50 years living within the city boundaries of Magdeburg and Freiburg were created at the beginning of 2006.

Apart from different economic conditions due to their location in East- (Magdeburg) versus West-Germany (Freiburg), the two cities are quite similar. They both have about 200,000 inhabitants; both have universities and are not near another important city within reasonable commuting distance. Regarding economic conditions, there are some striking macro indicators of the different labor market conditions in both cities.[7] For instance, in 2007 the unemployment rate was seventeen percent in Magdeburg but only nine percent in Freiburg; the average annual income per employee was €21,000 in Magdeburg and €26,000 in Freiburg. In the years before the survey began, Magdeburg regularly lost population due to a negative migration balance whereas Freiburg gained new inhabitants due to migration. Previous research correspondingly revealed that significantly more Magdeburg residents perceived their career and income prospects to be better elsewhere than in their city of residence, compared to respondents living in Freiburg (Kley 2009). Therefore, the information whether a respondent lives in Magdeburg or in Freiburg is considered in the analysis.

For each of the cities, the sampling scheme envisaged strata consisting of 250 respondents who had lived for less than twelve months in the city (immigrants), 600 respondents who had lived there for at least twelve months and were not considering leaving, and 600 respondents who had lived there for at least twelve months and were considering leaving the city.[8] The 500 immigrants were not asked whether they were considering or planning to leave the city and they were not part of the panel study; therefore the first wave of the panel comprises a total sample of 2,410 interviewees. Among these, 2,288 persons agreed to take part in follow-up interviews. The response rates in the second and third waves, which took place about one and two years after the first interview, were between 69 and 75 percent. In the third and final wave, 1,180 respondents were reached. Since panel attrition is not randomly distributed across groups of respondents, we use longitudinal weights in the regression analysis. Whether the respondents considered or planned leaving the city was asked in each wave and additionally during short telephone contacts two times between the main waves of the survey. Retrospective life history information covering the time of the survey was gathered on a monthly basis from the participants of the third wave, including questions about the

[7] All figures were obtained from the internet platform http://www.insm-wiwo-staedteranking.de.

[8] To keep the sampling time short, the immigrant sub-sample was supplemented by official data. The response rates in sampling recruitment procedure in the two cities were 52 and 47 percent respectively. If more than one person aged between 18 and 50 years lived in the household, the person whose birthday was most recent was interviewed.

respondent's labor market status and income, that of his or her partner, and about household composition and moving behavior. To avoid left-censoring of the episodes, the starting date of each status held at the beginning of the panel study (i.e. employed, unemployed, partnership, cohabiting) was recorded. In this article, the data of 1,172 respondents from each of the two cities who took part in each wave and who provided complete information on the main variables is used.

4.2 Variables

As we outlined above, the effect of the readiness to move and to improve life conditions associated with considering moving can produce three independent outcomes: increase of job search activities, increase of chances of getting a job, and residential mobility to match workplace mobility. Therefore, we consider these three outcomes in our analysis.

First, as the panel study focused on the impact of local conditions on leaving the city of residence, we use the first record of out-migration from Magdeburg or Freiburg in the first follow-up or subsequent wave of the study as a measure of actual residential mobility. As the sample is restricted to those inhabitants who were residing in the town for at least one year, a probably biasing impact of short-time stayers should be minimized in our estimations. Due to similarities of both urban contexts, 90 percent of relocations from both towns are over 50 kilometers. Therefore, our migration measure is adequate to capture work-oriented moves, which include both internal and international moves. We are able to track the exact month of migration using the retrospective information about residential career gathered in the last wave of the study.

Second, job mobility has been operationalized as the transition to a new job conditional on ending previous employment (if the previous observed status is "employed"). The retrospective record allows us to track the month of job start and job end (if not censored) for all occupations the interviewees had within the observation window. We observe several outcomes per individual. Some of them occur before and some after an eventual residential move. We focus on the main activities full-time or part-time employment, including both wage and salary earners, and self-employed persons. Residual jobs of renters or persons who are enrolled in education are not part of this category. All information was gathered via self-assignment of the respondents.

Third, job search activities are also tracked from the retrospective record. All respondents were asked about the time spans of their job search within the observation window on a monthly basis. Additionally, the respondents reported the area of their search activities on a 5 point scale from local to over 100 kilometers. We decided to dichotomize the scale in search activities within a radius of up to 50 kilometers and a radius that trespasses the 50 kilometers threshold. The choice of the 50 kilometer threshold is in line with our distinction between local moves (within town) and migration (leaving town), which is also based on 50 kilometers.

Our main independent variable is considering to leave town, which together with planning to leave town, as a stage of migration decision making, usually precedes actual moves. In the first wave of the study, all respondents were asked whether they recently considered leaving the city to live somewhere else, and for those who answered this question affirmatively whether they have plans to do so within the following twelve months. After the first wave, those questions were posed again in two follow-up questionnaires (August 2006 and November 2006) as well as in two subsequent panel waves that took place about one year and two years after the initial interview if no residential move out of town was observed. The data on considering or planning migration shows enough within-individual variation to be used as a time-varying covariate, which switches every time a new status is reported.

Other measures will be used as covariates in the regression analysis. We apply duration analysis for migration as well as for job mobility. The duration of residence in town is measured in months since birth, if the respondent never moved from town; or arrival to town, if the respondent moved previously. The duration until a new job is started is measured as months since the last job change, in case of previous employment, or since age 18, in case of no previous employment. Among demographic characteristics, we account for the sex of the individual as well as a measure of individual age in months since the 18^{th} anniversary. As duration and age are allowed to vary over time on a monthly basis, we center age to its mean in order to reduce collinearity. Considerations to move can be confounded with other investments in human capital. In particular, people who attain higher education are better informed about opportunities at their place of living and elsewhere and are more prone to residential mobility (Mulder and van Ham 2005). A dummy indicator of higher educational attainment (i.e. 1- attained university degree; 0- lower educational attainment) works as a main proxy for human capital investment. We also include a measure of whether the individual is still enrolled in education (ref: not in education), which may capture the effect of investing in human capital before the attainment of a degree. The information to construct the educational variables as time-varying indicators, which change on a monthly basis, is extracted from the retrospective record. Similarly, we construct family related status indicators for partnership (ref: single) and whether the respondent has children (ref: childless).

The retrospective record also allows us to track the on-time job status (1- employed / 0- not employed), the job episode order since January 2006, as well as job-related characteristics for each episode. Job status indicates the need for a new job no matter where (for the unemployed). We distinguish between first job episodes and second or more in order to capture the effect of post-job mobility.

We include commuting behavior in our models to account for the effect of current commuting costs on both, job mobility and residential mobility. Commuting behavior was measured with regard to places of work that lied outside the boundaries of the actual city of residence. The respondents reported the time traveled one way in minutes and the frequency of traveling to

work. We constructed an indicator that reflects relatively high costs of commuting where the frequency must be more than once a week and over one hour of travel time.

As the expected effects of considerations to move on the three outcome variables can be mediated by a poor satisfaction with the place of residence, we use proxies that mediate such effects. First, we construct a measure of perceived opportunities in town. For that we use the individual importance of eight different items (partnership, income, hobbies, children, occupation, health, social contacts, and living standards) measured in a seven-point scale [1- not important at all, … , 7- very important] in the first wave. From each item, we subtracted the score the respondent assigned to a measure with the same metric reflecting the individual satisfaction with the possibilities in each of these areas of life in their home town. The resulting sum for each item is used in the analysis. Negative values of this score mean low perceived opportunities in town compared to personal ambitions whereas positive values mean good perceived opportunities for this person. Second, a measure of migration experience is considered in the analysis as it indicates predispositions for reconsidering and repeating moves (Detang-Dessendre 1999). The measure is constructed from a variable, which indicates the number of residential moves before arrival into town. We transformed the variable as follows: 1- have moved, 0- never moved from town. After controlling for these two measures, other typical predictors used in residential mobility research, like home-ownership, proved to only add redundant information to the model, and were therefore discarded from the analysis.

4.3 Methods

The data analysis is based on different multivariate methods that aim to find the strength of associations between intended and actual measures of behavior as well as to reveal the interactive nature between both processes by analyzing their time dependence. We apply the following methods of data analysis: the descriptive approach of Configural Frequency Analysis and a simultaneous equation model for job change, (first) migration (hazard), and job search (panel logit).

First, our descriptive analysis is based on contingency table analyses. It is called Configural Frequency Analysis – CFA – and was developed by the psychologists Kraut and Lienert (1973, comp. von Eye 2002, Beier 2005). The CFA is a multivariate approach to analyze contingency tables of two and more dimensions and identify syndromes of discrete attributes of individuals. It gives insight into the interactional structure between categorical variables X_j, j=1,…,q. It allows detecting interactions between these variables by identifying cells in the q-dimensional cross-tabulation of $X_1,\ldots,X_q$ which contain significantly more cases (“types”) or fewer cases (“anti-types”) than expected from the model of total independence. The short hand notation of this model may be $[X_1]\ [X_2]\ \ldots\ [X_q]$. Another type of model that we will apply compares the observed frequencies in the q-dimensional table of X_j, j=1,…,q with the expected frequencies estimated assuming the independence of the full (q-1)-dimensional table

of variables $X_1,\ldots,X_{q-1}$ from X_q (short hand notation: $[X_1,\ldots,X_{q-1}]$ $[X_q]$).[9] In this case, the CFA identifies first order interactions between the (q-1)-dimensional table of $X_1,\ldots,X_{q-1}$ and X_q. Because of multiple testing, the Holm-adjusted $\alpha^* < \alpha$ is applied in the single test to save α as level of significance for the complete test (Holm 1979). There are different kinds of tests proposed for CFA. We use an algorithm to calculate the exact conditional probability of a configuration frequency as proposed by Beier (2005).

To test our hypotheses, the second part of the analysis is based on regression methods for longitudinal data. We simultaneously estimate a mixture of hazard regression for discrete durations and panel models for competing outcomes in a similar way to other research (cp. Lillard and Panis 1996). We consider three outcomes for which we model the available measures introduced above: job mobility (i.e. getting a new job), residential mobility (i.e. moving beyond the city boundaries), and job search (i.e. searching within a radius of up to 50 km from the place of residence, searching within a radius of 50 km and more).

$$(1) \qquad \log_e\left(\frac{h_{ij}^{RM}}{1-h_{ij}^{RM}}\right) = \alpha' D_i + \beta' x_i + \beta' w_i + \delta_j^{RM}$$

$$(2) \qquad \log_e\left(\frac{h_{ij}^{JM}}{1-h_{ij}^{JM}}\right) = \alpha' D_i + \beta' x_i + \beta' w_i + \delta_j^{JM}$$

$$(3) \qquad \log_e\left(\frac{JS_{ij}^{r}}{JS_{ij}^{0}}\right) = \alpha + \beta' x_i + \beta' w_i + \delta_j^{r} \quad \text{, r=1 (<=50km), 2 (>50km)}$$

The first two outcomes are estimated as discrete time hazard models – equations 1 and 2 – (Allison 1982). They account for the effect of considering migration and the above described covariates as proportional increases or reductions of the baseline time to the event. We preferred a hazard model to other longitudinal analysis as it not only allows including time variant covariates but also predicting the duration and event effects. This is particularly interesting as we aim to analyze interdependencies between the two spheres of life, residential history and job history. These interdependencies can be captured using measures of duration or episode order of a career in one sphere of life as covariates predicting the outcome of the other career. We minimize common biases due to right-censoring and left-truncation as we are able to use complete information on both the entry and exit for each outcome and for all observations in the analysis (Guo 1993). Job search activity is modeled as a multinomial logit model in a longitudinal framework – equation 3. We estimate the individual odds of engaging in searching activities in a local or a wider search radius in time *t* on the odds of not engaging in any search activity in the same period. The interdependence of irrelevant alternatives for

[9] The CFA is one particular kind of log-linear analysis. We use the same short hand notation for our models as usually used for log-linear analyses.

multinomial logit applications is ruled out by allowing each outcome to have its own but correlated random term. Although the outcomes are modeled differently, statuses, durations, and periods of event-occurrence for all of them are measured in the same discrete interval of time (i.e. months). Therefore, there is a direct correspondence between the measures in all models, which allows the inclusion of each two outcomes as covariates in the third equation to shed light on interdependences.

The decision to estimate the three outcomes simultaneously is based on claims that current model specifications working out the effects of job mobility on residential mobility or the other way around are flawed because they do not account for unobserved heterogeneity, or unmeasured conditions that are supposed to affect both outcomes commonly (Courgeau 1985, Oddland and Shumway 1993, Mulder 1993, Van Ham 2002). That is to say, if there are some unobserved factors that influence the transition to a new residence, as well as to a new job, not only the observed covariates are likely to be over- or underestimated, but the estimated interdependence between both careers is going to be biased. It has been posed in the life course literature that possible origins of unobserved heterogeneity between careers lie in subjective dimensions such as value orientations, norms, and attitudes, but also in personal attributes and abilities (Billari and Philipov 2004). The topic of unobserved heterogeneity or selection (Borjas et al. 1991, Chiswick 1999) in the migration literature is focused on different levels of risk aversion (i.e. uncertainty about future outcomes) and abilities or perceived behavioral control (i.e. specific capabilities and beliefs that one is ready to perform an action or behavior) between those who are observed moving and staying. We suggest that unobserved factors are also confounding the effects of considerations to move. Among those who consider moving at a given time, the share of people who are less risk averse and who profit from a high level of abilities and perceived control might be greater.

The simultaneous estimation in a hazard regressions setting, outlined first by Lillard (1993), has become a widespread strategy to overcome bias associated with the interdependence of careers through common unobserved heterogeneity (e.g. Panis and Lillard 1996, Baizan et al. 2003, Aassve et al. 2004, Billari and Philipov 2004, Kulu 2008). Simultaneity means that the transition rate of one event at time t can influence the transition rate of another outcome within the same period. The strategy is based on a Maximum Likelihood estimation of the correlation between individual-specific random effects for each estimated outcome. Random effects are extracted from a joint multivariate normal distribution with as many draws as outcomes in the model. As the multivariate normal distribution does not allow for a closed form of the likelihood, we overcome such problem integrating-out the random terms from the likelihood by numerical integration. We use the software aML 2.0 (Lillard and Panis 2002), which contains a numerical integration algorithm based on Gauss-Hermite Quadrature. An individual specific random term for each outcome is added: residential mobility, job mobility, local job search, and wider scope job search; it is allowed for unrestricted correlations between all random terms (4).

$$(4) \qquad \begin{pmatrix} \delta^{RM} \\ \delta^{JM} \\ \delta^{r=1} \\ \delta^{r=2} \end{pmatrix} \sim N\left((0), \begin{pmatrix} \delta^{RM} & \rho_{\delta\delta} & \rho_{\delta\delta} & \rho_{\delta\delta} \\ \rho_{\delta\delta} & \delta^{JM} & \rho_{\delta\delta} & \rho_{\delta\delta} \\ \rho_{\delta\delta} & \rho_{\delta\delta} & \delta^{r=1} & \rho_{\delta\delta} \\ \rho_{\delta\delta} & \rho_{\delta\delta} & \rho_{\delta\delta} & \delta^{r=2} \end{pmatrix}\right)$$

The identification of unobserved heterogeneity is possible due to the observation of multiple episodes per individual in each hazard model and status variation in the job search model (Panis and Lillard 1996). However, in our model, we only observe residential mobility once and then the variance of the residual term can only be weakly identified. Here, Baizán et al. (2003) suggested fixing the residual term to a given level (i.e. not estimating it) but allowing for correlation with the estimated individual specific residuals of the other outcomes. Such a strategy has been tested in a Monte Carlo experiment by Aassve et al. (2004) and also applied by Billari and Philipov (2004) and Lapuerta et al. (2010). We will address the sensitivity of our model coefficients to different values for the fixed random effect.

5 Findings

5.1 A First Descriptive Look

To get an idea about the interaction structure between our core variables, we do some contingency table-analysis first using the information on considering or planning a move in the first wave (C/P), an onset of a job search during the panel period (JS), job mobility during the panel period (JM), and residential mobility after the first wave (Mig).

Table 1: Results of Two Dimensional Contingency Table Analysis (N=1274)

Variable 1	Variable 2	Chi^2, df
C/P	JS	103.01, 2
C/P	JM	78.41, 2
C/P	Mig	360.48, 2
JS	JM	185.42, 1
JS	Mig	55.25, 1
JM	Mig	67.06, 1

Analyzing all possible two-dimensional contingency tables, we find significant first order interactions for all possible pairs of variables (cf. Table 1). Considering or planning a move in the first wave is positively correlated with a job search, job mobility, and residential mobility. The latter three variables also interact with each other in the expected way. Moreover, if we

differentiate the job search between a search radius of up to 50 km and 50 km and more, we find a significant correlation between a job search and considering a move in both cases (results not displayed).

Next, we estimate a CFA including the first three variables and test observed frequencies against expected frequencies from the model of total independence for all included factors: [C/P] [JS] [JM]. The results are displayed in Table 2, which is a three-dimensional cross tabulation of our variables. Numbers in cells with types are printed bold and numbers in cells with anti-types are printed in italics.

We found three configurations with significantly more frequent observations than expected: "not considering/planning moving, no job search, and no job mobility;" "considering moving, job search, and job mobility;" and "planning moving, job search, and job mobility." This shows that there is a strong relation between these three indicators. Moreover, in connection with considering and planning, particularly both, job search and job mobility, occur especially frequently while the combination of considering and planning with either job search or job mobility is proved to be an anti-type. Having identified a strong second order interaction, we see that these three phenomena obviously are very closely connected to each other.

Table 2: CFA with Test of Model [C/P] [JS] [JM]: Cross Tabulation of observed and expected frequencies

Types printed in bold, anti-types printed in italics

JM	JS	Considering or Planning Moving (C/P)					
		Neither - Nor		Considering		Planning	
		Observed	Expected	Observed	Expected	Observed	Expected
No	No	**427**	**284.80**	160	168.39	*54*	*76.50*
No	Yes	*79*	*153.94*	75	91.02	*21*	*41.35*
Yes	No	*99*	*159.85*	*65*	*94.51*	*22*	*42.94*
Yes	Yes	80	86.40	**105**	**51.08**	**87**	**23.21**

In the final step, we additionally include the migration variable. Our model of reference, however, is not total interdependence but the assumption that the configurations shown in Table 2 are independent from whether a migration took place or not. The short hand notation is [C/S JS JM] [Mig]. We test whether the above identified types "considering moving, job search, and job mobility;" and "planning moving, job search, and job mobility" positively interact with migration or not. Our hypothesis is that at least in the first type it makes no difference whether in addition a migration takes place or not.

The results of this CFA-analysis are displayed in Table 3. As we expected, there is no or only a weak interaction between our typical configuration "considering moving, experiencing a job search, and experiencing job mobility" and migration. We found some but not a significant deviation of the observed from the expected frequencies in the configurations #15 and #16, which encompass the two possible combinations of the configuration "considering moving,

experiencing a job search, and experiencing job mobility" with migration (#16) and no migration (#15).[10] A closer look reveals that in the case of migration the number of observations is larger than the expected one (observed: 34; expected 22.75), and if a migration did not take place it is smaller (observe: 71; expected 82.25). If we estimate the Model of total independence ([C/S] [JS] [JM] [Mig]), however, both the configurations, "considering moving, experiencing a job search, experiencing job mobility, and migration" and "considering moving, experiencing a job search, experiencing job mobility, and no migration," are identified as types (results not displayed).

Table 3: CFA with Test of Model [C/S JS JM] [Mig]

Types printed in bold, anti-types printed in italics;
C/P: 0=no, 1=considering; 2=planning; JS, JM: 0=no, 1=yes

# of Configuration	C/P_JS_JM	Migration	Observed	Expected	Holm-adj
1	**0_0_0**	**no**	**403**	**334.49**	**0.000**
2	*0_0_0*	*yes*	*24*	*92.51*	*0.000*
3	0_0_1	no	86	77.55	0.308
4	0_0_1	yes	13	21.45	0.308
5	0_1_0	no	70	61.89	0.279
6	0_1_0	yes	9	17.11	0.279
7	0_1_1	no	68	62.67	0.965
8	0_1_1	yes	12	17.33	0.965
9	1_0_0	no	136	125.34	0.308
10	1_0_0	yes	24	34.66	0.308
11	1_0_1	no	52	50.92	1.000
12	1_0_1	yes	13	14.08	1.000
13	1_1_0	no	63	58.75	0.999
14	1_1_0	yes	12	16.25	0.999
15	1_1_1	no	71	82.25	0.125
16	1_1_1	yes	34	22.75	0.125
17	*2_0_0*	*no*	*18*	*42.30*	*0.000*
18	**2_0_0**	**yes**	**36**	**11.70**	**0.000**
19	*2_0_1*	*no*	*5*	*17.23*	*0.000*
20	**2_0_1**	**yes**	**17**	**4.77**	**0.000**
21	*2_1_0*	*no*	*7*	*16.45*	*0.000*
22	**2_1_0**	**yes**	**14**	**4.55**	**0.000**
23	*2_1_1*	*no*	*19*	*68.15*	*0.000*
24	**2_1_1**	**yes**	**68**	**18.85**	**0.000**

If a move is planned, migration typically takes place (configurations # 18, 20, 22, 24). In the planning status, it does not matter whether a job search and job mobility also occurred. We find types in any configuration where planning and a residential move come together. At the same time, configurations with planning and no migration, i.e. people plan and do not move, are all anti-types (configurations # 17, 19, 21, 23). So, if a move is planned because of

[10] In the model [Mig] [JS JM], the configuration Mig=1 and both JS and JS =1 are also a type (results not displayed). Only if both the job search and job mobility take place does a migration typically also occur.

whatever reason, the probability of realizing the move is very high (Kley 2009: 145-148, Kley 2010).

We just briefly mention that the configuration with not considering or planning, no job search, no job mobility is typically connected with no migration (configuration # 1). A migration in this case is significantly rarer than expected (configuration # 2).

These results enable a first detailed overview of the interplay between migration intentions, a job search, and job mobility – supporting our hypotheses in regard to the relevance of considering a move. However, these descriptive results do not disentangle the complex dynamics behind it. Motivated by the findings, we now estimate the simultaneous equation model, which allows us to have a closer look, and to control for other important variables as well as latent heterogeneity correlated with our dependent variables.

5.2 Simultaneous Equation Model

In the following report, the effects of covariates on each outcome (job search, job mobility, and residential mobility) are presented in different subsections, although the equations were estimated simultaneously. We begin with the models in that no analysis of unobserved heterogeneity was applied, assuming no interdependencies between processes due to unobserved characteristics of the individual that commonly affect all outcomes (-independent models-). Subsequently, we comment on coefficients when unobserved heterogeneity is treated allowing unrestricted correlation between individual-specific heterogeneity for each outcome (-interdependent models-).

Job search

The association of the predictors with a job search (Table 4) is somewhat distinct with regard to whether the radius is up to 50 km or spreads over a broader area. In the independent model (columns two and four in table 4), we observe a positive effect of considering moving on both types of search activities. This is apparent regardless of further stages of the migration process. Planning a move is positively associated with a job search over longer distances but insignificant for a local job search. Because it is also possible that the decision to move is not conditional on a job offer and that residential mobility has non-occupational reasons, the search for a job at the destination might be part of the planning stage. The actual move and the post-move residential episode have a negative effect on a job search in a broad area and no effect on a local job search. This finding supports the idea that job search activities more likely take place in advance of a move. Search activities are more probable in situations of unemployment, as expected. For employed people, it is more likely for them to engage in any job search activities when they are found in second or higher order job episodes compared to first episodes. Moreover, long-term commuting motivates any type of job search.

Table 4: Multinomial logit coefficients of job search activities (ref: no search)

	Job search (<=50km radius)		Job search (>50km radius)	
	Independent model	Interdependent model	Independent model	Interdependent model
Before Leaving town				
No intentions	ref	ref	ref	ref
Considerations	0.65 ***	-0.04	0.78 ***	0.34 **
Plans	0.04	0.15	1.55 ***	1.51 ***
After leaving town	-0.05	-0.34 ***	-1.12 ***	-1.74 ***
Unemployed	ref	ref	ref	ref
Employed (1st episode)	-1.10 ***	-1.18 ***	-0.64 ***	-1.06 ***
Employed (higher episode)	-0.40 ***	-2.03 ***	-0.52 ***	-2.53 ***
Commutes (over 1 hour)	0.51 ***	0.70 ***	0.70 ***	-1.48 ***
High education	-0.37 ***	0.72 ***	0.95 ***	1.76 ***
In education	-0.85 ***	0.18 *	-1.28 ***	-1.27 ***
Partnership	-0.30 ***	0.99 ***	-0.37 ***	0.10
Children	0.53 ***	2.45 ***	-0.52 ***	-3.02 ***
Previous mobility	-0.46 ***	-0.21	0.31 ***	2.80 ***
Perceived opportunities in town	-0.04 ***	-0.08 ***	-0.03 ***	-0.14 ***
City (Freiburg)	-0.03 **	1.07 ***	-0.70 ***	0.39
Age (over 35)	0.84 ***	-1.22 ***	0.06 ***	-1.23 ***
Sex (female)	0.51 ***	7.94 ***	-0.56 ***	-0.73 ***

Significance levels: *0.1, **0.05, ***0.01. Interdependent models include individual-specific random terms for each equation, which are allowed to be correlated among them and with the random terms of the residential mobility and job mobility equations.

We controlled for possible confounders of considerations to move in order to reinforce the role of considerations as readiness to move. As expected, investments in human capital (i.e. higher education and previous mobility experiences) are positively associated with a job search in a broader area and negatively associated with a local job search. The more opportunities are perceived in town, the less likely the individual will search for a job. The estimated effect for the city of residence points in the same direction, as individuals living in Freiburg, the more prosperous city, are less likely to engage in job search activities compared to those living in Magdeburg, the relatively deprived city.

Other characteristics are also differently associated with the probabilities of a local job search and a job search in a broader area. The findings shed more light on how job search activities are associated with both job mobility and residential mobility. Women are more likely to search locally and men are more likely to search over long distances. This effect can be explained by a lower spatial flexibility among women due to household duties; women are more likely to search for a job near home in order to balance paid and unpaid work (Hanson and Pratt 1991). Moreover, family moves are more often justified by the job of the husband rather than the wife's work (Cooke et al. 2009), and a wife is more likely to search locally after the move (Hanson and Pratt 1995). Furthermore, children increase the probability of searching for jobs locally and decrease the chance of conducting a job search in a broader area. The presence of children enhances the need for spatial proximity, which is in agreement

with the fact that children are negatively associated with residential mobility. Having a partnership has a negative effect on all types of job search activities indicating that transitions to employment precede those of partnership formation or that the disruption of a partnership is associated with changes in other spheres of one's life course career.

In the third and fifth columns of table 4, we allow job search activity to depend on unobserved individual features that also affect residential mobility and job mobility. One of the most substantial differences between the independent and the interdependent model is that considering a move loses significance for the local job search and that the effect is much reduced but still significant for long distance job search. This finding indicates an important selection effect with regard to considering moving: Individuals with a higher propensity for mobility are more likely to engage in search activities. Therefore, they are over-represented among those who consider moving in a given point in time. After residential mobility, we observe an even stronger decline of probabilities to engage in any type of search activity confirming that moves are not speculative as the job search activity is concentrated in the pre-movement stage. Moreover, the treatment of unobserved heterogeneity also raises the effect of human capital on job search activities. The independent model showed the selection of those who do not invest in a local job search. Now, higher education has a positive effect for all types of job searches but still maintains a special emphasis for a job search in a broader area. The negative effect of a previous migration experience on a local job search disappears, and the effect of being in a higher order job episode becomes more negative – compared to the still observed negative effect of the first job episode. Those who made job transitions are indeed selected towards higher mobility. Previous migration experience was found to have a considerably positive impact on a job search in a broader area, i.e. the selection can be based on learning from previous experiences for future mobility. Furthermore, long-term commuters turn out to be less likely to search for a new job in a broader area but more likely to search locally compared to the unemployed. In the new model, the effects of children and sex also become stronger indicating that women and parents are certainly more likely to look for local jobs. However, women are not much less likely than men to search for jobs over long distances. The coefficients of partnership and town of residence turn out to enhance the probability for a local job search whereas they become insignificant for a job search in a broader area. In general, those living in Magdeburg and singles are more likely to search in a wider radius. Lastly, the respondents living in Freiburg, the more affluent city, are more likely to search locally for a job, although the perceptions of job opportunities in town are considered in the model.

Job Mobility

The previous sub-section shed light on the association between the steps that lead to job mobility and residential mobility. Now, we turn to how these previous steps associate with job mobility (Table 5). The independent model shows that the association between residential mobility and job mobility is mediated by the stages before the migration event.

Considerations and plans to leave town positively add to job mobility, while having moved once does not particularly impact on a job change. As commented before, this result can be due to the fact that residential mobility is seldom speculative. Individuals want to be certain about a job opportunity before deciding to move. Planning a move, the stage where decisions are already taken, has a positive effect on a job change probably because a job opportunity elsewhere has been accepted and preparations for the move are taking place. If the job opportunity "disappeared" or a new opportunity in town appeared, the intended residential move will probably not take place. Controlling for the planning stage and for actual mobility considerations to move still increases the probability of job mobility. This means that those who consider moving in some given period of their life are more likely to find job opportunities, regardless of whether these opportunities are elsewhere or in their town of residence.

Table 5: Discrete time log-hazards of job mobility

	Independent model	Interdependent model
Before Leaving town		
No intentions	ref	ref
Considerations	0.26 **	0.26 *
Plans	0.44 ***	0.42 ***
After leaving town	-0.05	-0.07
Unemployed	ref	ref
Employed (1st episode)	-2.42 ***	-2.36 ***
Employed (higher episode)	-1.40 ***	-1.52 ***
Commutes (over 1 hour)	0.93 **	0.82 *
Search job	2.09 ***	2.01 ***
High education	0.25 *	0.36 **
In education	-0.46 ***	-0.38 ***
Partnership	0.07	0.08
Children	-0.10	-0.04
Previous mobility	-0.13	-0.09
Perceived opportunities in town	0.01	0.00
City (Freiburg)	-0.04	-0.01
Age	0.00 ***	0.00 ***
Sex (female)	-0.03	0.14

Significance levels: *0.1, **0.05, ***0.01. Job mobility refers to getting a full-time or part-time job conditional on ending previous employment (if applicable). Interdependent models include an individual specific random term that is allowed to be correlated with the random terms of the residential mobility and job search equations. Episode duration is also accounted for in the model.

The effect of considering moving is independent from a possible indirect effect of job searching as we controlled for the latter. Job search activity here refers to any spatial area and a time span up to three months before the new job was started. As expected, a job search largely explains the variation in job mobility. Those who are unemployed the month before are more likely to start a new job compared to those who are employed or enrolled in education. Long-term commuters are an exceptional group; they are significantly more likely to change jobs than all other status groups. This finding supports the idea that commuting motivates changing jobs due to high monetary, social, and other costs. Significant effects are further observed only for highly educated individuals; higher education is positively associated with a job change. Other characteristics like the context or the perceived opportunities do not add to the probability of job mobility presumably because part of their effect is already mediated by a job search. In particular, one would expect that engaging in a job search explains most of the variation of job mobility. However, not all job changes are the result of previous job searches. Jobs can simply be offered and the intensity of a job search in terms of methods, persistence, and duration may impact finding matching job opportunities. We suggest that the small but significant effect of considering moving can be understood as a form of investment in the occupational career, and that the readiness to move adds to the persistence of finding a good job net of traditional human capital. To confirm our thesis, we still have to rule the selection effects out.

Allowing the job mobility outcomes to be commonly affected by unobserved factors that impact on residential mobility and a job search (third column in Table 5), we find only slight changes from the previous results. As for the estimation of a job search, the level of significance of considerations to move on job mobility is reduced, too. This finding indicates that selection mechanisms are also present in this association. However, we still identified a weak but significant effect.

Residential Mobility

The residential mobility equation (Table 6) sheds light on the direct effect of job mobility and the impact of a job search and intentions to move on actual moves. As it was expected, planning a move is the most important predictor for actually realizing migration. In that stage, individuals already made a firm decision about their mobility. To have accepted a job opportunity elsewhere may impact on making such a decision. In fact, the previous job status, i.e. whether a person was unemployed, employed, or enrolled in education, and the situation after beginning a new job do not influence actual mobility. This finding indicates that job-related residential mobility exclusively takes place after the job has been found; in other words, residential mobility is an instrumental behavior to reduce the costs derived from workplace mobility. That no effect of job mobility is found when plans to move are controlled for in the model supports the interpretation that moves are not undertaken speculatively. This means that unemployed people rarely move if they are not certain about a given job opportunity in the location of their destination. However, searching for a job has an

independent effect on residential mobility. There might be a need for a job at the destination once the decision to move has been taken, because the intention to move may be initially triggered by other reasons. Considerations of moving also add to the likelihood of residential change despite the fact that planning migration and other aspects like job mobility, investment in human capital, or perceived local opportunities are accounted for in the model. These variables are likely to be predictors of considering and planning migration and are therefore only weakly associated with residential mobility once accounting for the pre-action stages of residential mobility. Allowing for interdependence of residential outcomes with unobserved heterogeneity present in job mobility and job search outcomes (third column of Table 6), we observe only very slight changes that do not change the interpretation compared to the independent model.

Table 6: Discrete time log-hazards of residential mobility

	Independent model	Interdependent model
No intentions	REF	REF
Considerations	1.66 ***	1.60 ***
Plans	3.90 ***	4.03 ***
Unemployed	REF	REF
Employed (1st episode)	-0.04	-0.15
Employed (higher episode)	0.32	0.35
Commutes (over 1 hour)	-0.32	-0.52
Search job	1.68 ***	1.69 ***
High education	0.27	0.57 **
In education	-0.18	-0.11
Partnership	0.03	0.01
Children	0.17	0.16
Previous mobility	-0.11	0.05
Perceived opportunities in town	0.02	0.02
City (Freiburg)	0.01	0.04
Age	0.00 **	-0.01 **
Sex (female)	-0.18	-0.16

Significance levels: *0.1, **0.05, ***0.01. Residential mobility refers to the first long-term move of more than 50 km. Interdependent models include an individual specific random term that is allowed to be correlated with the random terms of the job mobility and job search equations. The episode duration is also accounted for in the model.

Unobserved heterogeneity and sensitivity tests

Finally, we briefly comment on the unobserved heterogeneity components of each outcome and their interrelation (Table 7). Because we have chosen a fixed value for the variance of the

unobserved heterogeneity of the residential mobility equation, we also show a table displaying the changes in the estimates of our main independent variable (i.e. considerations to leave town) for all outcomes when allowing for variation in the value of the variance (Table 8).

Table 7: Unobserved heterogeneity: Variances and Correlations

	Variance	Correlations			
		Residential Mobility	Job Mobility	Job search (<=50km)	Job search (>50km)
Residential Mobility	1	1	-	-	-
Job Mobility	0.47 ***	0.34 **	1	-	-
Job search (<=50km)	8.98 ***	0.17 ***	0.56 ***	1	-
Job search (>50km)	6.68 ***	0.24 ***	0.56 ***	-0.11 ***	1

Significance levels: *0.1, **0.05, ***0.01.

The correlations among unobserved heterogeneities for the different outcomes, presented in Table 7, show expected results. The correlation between residential mobility and job mobility is positive, confirming that unobserved individual propensities exist, which select individuals towards mobility. A job search, no matter what the search radius, is also positively associated with residential changes. This also confirms that individuals prone to move are more prone to engage in search activities, too, whereas the scope of the search is mostly irrelevant. In accordance with what one would expect, the positive correlations between heterogeneity components of a job search and job mobility are very strong. And, we finally observe a negative association in the heterogeneity of searching for jobs locally and in a broader area. Although searching for jobs locally may be associated with mobility, as the previous coefficients showed, the decision to constrain job search activities to a small area may be attributed to unobserved components that restrict workplace mobility, for example dependent relatives.

Table 8: Sensitivity of the coefficient of considerations to move to unobserved heterogeneity of the residential mobility equation

Considerations coefficient in equation:	Value of the random term variance in the migration equation			
	0.5	1	1.5	2
Residential Mobility	1.62 ***	1.60 ***	1.59 ***	1.61 ***
Job Mobility	0.24 *	0.26 *	0.25 *	0.25 *
Job search (<=50km)	-0.08	-0.04	-0.04	-0.03
Job search (>50km)	0.38 ***	0.34 **	0.39 ***	0.40 ***

Significance levels: *0.1, **0.05, ***0.01.

In the models showed so far, the variance of the unobserved heterogeneity of the residential mobility equation was not estimated because there is no outcome repetition to identify it. Instead, we set the variance to the arbitrary value 1. Therefore, we ran the same specification of the model setting different fixed values in order to address the consistency of our results. As the effects of considering moving on all outcomes were relatively weak in the previous section, in Table 8, we particularly address variations in these coefficients from our sensitivity tests. It shows that the coefficients for considerations to move in all outcomes are robust to changes in the level of unobserved heterogeneity in the residential mobility equation. In general, the level of the coefficients was affected but their direction and significance levels did not change; therefore, our interpretations are not affected (results available upon request).

6 Conclusion

In our study, we examined the interdependence between residential mobility and job mobility from a decision-making perspective introducing pre-decisional dispositions in regard to residential mobility into the model. Doing this, we added considerably to the rich literature on this issue, which mainly assumes that job mobility drives residential mobility and the latter – in case of a long distance change of the workplace – is a cost reducing instrument to avoid commuting costs that are too high. That the readiness to move or considering a move as a realistic choice plays a crucial role for job mobility has been assumed by several authors, though. The term of "motility" introduced by Blau and Duncan is just one prominent example. However, the assumption has so far not been tested explicitly with adequate data.

On the basis of a three-stage model of migration decision making and behavior and including the job search as an intervening step in the job change process, we developed a model assessing the interdependence of readiness, intentions, and actual behavior in regard to residential and job mobility. Our core hypotheses were that (1) readiness to migrate favors a job search – particularly for jobs at a greater distance – and so indirectly positively affects job mobility; (2) readiness to move also has direct positive effects on job mobility because it can be interpreted as a special kind of disposition triggering the awareness of better opportunities for the individual welfare production including the improvement of the job whether at the place of residence or elsewhere; and (3) the correlation between considering moving, a job search, job mobility, and residential mobility can only partly be explained by latent individual dispositions, e.g. because individuals with a higher openness to new experiences are more motivated to be mobile, in general.

Testing our hypotheses with data from a German migration panel, we could confirm the role of considering residential mobility as a trigger of job mobility. Job mobility is positively associated with the readiness to move, in general, i.e. independent from the distance to the

new workplace. Additionally, considering moving favors job search activities. Controlling for latent heterogeneity, which covers intervening unobserved factors, does not change the coefficients of considering a move in the migration and job change equation but in the searching equations. Considering moving is only significantly positive in the case of searching beyond a radius of 50 km. These findings are robust against including observed intervening factors like age, sex, education, living arrangement, and relevant information regarding residential and job mobility. The coefficients of these variables are mainly reasonable and give additional interesting insights into the process analyzed.

Our findings show that the interdependence between residential mobility and job mobility is more complicated than assumed in many previous studies. It particularly shows that the readiness for migration motivates people to invest in more intensive scanning of the opportunities to improve their welfare production over the life course, among them job opportunities. It leads to a successive improvement of relevant information, which those who just focus on the place where they live do not accumulate or activate. In this sense, it can be interpreted as a special kind of human capital that can be invested to improve the returns of future activities - maybe not only in regard to employment but also in regard to other life domains.

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