Schmollers Jahrbuch 130 (2010), 143 – 168
Duncker & Humblot, Berlin

Are there Gender-Specific Preferences for Location Factors? A Grouped Conditional Logit-Model of Interregional Migration Flows in Germany

By Lutz Schneider and Alexander Kubis

Abstract

The article analyses the question of whether women and men differ in their tastes for location factors. The question is answered by quantifying the impact of location characteristics on interregional migration flows across Germany. The analysis is based on a grouped conditional logit approach. We augment the framework by controlling for violation of the independence of irrelevant alternatives assumption and for overdispersion. As a result we find no differences in terms of direction of impact; however, the regressions confirm gender differences, mostly in terms of intensity, regarding regional wage levels and the availability of educational institutions. Moreover, even after controlling for place attributes women seem to be more migratory than men.

Zusammenfassung

Die vorliegende Arbeit untersucht geschlechtsspezifische Unterschiede in der Wertschätzung regionaler Standortfaktoren. Die Standortpräferenzen werden auf Basis einer Analyse von interregionalen Wanderungsströmen innerhalb Deutschlands analysiert. Die Untersuchung basiert auf einem Grouped Conditional Logit-Ansatz, wobei die Probleme der Unabhängigkeit von irrelevanten Alternativen und der Überdispersion berücksichtigt werden. Im Ergebnis zeigt sich zunächst, dass bei Frauen und Männern dieselben regionalen Charakteristika als Pull- oder aber als Push-Faktoren wirken. Geschlechtsspezifische Unterschiede werden aber hinsichtlich Stärke des Einflusses der einzelnen Faktoren sichtbar, vor allem im Hinblick auf das regionale Lohnniveau und das Angebot an Bildungseinrichtungen. Darüber hinaus zeigt sich, dass Frauen auch nach Kontrolle von Standortfaktoren mobiler sind als Männer.

JEL Classification: C25, J61, J16, R23

Received: August 20, 2009
Accepted: March 2, 2010

1. Introduction

"Females are more migratory than males." This – the seventh – law of migration was noted by Ernest George Ravenstein at the beginning of statistical migration analysis (Ravenstein, 1885). Since then, migration research has widely neglected the gender dimension of spatial mobility – especially with respect to interregional migration. While the empirical literature dealing with international migration recently turned to gender issues (Dumont et al., 2007), only a few studies can be found that explicitly focus on gender-specific internal migration patterns and determinants. Likewise, the literature dealing with differences in preferences for local amenities or public goods – possibly causing different migration patterns – has neglected the gender dimension. Whereas the value of amenities is analyzed for individuals' attributes like home ownership (Bayoh et al., 2006), education (Whisler et al., 2008), socio-economic status (Gustavus / Brown, 1977), having children (Kim et al., 2005) or age – especially retirement – (Findlay / Rogerson, 1993; Jensen / Deller, 2007; Ferguson et al., 2007) differences in terms of gender are mostly ignored.[1]

This research gap is surprising since different amenity preferences causing unequal mobility rates usually translate into imbalances between regional in- and out-migration and, thus, into unequal regional net migration rates in terms of gender. In the long run regions mostly left by (or attracting) one sex will show substantially unbalanced sex ratios. Vice versa unbalanced mobility rates in terms of gender might support the hypothesis that women and men differ in their taste for location factors. Regarding younger age groups, unequal mobility patterns of men and women can be observed in many countries, in particular within transition regions. Generally, men seem to be more migratory than women in these countries – with the exception of Hungary (Paci et al., 2007). However, with respect to rural low growth areas a different pattern of strong female out-migration followed by remarkable disequilibria in terms of sex ratios can be found (Rees / Kupiszewski, 1999). Due to the regional dualism between Eastern and Western regions this trend is particularly prevalent in peripheral areas of East Germany (Mai, 2006; Höhn et al., 2008). Against this background our study tries to answer the following two questions:

1. After controlling for different regional characteristics, are women more migratory then men?
2. Which regional location factors are women and men attracted by, i.e., what are the gender-specific valuations of regional characteristics?

In answering these questions we focus on young adults aged 18 to 30 years. The main reason for restricting the analysis to this group is the distinction

[1] Exceptions are the recent analysis of Chen / Rosenthal (2008) and Niedomysl (2008). However, their focus on gender is rather ancillary. See section 2 for a discussion.

between household and individual migration. People between 18 to 30 years' old usually move as individuals, therefore, we do not expect a high share of *tied movers.* Tied movers within households are problematic since their migration decisions do not reveal *their* location preferences but the preferences of the persons – usually the partners – benefiting from migration. Unfortunately, our data set does not allow us to distinguish between household and individual migration, as such, restricting the age range was the best option to ensure the reliability of the empirical analysis. This restriction is far from being critical since this age group is responsible for the largest part of geographic mobility. Furthermore, we split the basic age group into two subgroups (18 – 25 and 25 – 30 years) to distinguish between education- and work-related migration.

The remainder of the paper is organized as follows: the next section (section two) outlines the recent empirical literature dealing with internal migration. Section three describes the econometric model, introduces the explanatory variables and characterizes the data set. The estimation results are presented in section four and a conclusion completes the paper.

2. Empirical Literature

The empirical literature analyzing the determinants of interregional migration can be divided into micro-level and aggregate approaches. The micro concepts focus on the migration decision or intention of individuals or households whereas the interregional migration flows, i.e., the outcome of individuals' behaviour, are explained in aggregate-level studies (Cushing / Poot, 2004). Due to the improved availability of survey data during the last decades the literature has increasingly turned to the micro concepts as it is on this level that the actual migration motives of individuals or households can be best captured (Cushing / Poot, 2004). However, these survey-based studies generally rely on a limited sample size, so the impact of location factors on a small-scale regional level cannot be examined. With respect to internal migration in Germany these micro studies usually focus only on the migration from East to West Germany (Burda, 1993; Burda et al., 1998; Hunt, 2006; Bruecker / Truebswetter, 2007). Solely the work of Hunt (2004) analyzes the determinants of regional migration on a smaller regional scale.

Due to our focus on the small-scale regional dimension of internal migration, this paper is more closely related to the empirical literature dealing with migration on the aggregate- than on the micro-level. The empirical literature analyzing the regional determinants of aggregate migration flows traditionally focuses on the role of regional labour market conditions (Greenwood, 1997). From a human capital perspective (Sjaastad, 1962; Harris / Todaro, 1970) the regional wage level as well as the unemployment rate are supposed to affect the regional migration balance. Many country studies confirm the positive ef-

fect of income levels on in-migration. In terms of regional unemployment rates the results are usually rather mixed.[2] Additionally, a third variable is usually implemented in this type of analysis – distance. It is referred to as a proxy for migration costs, thus, it should discourage migration, a supposition nearly almost supported by the data. Subsequently, in addition to labour market conditions and distance the effect of local amenities and local public goods attracted more awareness within the empirical migration literature (Graves / Linneman, 1979; Graves, 1980; Roback, 1982; Porell, 1982; Knapp / Graves 1989; Rappaport, 2004). Particularly in the North American context the questions has been asked whether people move for jobs or for quality of life reasons (Ferguson et al., 2007; Chen / Rosenthal, 2008). However, the empirical evidence of the strength of the local amenity effect is rather mixed. And, as already noted in the introduction, there is evidence that different groups show different valuations of local amenities (Jensen / Deller, 2007).

Regarding *gender-specific* migration patterns the literature is rare. Many of the micro studies implement a gender dummy and many studies calculate gender-specific mobility rates, however, most of these studies don't provide explanations of these gender mobility gaps or analysis of the gender-specific migration determinants. Remarkable exceptions are the articles of Détang-Dessendre / Molho (2000), Faggian et al. (2007) and, recently, Chen / Rosenthal (2008) as well as Niedomysl (2008). Détang-Dessendre / Molho investigate the migration patterns of young women in rural France after completing their education. They conclude that women might be more migratory than men since when a couple is formed the woman usually moves to be with the man. Mincer (1978) also states that women seem to be tied movers – a woman will tend to move to the region where her male partner can maximize his income. Faggian et al. (2007) explore the migration behaviour of university graduates in the UK. They also find young women to have higher mobility rates than young men but show the higher rates to be motivated by labour market factors rather than by partnership motives. Faggian et al. show that migration is used as a compensation mechanism for discrimination in the labour market. Chen / Rosenthal (2008) using US-Census data analyze household migration and try to assess the role of business- as well as quality of life-related characteristics for the migration decision. They find that female singles tend to rank business environment higher and consumer amenities lower than their male counterparts. In accordance with Faggian et al. (2007) one might conclude that women try to use migration as tool to improve their labour market performance to a greater extent than men. However, these differences in terms of gender are stronger for the subsample of the less educated whilst the differ-

[2] For the United States see Davies et al. (2001) as well as Cebula / Alexander (2006); for Europe see Huber (2004); Fidrmuc (2004) as well as Andrienko / Guriev (2004). Results for Germany are comparable to international studies (Burda / Hunt, 2001; Parikh / Van Leuvensteijn, 2003; Arntz, 2009).

ences for the educated are weaker. By performing a nationwide survey on residential preferences Niedomysl (2008) identifies different valuations of regional, area and neighbourhood attributes for certain Swedish population subgroups. With respect to gender he finds that women are more sensitive to cultural and shopping facilities, health care, natural amenities and social capital but also to regional work and career opportunities. However, since practically all listed place attributes are higher rated by females one might conclude that women and men differ regarding their comprehension of the rating scale causing systematic deviations of response behaviour.

Aside from these micro studies, no econometric analysis can be found dealing with the gender-specific determinants of internal migration on the aggregate level. Our approach of identifying gender-specific valuations of location factors and, thus, explaining the gender patterns of internal migration flows seems to be quite new and of vital interest. We expand the framework of Davies et al. (2001) by implementing the gender issue, controlling for violations of basic assumptions and adding explanatory variables. The last aspect is especially crucial since we do not solely focus on labour mobility but on other types of migration too.

3. Empirical Approach

3.1 The Model

Our empirical analysis is based on the micro-econometric approach of McFadden (1974) known as the Conditional Logit Model. Within the framework of a random utility model a probability function is derived which represents the likelihood of rational agents choosing a certain discrete alternative. As we will see, the concept is transferable to aggregate data of migration flows between regions, which substantially lowers the computational effort. Indeed, estimations for millions of individuals and a choice set consisting of 439 alternatives (regions) could hardly be done using anything other than this approach.[3] Our analysis focuses solely on regional characteristics as determinants of gender-specific migration. Since our data set does not contain information on individuals beyond age and gender, we ignore additional individual attributes. Our estimation assumes homogenous agents at the regional level, i.e., the groups – men as well as women – only differ with respect to their origin region.[4]

[3] Alternatively, we could estimate a count data model to overcome computational problems however, these models lack a sound micro-economic foundation and, thus, a straightforward interpretation of coefficients.

[4] The data driven assumption of homogenous agents beyond age and gender might be very strong, particularly with respect to different skill levels. However, the use of the

To describe the applied concept in more detail, we have to consider a one-stage decision of individual i between J alternatives. The decision is categorized as a one-stage process since choice set J also contains the source region. In other words, the individual simultaneously decides if he or she will move and where he or she will move to. Staying in the source region is not a qualitatively different phenomenon than moving to a different destination. Strictly speaking, the model assumes that the decision to stay can be seen as a decision to move from the source to the source region.

Utility U of (representative) individual i moving to region j is given by the equation:

$$U_{ij} = \beta' X_{ij} + \varepsilon_{ij} \quad i \in N, j \in J\,. \tag{1}$$

Vector X contains the attributes of destination j as well as the attributes of individual i. All individuals face the same choice set J. According to the rationality condition, an individual chooses the region that maximizes her utility. Thus, the probability of moving to region j is given by:

$$P(c_i = j) = P(U_{ij} > U_{ik}) \quad \forall k \neq j\,. \tag{2}$$

Given the statistical properties described in McFadden (1974) the probability of individual i moving to region j can be expressed as:

$$P(c_i = j) = p_{ij} = \frac{e^{\beta' x_j}}{\sum_{j=1}^{J} e^{\beta' x_l}}\,. \tag{3}$$

According to Guimarães and Lindrooth (2007), an indicator variable d_{ij} is defined that is set to one if individual i chooses option j or to zero otherwise. Then, the likelihood function of the migration decision is given by:

$$L = \prod_{i=1}^{N} \prod_{j=1}^{J} p_{ij}^{d_{ij}}\,. \tag{4}$$

In the case of grouped data, the likelihood can be concentrated if a group of individuals i can be treated equally and the choice set is the same for all the individuals. The so-called Grouped Conditional Logit (GCL) model is formulated as (Guimarães / Lindrooth, 2007):

most appropriate alternative data set with regional information, the regional file of the IAB employment sample (IABS), would restrict our analysis to persons within the labour force (Arntz, 2009). Thus, the huge share of education-oriented migration would be ignored. Moreover, first job-migrations are not observable in the data since the employment register only contains information on the individual's place of work. Therefore, the step out of education into employment cannot be examined.

$$L = \prod_{g=1}^{G} \prod_{j=1}^{J} p_{gj}^{n_{gj}} . \tag{5}$$

The exponent n_{gj} represents the number of individuals belonging to group g choosing region j. The probability p of moving to region j depends solely on the destination attributes of region j and the group characteristics of group g. The individual heterogeneity of the members of a group are neglected in the model. The utility of individual i in group g deciding on destination is given by:

$$U_{igj} = \beta' X_{gj} + v_{igj} . \tag{6}$$

In our analysis we assign individuals to groups on the basis of their origin region – we have 439 groups and 439 potential choices. Thus, the data set consists of a 439 × 439 matrix. The log-likelihood function is:

$$\ln L = \sum_{g=1}^{439} \sum_{j=1}^{439} n_{gj} \ln \frac{e^{\beta' x_{gj}}}{\sum_{j=1}^{439} e^{\beta' x_{gj}}} . \tag{7}$$

The factor n_{gj} refers to the number of individuals moving from region g to region j. Since the groups are generated according to their origin region, the choice probabilities are solely determined by the regional attributes captured by the vector X. Coefficient β can be interpreted as the implicit price of the corresponding attribute X (Maddala, 1983).

How is the gender dimension treated in the model? The simplest option is to realize two separate estimations for women and men. The drawback of this procedure is its failure to perform statistically-proven tests of gender-specific differences. Therefore, we apply a dummy approach. The male and female datasets are combined. The dummy variable indicates whether the observation stems from the male or female part of the data set (zero = male, one = female). In the male part of the dataset the number of male migrants between regions represents the left-hand side variable; in the female part the number of female migrants is used. The explanatory variables are duplicated – the duplicated part is multiplied with the gender dummy and contains the female values of a variable. Then, the estimated coefficients firstly show the pure male effect of a certain variable and, secondly, the female difference. The female effect itself can be calculated by the sum of the male and the difference coefficient of a variable. So, a special test of gender-specific differences is not necessary since the significance level of the difference coefficient itself provides this information.

3.2. Non-Migrants, Overdispersion and IIA

Despite its sound microeconomic foundation the GCL model has some shortcomings: i) in the GCL approach the non-moving option is regarded as equal to the alternative of moving to any of the 438 remaining destinations; ii) due to unobserved group-specific heterogeneity, a correlation between decisions of group members might deflate the variance-covariance matrix and inflate z-statistics – a problem referred to as overdispersion (Guimarães / Lindrooth, 2007). The model implies the independence of irrelevant alternatives (IIA), i.e., the relative choice probabilities between two options are independent of the existence and characteristics of other options (Maddala, 1983; Dahlberg / Ekloef, 2003).

As Davies et al. (2001) argue, there might exist unobserved (fixed) costs of moving leading to a qualitative difference between migration and non-migration. As we estimate a one-stage model this difference could bias the results. We follow Davies et al. who implement a dummy variable that indicates if the source and destination regions are identical. This dummy variable captures the effect of non-moving. A large and statistically high significant parameter is expected.

To avoid overdispersion caused by unobserved group-specific effects, Guimarães and Lindrooth (2007) propose the implementation of a random variable capturing the ignored group heterogeneity. The modified utility equation (6) is:

$$U_{igj} = \beta' X_{gj} + \mu_{gj} + v_{igj} \,. \tag{8}$$

The random effect μ is supposed to be gamma-distributed with parameters $(\delta_g^{-1}\,\lambda_{gj}, \delta_g^{-1}\,\lambda_{gj})$ where δ_g represents a group-specific parameter. Guimarães / Lindrooth (2007) show that choice probabilities p derived from (8) follow a Dirichlet distribution. The model can be estimated using a ML-technique; the Likelihood function follows a Dirichlet-Multinomial multivariate distribution. Guimarães and Lindrooth propose different methods to parameterize the random variable. We chose the option to treat δ_g as constant.[5]

The IIA assumption of the GCL model is rather idealistic in an interregional migration context where many destinations are indistinguishable from the individual's perspective (Cushing / Cushing, 2007). The weakness can be remedied at least partly if the lack of IIA is seen as an omitted variable problem (Guimarães et al., 2004). Then, the inclusion of an additional variable $\tilde{a}$ measuring the unobserved heterogeneity of each of the destination regions avoids estimation biases. Unfortunately, the implementation of a fixed effects vari-

[5] The alternative procedure of determining the coefficient of correlation within the groups was also performed. The estimation results do not change.

able measuring the unobserved heterogeneity of 439 destination regions is technically unfeasible. Instead of using dummies for every district, we construct dummy variables which aggregate regions showing great similarities in terms of migration flows. Firstly, we distinguish between East and West districts and, secondly, between seven types representing the regional planning category of a district.[6] Then, the IIA property is implied only between regions within these categories and not between the categories – a rather realistic implication.

3.3 Explanatory Variables

The log likelihood function has to be maximized with respect to the parameter vector $\hat{a}$ which measures the implicit prices of the choice-specific attributes $x \in X$. We model regional attributes as origin-destination relationships. Therefore, the estimation does not include separate variables for origin and destination but only ratios or differences between them. With respect to these origin-destination-specific characteristics we distinguish between four groups of factors that we believe drive the migration behaviour of young adults: i) labour market, ii) education, iii) family and iv) amenities.

i) Labour market. As shown in the literature review, the labour market conditions are part of nearly all studies analyzing the determinants of interregional migration flows. We follow these approaches and implement the regional *average wage levels* – computed as gross wages per employee – and the regional *unemployment rates* in our estimation. Whereas unemployment rates can be disaggregated in terms of gender, we are not able to calculate gender-specific regional wage levels. However, it can be presumed that these gender wage differences only vary slightly between regions. In order to cover not only the nominal income differences, the implementation of a regional price level is necessary. Since appropriate regional price level data do not exist we include the building *land prices.* This variable is indicative, to a degree, of regional rents, which seem to be the main source for purchasing power disparities.

ii) Education. Different age groups seem to have specific needs as well as specific ties driving residential mobility. Since our analysis focuses on the age group of 18 – 30 years, educational migration motives should be of particular relevance. Young adults of about 20 years usually start their tertiary education at this age and might choose a location depending on its educational institutions. In our analysis, the migration effects of third level education as well as of vocational training are considered. The first aspect is reflected by gender-

[6] These types are taken from a classification of the Federal Office for Building and Regional Planning primarily distinguishing between agglomerations, urbanized areas and peripheral regions.

specific *college availability,* defined as the share of students per high school graduates. It is a measure of the regional capacity to absorb high school graduates into tertiary institutions (put another way, the regional academic opportunities). The effects of vocational training are investigated by including *vocational training* availability, which represents the number of vacancies and mediated positions per person seeking for vocational training. Beyond these considerations, a further life-cycle migration motive is related to the transition from education to employment. This transition typically happens up until the age of 30. Spatial mobility seems to be a crucial requirement to finding adequate jobs for university graduates whereas people with vocational training usually stay with their firms after completing their education. Thus, the regional labour market capacity to absorb university graduates is implemented as an explanatory variable. The capacity is measured as the *employment gap,* i.e., a gender-specific ratio of students per highly qualified employees.

iii) Family. Despite our focus on young adults, family issues, particularly child-care, might already be of some relevance. We presume two exemplary concepts: i) either a reconciliation of work and family is aimed at, i.e. both partners have a job and externalize significant parts of child-care; or ii) tasks are split into employment and household production, which means that the sole earner has to generate the necessary monetary resources.[7] Egalitarian families should be attracted by regions with appropriate child-care facilities. Traditional families have to maximize the income of the sole earner but are not affected by external child-care. In addition, a mixed family model would be attracted to regions offering a high number of part-time jobs. To take these aspects into account we implement: i) the number of *child-care* places per child under six years' old; and ii) the share of gender-specific *part-time jobs.*

iv) Amenities. Due to their impact on life quality, the utility of residential choice is also affected by natural and cultural amenities. The cultural element is considered via the number of *concert halls.* Even if concerts are only a small part of cultural life his measure seems to be an appropriate proxy for the entire culture of a region. The extent of *park areas* as well as *near-nature areas* – defined in square kilometres per inhabitant – measures the natural component of amenities.

In addition to the variables belonging to the four basic categories we employ two structural variables usually implemented in migration estimations: *dis-*

[7] Juerges (2006) shows the relevance of the distinction between sole earner ("traditional") and double income ("egalitarian") couples for their migrations decisions. Furthermore, Zaiceva (2009) provides evidence that women reduce their workload after migration but do not give up work entirely in the case of migration in an East-West-direction. In a recent study, Nisic (2009) shows that locational contexts matter for the labour market outcome of mobile-coupled women. Moving to destinations with large labour markets increases their probability of benefiting from even a "tied move".

tance and *gender-specific population ratio* between source and destination region. Distance acts as a proxy for migration costs. The variable is defined as the time in minutes required when going by car from the administrative centre of the source region to the administrative centre of the destination district. Since the impact of distance on migration is usually found to be non-linear a second-order term is implemented. Because there might exist a structural break between short-distance and long-distance moves – short-distance moves might only affect residence and not jobs – we estimate a separate regression where only long-distance moves are considered as migration. The limit between short- and long-distance moves is set to 75 minutes' travelling time since duration below 75 minutes is officially regarded as a reasonable daily commuting distance (Federal Ministry of Justice, 2009). The population variable measures the potential stock of in- and out-migrants. A more populous region is supposed to attract more young adults, and more young adults should leave such a region. The effect on net migration is ambiguous.

Since different age related life course events – e.g. beginning a tertiary education, founding a family or starting a job – might affect preferences for certain place attributes we split our basic sample of the 18 to 30 years old into two subsamples (18 to 25 and 25 to 30 years) and repeat the performed regression for both groups. Since younger persons should be more attached to the educational phase while members of the higher age group should be more career- and family oriented we would expect a different valuation of the corresponding place characteristics.

3.4 Data

In our analysis, we use the migration data set for 2005 stemming from the migration statistics of the Federal Statistical Office. The data are based on the official register of residence (*Melderegister der Einwohnermeldeämter*) and comprise all residential movements across district borders within Germany. Within the dataset, a movement is classified as migration if the *main* residence (*Hauptwohnsitz*) is changed from one NUTS-3 region to another during the year 2005. If the main residence remains unchanged and only secondary residences (*Nebenwohnsitz*) are involved the movement is categorized as non-migration.[8] According to the registration laws of the German federal states (*Meldegesetze der Länder*) everyone has to register her place of residence immediately after the movement – typically within one or two weeks – regardless if it is intended to be temporary or permanent. The data set enables us to analyze migration flows at the small-scale level of NUTS-3 regions. Since

[8] Since the records of the migration statistics consist of movements and not of migrants one person is counted more than once if she changes the first residence at least twice within one year.

the migration data are laid down as a 439 origin-destination matrix, we know where the individuals come from and where they go. The data differentiates between the migration flows of men and women as well as certain age groups. Since our analysis focuses on young adults, we explore migration flow data for individuals aged from 18 to 30 years. A drawback of the official register of residence is its lack of information about crucial individual attributes, e.g., the educational status of movers cannot be observed. The main focus of our analysis, therefore, is on regional characteristics. For this study, we have to ignore any impacts of individual attributes as well as interactions between the individual and the regional level beyond age and gender.

To avoid endogeneity bias, the explanatory variables in general refer to the year 2004. They were taken from different sources. Regional wage level, land price educational variables, child-care availability, variables representing natural amenities and the population measures were provided by the Federal Statistical Office and the statistical Offices of the Länder (*Statistische Ämter des Bundes und der Länder)*. The unemployment rates were sourced from the labour market statistics of the German Federal Employment Office (*Bundesagentur für Arbeit*). Information on gender-specific part-time- and high-qualification jobs within the regions came from the comprehensive employment statistics also issued by the German Federal Employment Office. These data contain records for every employee registered on the National Security System, i.e., for approximately 2 / 3 of the total employed.[9] Every record includes information on the employee's job location, gender, employment status (part-time / full-time) and qualification. So, these data provide a very detailed description of regional labour markets. The variable representing the number of concert halls within a region was compiled by a comprehensive internet investigation.[10] The distance variable measuring the travelling time between two regions was computed in ArcGIS on the basis of a detailed German road map. Table 1 presents a short illustration of all the explanatory variables. Note that the summary statistics refer to the values of the NUTS-3 regions themselves while the estimation uses the computed ratios or differences between the source and destination regions.

[9] Self-employed workers, civil servants and people working in freelance professions are not covered by the data. However, there should be a high correlation between the characteristics of the workers included and those not included in the data set. So our analysis should be largely unaffected by this problem.

[10] The compilation is based on records listed on http: // www.opernwelt.de.

Table 1

Description of explanatory variables

Variable	Description	Data Source	Mean	
Gender specific variables			♀	♂
Unemployment-rate ♀♂	Gender-specific unemployment rate (in percent)	Bundesagentur für Arbeit – Arbeitsmarktstatistik	13.53	13.14
College availability ♀♂	Gender-specific number of students per high school graduate	Statistische Ämter des Bundes und der Länder	3.44	1.32
Employment gap ♀♂	Gender-specific number of students per high qualification job[b)]	Statistische Ämter des Bundes und der Länder / Bundesagentur für Arbeit – Beschäftigtenstatistik	0.23	0.33
Part-time jobs ♀♂	Gender-specific number of high qualification part-time jobs per high qualification job[b)]	Bundesagentur für Arbeit – Beschäftigtenstatistik	0.01	0.05
Population ♀♂	Gender-specific population aged 18 to 30 years (in 1000)	Statistische Ämter des Bundes und der Länder	13.46	13.05
Gender unspecific variables			*All individuals*	
Average wage level	Average regional gross wage per employee and year (in €)	Statistische Ämter des Bundes und der Länder	24.61	
Land price	Price of building land (€ / m^2)	Statistische Ämter des Bundes und der Länder	94.08	
Vocational training	Number of per persons looking for training per offered training positions (in percent)	Bundesamt für Bauwesen und Raumordnung / Berufsbildungsstatistik des Bundesinstituts für Berufsbildung	94.98	
Child-care	Number of kindergarten places per child under six years' old (in percent)	Statistische Ämter des Bundes und der Länder	73.1	
Near-nature area	Near-nature area (m^2 per inhabitant)	Statistische Ämter des Bundes und der Länder	51.73	
Park area	Recreation area (m^2 per inhabitant)	Statistische Ämter des Bundes und der Länder	43.81	
Concert halls	Number of concert halls and opera venues	Own compilation	0.24	
Distance	Distance between centres of two regions required when travelling by car (in minutes)	Own calculation	261.3	

Note: a) In the estimations, the variables are implemented as origin-destination relationships. The table values refer to the values of the regions themselves, not to the relationship between the regions. Otherwise, an adequate interpretation would be difficult; b) High qualification jobs are defined as jobs filled by highly qualified employees, i.e., employees with academic degrees.

Source: Own calculation.

4. Econometric Analysis

4.1 Basic Results

In answering the first research question concerning the unequal mobility rates in terms of gender one might firstly inspect the regional averages of gender-specific out-migration rates (table 2). Women aged 18 to 30 years seem to be more migratory than men no matter what type of migration (entire or long-distance) is considered. However, the gender difference is larger within the younger age group (18 to 25 years) whereas for the older age group (25 to 30 years) no substantial difference can be found.[11] To check if these differences are attributable to different preferences for regional location attributes we turn to the estimation of the econometric model presented in the previous chapter.

Table 2

Regional averages of gender-specific out-migration rates

Age-group	Men	Women
Entire migration		
18 – 30 years	8.63%	10.56%
18 – 25 years	7.80%	10.95%
25 – 30 years	9.80%	9.88%
Long-distance migration		
18 – 30 years	4.05%	4.77%
18 – 25 years	3.76%	5.04%
25 – 30 years	4.44%	4.33%

Source: Own calculation.

Tables 3 and 4 present the estimation results of the GCL method controlling for overdispersion.[12] Table 3 contains the results for all of the migrational movements of the 18 – 30 year olds between German districts, whereas in table 4, the short-distance migration (below 75 minutes' driving time) is filtered out.

[11] Possibly, migrants at higher ages move to a larger extent as couples. In that case gender-specific mobility differences should diminish with age. Therefore, it is a helpful robustness check to estimate the specified econometric model separately for both age groups. See section 4.2.

[12] If the GCL Model is estimated without consideration of overdispersion, the standard errors are much smaller and all the coefficients are highly significant. Since the confidence intervals become narrower, nearly all the factors exhibit gender-specific differences – for the most part a purely statistical result. See Appendix tables 1 and 2 for the corresponding estimation output.

In table 3 the estimations are not in favour of gender-specific impacts of location factors in terms of sign. Focusing on the labour market, high wages and low unemployment attract young men *and* young women. Also, the price level variable shows the same sign for males and females – but in a surprising direction: young adults move to regions with high land prices. Since individuals care about real wages, this unexpected sign is consistent with utility maximization when price levels are high where wages are high. Then, higher price levels are compensated by higher nominal wages and consequently, individuals move to high price level regions. Regarding the educational motives the expected signs predominate. Young adults are attracted by adequate facilities for college education and vocational training. Likewise, the absorption capacity of the regional labour markets for university graduates stimulates in-migration. An unpredicted effect is, however, evident in the family field – a high number of child-care facilities has a negative impact on net migration. One reason for this outcome might be the age group we focus on – child-care considerations are not of crucial interest to this group. If there is a substantial negative correlation between child-care facilities on the one hand and labour market conditions as well as educational institutions on the other hand then a negative sign will result from the analysis.[13] With respect to amenities the estimated coefficients confirm the importance of cultural infrastructure – both for men and women. In addition, recreation areas seem to operate as a pull factor.

The impact of distance on migration behaviour is u-shaped for both sexes. This finding is firstly driven by the large propensity of moving to adjacent regions. Secondly, the further away people move the less the binding impact of proximity becomes.[14] Moreover, the estimations are in favour of an obvious agglomeration effect. Young adults – men as well as women – are attracted by more populous regions. And, not surprisingly, the option not to migrate exhibits an exceptionally high probability.

From a regional policy perspective it might be interesting if preferences change when only long-distance movers are considered. Table 4 displays the estimation results where only relocation of at least 75 minutes' travelling distance is counted as migration. This filters out any effects caused by suburbanization trends or by arbitrarily-fixed administrative borders. Additionally, the

[13] The correlation coefficient between regional wage levels and child-care facilities is –0.54, so, the conjecture might be true. However, the correlation coefficients within the Eastern part and the Western part of the migration relationships are positive. Therefore, an East-West effect might cause this negative relationship. In the regressions, this effect is controlled for by the destination East-West dummy variable implemented to guarantee the IIA assumption.

[14] Surprisingly, after a distance of 370 minutes the impact turns to a positive direction. However, only 5% of migrants and 0.4% of the total sample move over 370 minutes away from their original abodes. So, the right tail of the distribution may be not well identified.

fact that migrants seem to be less bound by social networks and private loyalties when migration decisions have to be made solely between distant regions comes into play.

Table 3

GCL-Regression with Random Effects: Entire migration

	Male Effect		Female Difference		#
	Coefficient	Stand. Err.	Coefficient	Stand. Err.	
Labour market					
Average wage level	0.3674*	0.0209	0.0953*	0.0175	•
Unemployment rate ♀♂	–0.0125*	0.0008	–0.0023	0.0011	
Land price	0.0171*	0.0007	–0.0019	0.0010	
Education					
College availability ♀♂	0.0184*	0.0008	0.0374*	0.0021	•
Vocational training	0.0048*	0.0006	–0.0012	0.0008	
Employment gap ♀♂	–0.1552*	0.0102	0.0170	0.0127	
Family					
Part-time jobs ♀♂	1.7992*	0.3747	–1.1316*	0.4094	•
Child-care	–0.0024*	0.0002	–0.0003	0.0003	
Amenities					
Near-nature area	0.0000	0.0000	0.0000	0.0000	
Park area	0.0005*	0.0001	0.0003	0.0001	
Concert halls	0.1793*	0.0072	–0.0008	0.0098	
Structural characteristics					
Distance	–0.0199*	0.0001	–0.0004*	0.0001	•
Distance^2	0.0000*	0.0000	0.0000	0.0000	
Population ♀♂	0.0466*	0.0006	–0.0054*	0.0007	•
Stay Dummy	5.9443*	0.0106	–0.2638*	0.0143	•
Regions	192,721 (439 × 439)				
Individuals	11,634,142				
Log Likelihood	–568,746.9*				

Note: * indicates a 1% significance level; # indicates a 5% significance level; • indicates gender-specific differences to a 5% significance level. The gender symbols indicate that a variable contains gender-specific values.

Source: Own calculation.

Table 4

GCL-Regression with Random Effects: Long-distance migration

	Male Effect		Female Difference		#
	Coefficient	Stand. Err.	Coefficient	Stand. Err.	
Labour market					
Average wage level	0.2442*	0.0233	0.1513*	0.0216	•
Unemployment rate ♀♂	–0.0120*	0.0008	–0.0007	0.0011	
Land price	0.0193*	0.0006	–0.0018	0.0009	
Education					
College availability ♀♂	0.0204*	0.0009	0.0498*	0.0023	•
Vocational training	0.0056*	0.0006	–0.0008	0.0008	
Employment gap ♀♂	–0.2113*	0.0113	0.0035	0.0142	
Family					
Part-time jobs ♀♂	1.5964*	0.4001	–1.3331*	0.4372	•
Child-care	–0.0006*	0.0002	–0.0002	0.0003	
Amenities					
Near-nature area	0.0001	0.0000	0.0000	0.0000	
Park area	0.0003	0.0001	0.0002	0.0001	
Concert halls	0.2682*	0.0077	0.0036	0.0103	
Structural characteristics					
Distance	–0.0132*	0.0001	–0.0003	0.0002	
Distance^2	0.0000*	0.0000	0.0000	0.0000	
Population ♀♂	0.0455*	0.0005	–0.0054*	0.0007	•
Stay Dummy	7.3240*	0.0158	–0.2040*	0.0208	•
Regions	192,721 (439 × 439)				
Individuals	11,634,142				
Log Likelihood	–456,942.1				

Note: * indicates a 1% significance level; • indicates gender-specific differences to a 5% significance level. The gender symbols indicate that a variable contains gender-specific values.

*Sourc*e: Own calculation.

However, the findings actually remain unchanged, with only a few exceptions. Park areas are no longer a significant pull factor when long-distance migration is considered. This result seems quite obvious since suburbanisation movements have been filtered out. Additionally, the negative effect of distance becomes smaller and the non-migration option is more attractive when the

choice set is restricted to distant regions. Regarding gender effects only one variation can be noticed. Women seem to have a strong preference for short-distance moves – if these moves are filtered out then the gender bias regarding the distance variable disappears.

4.2 Stability of Results – Splitting the Age Group

Since migration is frequently motivated by life course events particularly at younger ages one might question if individuals within the broad age group of 18 to 30 years are actually homogenous. Therefore the sample is split into a younger (18 to 25 years) and an older (25 to 30 years) part. We hypothesize that educational factors are more relevant for the younger group while the older individuals might be stronger involved in labour market- and family-related issues. Table 5 and 6 display the results for the entire and the long-distance migration respectively.

With respect to entire as well as long-distance migration only a few differences of the effect of place characteristics on migration between younger and older individuals can be noted. The most remarkable discrepancy concerns the availability of part-time jobs. Against our conjecture, labour markets characterized by a lot of part-time jobs attract individuals of the younger age group whereas an effect on the older individuals is not confirmed. A potential explanation might draw on the relevance of part-time jobs not only for families but also for students. The fact that particularly young men react on the supply of part-time jobs supports this supposition. Beside the part-time job variable, we find a stimulating effect of recreation areas for the older individuals whereas a positive amenity effect for the younger only holds in terms of culture. This result is reasonable if one concedes that environmental amenities are of more importance for the founders of a family. A third difference concerns the effect of distance. Whereas younger women do not differ from younger men regarding the distance variable a stronger negative impact of distance on migration propensity is confirmed for older women in comparison to older men. Yet, this difference is restricted to the regression for the entire migration.

Apart from these few exceptions there seems to be no substantial difference between the split age subgroups. Therefore we conclude that our initial scope of the age group (18 to 30 years) is quite appropriate. The assumption of homogeneity of agents within this age group seems to be justified and the results obtained by the joint estimation of both age subgroups remain by and large convincing.

Table 5

GCL-Regression with Random Effects: Entire migration

	Age-group 18 – 25		Age-group 25 – 30	
	Male Effect	Female Difference	Male Effect	Female Difference
Labour market				
Average wage level	0.354 (0.024)*	0.136 (0.020)*	0.420 (0.026)*	0.086 (0.022)*
Unemployment rate ♀♂	–0.012 (0.001)*	–0.002 (0.001)	–0.014 (0.001)*	–0.003 (0.001)
Land price	0.017 (0.001)*	–0.001 (0.001)	0.018 (0.001)*	–0.004 (0.001)*
Education				
College availability ♀♂	0.023 (0.001)*	0.045 (0.002)*	0.017 (0.001)*	0.026 (0.003)*
Vocational training	0.006 (0.001)*	–0.001 (0.001)	0.006 (0.001)*	–0.002 (0.001)
Employment gap ♀♂	–0.150 (0.012)*	0.019 (0.015)	–0.198 (0.012)*	0.021 (0.016)
Family				
Part-time jobs ♀♂	3.418 (0.442)*	–2.382 (0.481)*	–0.906 (0.466)	0.762 (0.513)
Child care	–0.003 (0.000)*	0.000 (0.000)	–0.002 (0.000)*	0.000 (0.000)
Amenities				
Near-nature area	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)#	0.000 (0.000)
Park area	0.000 (0.000)*	0.000 (0.000)#	0.001 (0.000)*	0.000 (0.000)
Concert halls	0.188 (0.008)*	0.003 (0.011)	0.197 (0.009)*	–0.011 (0.012)
Structural characteristics				
Distance	–0.021 (0.000)*	0.000 (0.000)	–0.023 (0.000)*	–0.001 (0.000)*
Distance^2	0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)*
Population ♀♂	0.053 (0.001)*	–0.006 (0.001)*	0.043 (0.001)*	–0.006 (0.001)*
Stay Dummy	5.963 (0.012)*	–0.402 (0.016)*	5.519 (0.012)*	–0.098 (0.017)*
Regions	192,721 (439 × 439)		192,721 (439 × 439)	
Individuals	6,782,065		4,852,077	
Log Likelihood	–432,639.79		–366,635.15	

Note: Standard errors in parentheses, * 1% significance level; # 5% significance level.

Source: Own calculation.

Table 6

GCL-Regression with Random Effects: Long-distance migration

	Age-group 18 – 25		Age-group 25 – 30	
	Male Effect	Female Difference	Male Effect	Female Difference
Labour market				
Average wage level	0.174 (0.028)*	0.207 (0.026)*	0.413 (0.031)*	0.114 (0.029)*
Unemployment rate ♀♂	–0.012 (0.001)*	0.000 (0.001)	–0.014 (0.001)*	–0.002 (0.002)
Land price	0.019 (0.001)*	0.000 (0.001)	0.020 (0.001)*	–0.004 (0.001)*
Education				
College availability ♀♂	0.025 (0.001)*	0.058 (0.003)*	0.017 (0.001)*	0.031 (0.003)*
Vocational training	0.007 (0.001)*	0.000 (0.001)	0.006 (0.001)*	–0.002 (0.001)
Employment gap ♀♂	–0.191 (0.014)*	0.002 (0.017)	–0.251 (0.014)*	0.010 (0.019)
Family				
Part-time jobs ♀♂	3.354 (0.484)*	–2.703 (0.527)*	–0.916 (0.516)	0.667 (0.570)
Child care	–0.001 (0.000)*	0.000 (0.000)	–0.001 (0.000)#	–0.001 (0.000)
Amenities				
Near-nature area	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)
Park area	0.000 (0.000)	0.000 (0.000)#	0.000 (0.000)*	0.000 (0.000)
Concert halls	0.262 (0.009)*	0.006 (0.012)	0.282 (0.010)*	0.000 (0.013)
Structural characteristics				
Distance	–0.014 (0.000)*	0.000 (0.000)	–0.014 (0.000)*	0.000 (0.000)#
Distance^2	0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)
Population ♀♂	0.052 (0.001)*	–0.006 (0.001)*	0.042 (0.001)*	–0.006 (0.001)*
Stay Dummy	7.339 (0.019)*	–0.318 (0.025)*	7.071 (0.020)*	–0.057 (0.027)#
Regions	192,721 (439 × 439)		192,721 (439 × 439)	
Individuals	6,782,065		4,852,077	
Log Likelihood	–343,904.94		–284,041.24	

Note: Standard errors in parentheses, * 1% significance level; # 5% significance level.

Source: Own calculation.

5. Discussion

What are the essential findings of our analysis? In answer to our first study question, "Are women more mobile than man?", we conclude that young women are more mobile than men even after the main location factors of their origin and potential destination regions are taken into account. The second question of gender-specific tastes for location factors has a rather more complicated answer. Generally, women and men seem to be attracted by the same location factors. Some characteristics are more highly valued by men than by women, and vice versa. But the direction of valuation is for the most part identical. Young adults prefer regions with high wage levels, low unemployment rates, appropriate jobs for university graduates and adequate educational institutions. The cultural infrastructure also acts as a pull factor.

Having said that, there were some quite surprising gender-specific differences that emerged from the evaluation. Women appear to attach greater importance to regional wage levels than men. Also, women are more strongly attracted by a region's educational institutions, in particular its universities, than men. However, our estimations cannot fully verify whether this difference is actually attributable to gender. Educationally-motivated migration is not a gender phenomenon, but a consequence of educational potential. Women might be more migratory not because they are women, but because they are better educated than men.

As a final point, some limitations to our work have to be mentioned. The data used stem from aggregate migration statistics, hence, a lot of desirable information about migrating individuals, as well as their life-cycle positions, is not given and ecological fallacies cannot completely be ruled out. Our analysis would be greatly improved if longitudinal survey data containing individual level variables and their interaction with regional characteristics could be used. Of primary interest are education and life-cycle attributes, with these we could distinguish between education-, labour market- and family-related migrations and we could analyse if highly-qualified movers differ from low-skilled migrants in their location preferences. Furthermore, discrimination between individual and household migration would be very useful. Otherwise, a huge share of tied movers within households could bias results since their migration behaviour is driven by household and not individual preference.

Appendix

Table A1

GCL-Regression without Random Effects: Entire migration

	Male Effect		Female Difference		#
	Coefficient	Stand. Err.	Coefficient	Stand. Err.	
Labour market					
Average wage level	0.5897*	0.0143	0.1022*	0.0191	•
Unemployment rate ♀♂	–0.0182*	0.0004	–0.0028*	0.0006	•
Land price	0.0171*	0.0004	–0.0020*	0.0005	•
Education					
College availability ♀♂	0.0198*	0.0003	0.0428*	0.0008	•
Vocational training	0.0099*	0.0003	–0.0014*	0.0004	•
Employment gap ♀♂	–0.2082*	0.0044	0.0095	0.0054	
Family					
Part-time jobs ♀♂	1.1275*	0.1728	0.2533	0.1890	
Child-care	0.0006*	0.0001	–0.0005*	0.0002	•
Amenities					
Near-nature area	–0.0001*	0.0000	0.0000	0.0000	
Park area	–0.0010*	0.0001	0.0004*	0.0001	•
Concert halls	0.2822*	0.0026	–0.0113*	0.0034	•
Structural characteristics					
Distance	–0.0325*	0.0000	–0.0010*	0.0001	•
Distance^2	0.0000*	0.0000	0.0000*	0.0000	•
Population ♀♂	0.0622*	0.0002	–0.0079*	0.0003	•
Stay Dummy	4.8163*	0.0030	–0.2878*	0.0041	•
Regions	19,2721 (439 × 439)				
Individuals	11,634,142				
Log Likelihood	–8,229,520.9				

Note: * indicates a 1% significance level; • indicates gender-specific differences to a 5% significance level. The gender symbols indicate that a variable contains gender-specific values.

Source: Own calculation.

Table A2

GCL-Regression without Random Effects: Long-distance migration

	Male Effect		Female Difference		#
	Coefficient	Stand. Err.	Coefficient	Stand. Err.	
Labour market					
Average wage level	0.6140*	0.0201	0.1320*	0.0270	•
Unemployment rate ♀♂	–0.0177*	0.0006	–0.0019	0.0008	
Land price	0.0166*	0.0004	–0.0027*	0.0006	•
Education					
College availability ♀♂	0.0229*	0.0005	0.0535*	0.0013	•
Vocational training	0.0116*	0.0004	–0.0007	0.0005	
Employment gap ♀♂	–0.2649*	0.0070	0.0019	0.0085	
Family					
Part-time jobs ♀♂	0.1905	0.2439	1.7645*	0.2692	•
Child-care	–0.0019*	0.0001	–0.0003	0.0002	
Amenities					
Near-nature area	0.0000*	0.0000	0.0000	0.0000	
Park area	0.0000	0.0001	0.0002	0.0001	
Concert halls	0.3351*	0.0036	–0.0138*	0.0047	•
Structural characteristics					
Distance	–0.0171*	0.0001	–0.0006*	0.0001	•
Distance^2	0.0000*	0.0000	0.0000*	0.0000	
Population ♀♂	0.0550*	0.0003	–0.0071*	0.0004	•
Stay Dummy	6.7207*	0.0091	–0.2438*	0.0125	•
Regions	192,721 (439 × 439)				
Individuals	11,634,142				
Log Likelihood	–4,582,665.4				

Note: * indicates a 1% significance level; • indicates gender-specific differences to a 5% significance level. The gender symbols indicate that a variable contains gender-specific values.

Source: Own calculation.

References

Andrienko, Y. / *Guriev,* S. M. (2004): Determinants of interregional mobility in Russia, The Economics of Transition 12, 1 – 27.

Arntz, M. (2009): What Attracts Human Capital? Understanding the Skill Composition of Interregional Job Matches in Germany, Regional Studies, doi:10.1080 / 00343400 802663532.

Bayoh, I. / *Irwin,* E. G. / *Haab,* T. C. (2006): Determinants of Residential Location Choice: How Important are Local Public Goods in Attracting Homeowners to Central City Locations?, Journal of Regional Science 46(1): 97 – 120.

Bruecker, H. / *Truebswetter,* P. (2007): Do the best go West? An analysis of the self-selection of employed East-West migrants in Germany, Empirica 34, 371 – 395.

Burda, M. C. (1993): The Determinants of East-West-Migration: Some First Results, European Economic Review 37, 452 – 461.

Burda, M. C. / *Haerdle,* W. / *Mueller,* M. / *Werwatz,* A. (1998): Semiparametric Analysis of German East-West-Migration Intentions: Facts and Theory, Journal of Applied Econometrics 13, 525 – 541.

Burda, M. C. / *Hunt,* J. (2001): From reunification to economic integration: productivity and the labor market in Eastern Germany, Brookings Papers on Economic Activity 2, 1 – 92.

Cebula, R. J. / *Alexander,* G. M. (2006): Determinants of Net Interstate Migration 2000 – 2004, The Journal of Regional Analysis & Policy 36, 116 – 123.

Chen, Y. / *Rosenthal,* S. S. (2008): Local amenities and life-cycle migration: Do people move for jobs or fun?, Journal of Urban Economics 64 (3): 519 – 537.

Cushing, B. / *Poot,* J. (2004): Crossing Boundaries and Borders: Regional Science Advances in Migration Modelling, Papers in Regional Science 83, 317 – 338.

Cushing, Ch. / *Cushing,* B. (2007): Conditional Logit, IIA, and Alternatives for Estimating Models of Interstate Migration, Paper presented at the 46 annual meeting of the Southern Regional Science Association, Charleston (SC).

Dahlberg, M. / *Ekloef,* M. (2003): Relaxing the IIA Assumption in Locational Choice Models: A Comparison between Conditional Logit Model, Mixed Logit, and Multinomial Probit Models, Working Paper No. 9 – 2003, Department of Economics, Uppsala University.

Davies, P. S. / *Greenwood,* M. J. / *Li,* H. (2001): A Conditional Logit Approach to U.S. State-to-State Migration, Journal of Regional Science 41, 337 – 360.

Détang-Dessendre, C. / *Molho,* I. (2000): Residence spells and migration: a comparison for men and women, Urban Studies 37, 247 – 260.

Dumont, J.-Ch. / *Martin,* J. P. / *Spielvogel,* G. (2007): Women on the Move: The Neglected Gender Dimension of the Brain Drain, IZA Discussion Paper No. 2920, Bonn.

Faggian, A. / *McCann,* P. / *Sheppard,* S. (2007): Some Evidence That Women Are More Mobile Than Men: Gender Differences in U.K. Graduate Migration Behavior, Journal of Regional Science 47, 517 – 539.

Federal Ministry of Justice (2009): Drittes Buch Sozialgesetzbuch – Arbeitsförderung – (Section 1 of act from 24. March 1997, BGBl. I p. 594): last revision Section 4 of act from 16. July 2009 (BGBl. I p. 1959).

Ferguson, M. / *Ali,* K. / *Olfert,* M. R. / *Partridge,* M. D. (2007): Voting with Their Feet: Jobs versus Amenities, Growth and Change 38 (1): 77 – 110.

Fidrmuc, J. (2004): Migration and regional adjustment to asymmetric shocks in transition economies, Journal of Comparative Economics 32 (2): 230 – 247.

Findlay, A. / *Rogerson,* R. (1993): Migration, places and quality of life: voting with their feet?, in: T. Champion (ed.): Population Matters: The Local Dimension, London, 33 – 49.

Graves, P. E. (1980): Migration and Climate, Journal of Regional Science 20 (2): 227 – 237.

Graves, P. E. / *Linneman,* P. D. (1979): Household Migration: Theoretical and Empirical Result, Journal of Urban Economics 6 (3): 383 – 404.

Greenwood, M. J. (1997): Internal Migration in Developed Countries, in: M. R. Rosenzweig / O. Stark (eds.): Handbook of Population and Family Economics, North-Holland, 647 – 720.

Guimarães, P. / *Figeiredo,* O. / *Woodward,* D. (2004): Industrial Location Modeling: Extending the Random Utility Framework, Journal of Regional Science 44, 1 – 20.

Guimarães, P. / *Lindrooth,* R. C. (2007): Controlling for Overdispersion in Grouped Conditional Logit Models: A Computationally Simple Application of Dirichlet-Multinomial Regression, Econometrics Journal 10, 439 – 452.

Gustavus, S. O. / *Brown,* L. A. (1977): Place attributes in a migration decision context, Environment and Planning A 9 (5): 529 – 548.

Harris, J. R. / *Todaro,* M. P. (1970): Migration, Unemployment & Development: A Two-Sector Analysis, American Economic Review 60, 126 – 142.

Höhn, C. / *Mai,* R. / *Micheel,* F. (2008): Demographic Change in Germany. In: I. Hamm / H. Seitz / M. Werding (eds.): Demographic Change in Germany – The Economic and Fiscal Consequences, Berlin / Heidelberg, 9 – 33.

Huber, P. (2004): Inter-Regional Mobility in Europe: A Note on the Cross-Country Evidence, Applied Economics Letters 11, 619 – 624.

Hunt, J. (2004): Are Migrants more Skilled than Non-Migrants? Repeat, Return, and Same-Employer Migrants, Canadian Journal of Economics 37, 830 – 849.

Hunt, J. (2006): Staunching Emigration from East Germany: Age and the Determinants of Migration?, Journal of the European Economic Association 5, 1014 – 1037.

Jensen, T. / *Deller,* S. (2007): Spatial Modeling of the Migration of Older People with a Focus on Amenities, The Review of Regional Studies 37 (3): 303 – 343.

Juerges, H. (2006): Gender ideology, division of housework, and the geographic mobility of families, Review of Economics of the Household 4, 299 – 323.

Kim, T. / *Horner,* M. W. / *Marans,* R. W. (2005): Life Cycle and Environmental Factors in Selecting Residential and Job Locations, Housing Studies 20 (3): 457 – 473.

Knapp, T. A. / *Graves,* P. E. (1989): On the Role of Amenities in Models of Migration and Regional Development, Journal of Regional Science 29 (1): 71 – 87.

Maddala, G. S. (1983): Limited-Dependent and Qualitative Variables in Econometrics, Cambridge.

Mai, R. (2006): Die altersselektive Abwanderung aus Ostdeutschland, Raumforschung und Raumordnung 64 (5): 355 – 369.

McFadden, D. (1974): Conditional logit analysis of qualitative choice behaviour, in: P. Zarembka (ed.): Frontiers in Econometrics. New York, 105 – 142.

Mincer, J. (1978): Family Migration Decisions, Journal of Political Economy 86, 749 – 773.

Niedomysl, T. (2008): Residential preferences for interregional migration in Sweden: demographic, socioeconomic, and geographical determinants, Environment and Planning A 40 (5): 1109 – 1131.

Nisic, N. (2009): Labour Market Outcomes of Spatially Mobile Coupled Women: Why is the locational context important?, Schmollers Jahrbuch 129, 203 – 215.

Paci, P. / *Walewski,* M. / *Tiongson,* E. R. / *Livinski,* J. / *Stoilkova,* M. M. (2007): Internal Labor Mobility in Central Europe and the Baltic Reginternal Labor Mobility in Central Europe and the Baltic Region, World Bank Working Papers 105, Washington (DC).

Parikh, A. / *Van Leuvensteijn,* M. (2003): Interregional Labour Mobility, Inequality and Wage Convergence, Applied Economics 35, 931 – 941.

Porell, F. W. (1982): Intermetropolitan Migration and Quality of Life, Journal of Regional Science 22 (2): 137 – 158.

Rappaport, J. (2004): Why are population flows so persistent?, Journal of Urban Economics 56 (3): 554 – 580.

Ravenstein, E. G. (1885): The Laws of Migration, Journal of the Statistical Society of London 48, 167 – 235.

Rees, P. / *Kupiszewski,* M. (1999): Internal migration and regional population dynamics in Europe – a synthesis, Strasbourg.

Roback, J. (1982): Wages, Rents, and the Quality of Life, Journal of Political Economy 90 (6): 1257 – 1278.

Sjaastad, L. A. (1962): The Costs and Returns of Human Migration, Journal of Political Economy 70, 80 – 93.

Whisler, R. L. / *Waldorf,* B. S. / *Mulligan,* G. F. / *Plane,* D. A. (2008): Quality of Life and the Migration of the College-Educated: A Life-Course Approach, Growth and Change 39(1): 58 – 94.

Zaiceva, A. (2009): East-West migration and gender: Is there a differential effect for migrant women?, Labour Economics, doi: 10.1016 / j.labeco.2009.10.005.