Job and residential mobility in the Netherlands: the influence of human capital, household composition and location

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2010

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This version: 12 October 2010

Abstract

This study identifies and evaluates determinants of employees' job and residential mobility. It examines mobility of fulltime employees in selected sectors in 2003/2004, using register data provided by Statistics Netherlands. We estimate a multinomial model of job and residential change. The results illustrate that individuals decide upon changing jobs and/or relocating by taking into account the strength of their family- and job-related ties. We also find that the prevalence of internal versus external career opportunities impedes job changes. While a high salary facilitates relocation, our findings regarding the effect of salary on interfirm mobility were inconclusive. A long commuting distance encourages (simultaneous) job and housing mobility, while being situated in the municipality of a large city encourages employees to either change jobs, or to relocate.

JEL classification: J24, J61, J62, R23
Keywords: Job mobility, residential mobility, regional migration, human capital

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1 Introduction

Mobility is generally assumed to be motivated by an expected gain in utility (e.g. Böheim and Taylor, 2007; Ritsilä and Ovaskainen, 2001). In this study, we investigate two different kinds of mobility, namely interfirm and residential mobility, their determinants, and the extent to which these two forms of mobility are related. Within the framework of utility maximization, individuals are expected to change employers in order to, for example, receive higher wages, to benefit from superior career opportunities, or to reduce their daily commuting time (e.g. Clark et al., 2003; Henneberger and Sousa-Poza, 2002; Linneman and Graves, 1983; Schneider, 2007). The framework also accounts for residential relocation, as individuals may be induced to move, for example, in order to enjoy a more pleasant living environment (Knapp et al., 2001; Nivalainen, 2004), while they might be reluctant to migrate if other members of their family could be negatively affected by a residential move (e.g. Becker, 1981; Linneman and Graves, 1983; Molho, 1987; Nivalainen, 2004; Sjaastad, 1962).

Job and residential mobility can be closely related, since relocation might require individuals to also switch jobs, or changing employers may bring about the need for migration (e.g. Bartel, 1979; Kan, 2003; Sjaastad, 1962). In these instances, job and residential mobility function as complements, since one kind of mobility induces the other. Alternatively, a long commuting distance

between one's place of residence and workplace might trigger an employee to switch employers instead of moving geographically, or vice versa (Clark et al., 2003; Zax, 1991). Under these circumstances, job and residential mobility serve as substitutes, since, for example, changing jobs allows an employee to abstain from relocating.

Many studies on job mobility presume that individuals merely take personal characteristics such as their age, firm tenure, or level of education into consideration when deciding upon changing jobs or staying with their current employer. Nevertheless, as many employees belong to households consisting of more than one person, the presence of additional household members should not be ignored (Van Ommeren, 2000), especially since the composition of one's household has been found to affect the decision of whether or not a residential relocation will take place (Feijten and Van Ham, 2007; Linneman and Graves, 1983). We thus reason that a job change not involving migration is intrinsically different from interfirm mobility requiring the employee and possible further family members to move. Likewise, residential relocation not including a job change will be motivated by other aspects than joint job and housing mobility. We therefore explicitly differentiate between job mobility, residential mobility, and joint job and residential mobility in order to examine the supposedly dissimilar determinants underlying these three different types of mobility.

We analyze job and residential mobility within one integrated model, an approach which previously has only been taken by a small number of studies (Bartel, 1979; Börsch-Supan, 1990; Kan, 2003; Linneman and Graves, 1983). Our investigation benefits from the fact that the dataset at hand covers the entire population of Dutch employees, also allowing for the exploration of sectoral differences and peculiarities. Besides analyzing the role of personal features (e.g. age, educational level) and household attributes (e.g. marital status, number of children), we investigate the importance of employer characteristics (sector and firm size) as determinants of interfirm and/or residential mobility. In addition, we consider the degree of urbanization of an employee's place of residence and workplace, and also take into account the daily commuting distance between those two locations. This combination of explanatory variables is unique and, to our knowledge, has not been employed so far.

The Netherlands are a densely inhabited country, exhibiting a population density of 489 inhabitants/km² (Statistics Netherlands, 2010). The population of the Netherlands currently amounts to more than 16 million inhabitants, and is still growing (Statistics Netherlands, 2010). With congestion being an increasingly critical concern in such a densely populated region, it is crucial to comprehend the drivers behind human behavior regarding interfirm and/or housing mobility and commuting. Furthermore, there is a need to investigate the phenomena of job and residential mobility in order to

understand the imbalances in labor supply and demand at the level of firms, sectors, or areas. There are districts and sectors facing many vacancies, while others are confronted with high unemployment rates. In case of a lack of mobility, it could be expected that these regional or sectoral imbalances will persist over time.

We employ a multinomial logit (MNL) model in order to investigate the determinants of job and residential mobility. This model is derived from a framework of utility maximization. We use a dataset provided by Statistics Netherlands (CBS), consisting of information regarding the individual characteristics, household composition, and employers of employees aged 22-40 who had been working fulltime (at least 0.8 FTE) in selected Dutch sectors in 2003, the degree of urbanization of their places of residence and workplaces, and the commuting distances between those two locations.

The study is organized as follows. In section 2, we provide the theoretical background of the research. We introduce the concept of utility maximization in the context of job and residential mobility, and give an overview regarding the existing literature on this issue. In section 3, we outline the characteristics of the data used in this study, and indicate the sources they originate from. In section 4, we present the model employed in the empirical analysis, and define the variables used in the study. In section 5, we outline the results of the multinomial regressions, discuss our findings, and indicate

the limitations of the study. In section 6, we conclude. In the Appendix, all tables are provided.

2. Theoretical framework and hypotheses

2.1 A utilitarian perspective on mobility

We follow convention and use the concept of utility in order to explain individuals' behavior resulting from their preferences, expecting them to act rationally in order to accomplish or realize what they consider to be most pleasant, agreeable, or beneficial. Individuals will therefore adjust their current situation if they assume to derive a higher utility from any other alternative for which switching costs are not prohibitive.

If all jobs and residences were alike, then there would be no incentive to change one's job or place of residence (Linneman and Graves, 1983). However, since each job and place of residence possess certain distinctive features, we can assume that individuals find the utilities of different jobs and residences to be dissimilar. If they identify the utility they derive from their present job or place of residence as inferior compared to the utility they can presumably derive from a different job or residence, they will thus be inclined to accordingly change jobs or move houses.

2.2 Job mobility

An employee's decision to change jobs constitutes an investment which will only take place if the expected benefits derived from the new position (e.g. a friendlier working atmosphere, a higher salary, or superior career opportunities) exceed the benefits derived from the present job. We hypothesize in this section that the utility which an employee derives from changing jobs depends on the strength of the employee's ties with the current employer, the existing internal as well as the expected external career opportunities, the financial remuneration which the employee receives, and the commuting distance between the employee's place of residence and workplace.

In recent years, human capital theory has increasingly been utilized in order to explain workers' motivations to change employers. One typically distinguishes between two different forms of human capital, namely firm- or job-specific, and general human capital. Firm- or job-specific human capital represents a person's expertise which can only be used within the organization or with respect to the job in which it has been obtained. General human capital, on the other hand, is equal to a person's level of broad knowledge which can be transferred to and used with any employer (e.g. Acemoglu and Pischke, 1999; Becker, 1962; Borghans and Heijke, 2005; Henneberger and Sousa-Poza, 2002).

It can be expected that the human capital acquired and held by an individual has an effect on this person's propensity to change jobs. Regarding specific human capital, it is generally assumed that the more an employee previously invested in this type of expertise, the less likely this employee will be to change employers. As a consequence, it follows that the longer a person has been employed with a specific firm, the more likely this person is to stay with the same firm in the future, since a new employer would not reward the previously accumulated firm-specific knowledge (e.g. Bergin, 2008; Henneberger and Sousa-Poza, 2002). We therefore propose that the utility which an employee derives from changing jobs decreases with the strength of the employee's ties with the current employer, which is proxied by firm tenure.

The human capital approach also predicts that the size of a company influences an employee's tendency to change jobs, as bigger companies usually provide better career and training opportunities within the firm (Kalleberg and Mastekaasa, 1998; Kalleberg and Van Buren, 1996; Rebitzer, 1986; Stolzenberg, 1978). Within large organizations, employees can put their firm- and task-specific skills to use and have the chance to advance their careers without having to change employers. As Kalleberg and Mastekaasa (1998) demonstrate, job mobility is indeed lower for employees of larger organizations. We thus assume that the utility which an employee derives from changing jobs decreases with the internal career opportunities present in the employee's current organization, which are proxied by firm size.

While the opportunities regarding one's advancement within an organization can be assumed to induce employees to stay with their current employer, external options will most likely have the opposite effect. As argued by Börsch-Supan (1990) as well as Eliasson et al. (2003), a person with a higher level of education should be more capable of collecting and processing information regarding possible career opportunities. Furthermore, highly educated individuals are supposed to be more proficient with respect to the utilization of their knowledge in different environments, hence job mobility may increase due to a heightened availability of external options (Bergin, 2008; Weiss, 1984). We therefore hypothesize that the utility which an employee derives from changing jobs increases with the available external career opportunities, which are proxied by the employee's level of education.

The higher an employee's present salary is, however, the less likely the employee is to find another job which is even better paid. Hence, job mobility will be lower for employees with higher wages (e.g. Bergin, 2008; Boockmann and Steffes, 2007; Burdett, 1978; Henneberger and Sousa-Poza, 2002), especially if one's salary exceeds the level of productivity. We thus expect that the utility which an employee derives from changing jobs decreases with the financial remuneration the employee currently receives[3].

[3] It may be argued that not so much the absolute, but the relative salary an employee receives in comparison to colleagues having the same level of education, or being employed in the same sector matters regarding the decision of whether to change jobs or not (Henneberger and Sousa-Poza, 2002). By analyzing mobility for each sector separately, we control for sectoral affiliation. The model also includes firm tenure and educational level as explanatory variables. In this sense, we condition the absolute salary level on several observable measures of human capital.

As illustrated by Zax (1991), (dis)utility is also derived from the distance between one's place of residence and workplace. Individuals facing long commuting distances should therefore be more likely to switch jobs or relocate (Van Ommeren et al., 2000) in order to decrease travel costs, or to reduce the time spent each day on traveling. Hence, we assume that the utility which an employee derives from changing jobs increases with the commuting distance between the employee's place of residence and current workplace.

Furthermore, being situated within a densely populated, metropolitan area may also affect individuals' behavior regarding interfirm mobility. Residents of densely inhabited urban areas have more employment opportunities in close proximity (Finney and Kohlhase, 2008; Nivalainen, 2004). These individuals can be expected to have an increased likelihood to change jobs due to the comparatively higher number of nearby alternative job matches which e.g. do not require the simultaneous change of one's residence. Thus, we assume that the utility which an employee derives from changing jobs increases for those being situated in the municipality of a large city.

2.3 Residential mobility

Individuals will relocate if they expect the utility from migrating to be higher than the utility from staying in their present location (Ritsilä and Ovaskainen,

2001). We hypothesize in this section that the utility of changing houses depends on the strength of the employee's family ties, the financial remuneration which the employee receives, and the commuting distance between the employee's place of residence and workplace.

With respect to household composition, Mincer (1978) argued that family ties discourage migration. Since human behaviour is also guided by 'community-minded, altruistic, cooperative, and loving acts' (Etzioni, 1986), not only the pursuit of one's own happiness, but also the altruistic concern about the wellbeing of others thus constitute vital components of utility (Boswell, 2008). Hence, as the well-being of other family members who might be unwilling to leave familiar surroundings (Sjaastad, 1962) is taken into account, it follows that multi-person households will be less inclined to move than those consisting of only one person (Becker, 1981).

This assumption was empirically verified by Linneman and Graves (1983) and Molho (1987), who identified a lower propensity to relocate among employees who are married and have children. Likewise, employees with a partner who also holds a fulltime job will be less geographically mobile (Nivalainen, 2004), since relocation might require the spouse to give up his or her job, or to accept a longer commuting distance[4]. We thus propose that the utility which an employee derives from relocating decreases with the strength

[4] This argument most plausibly applies to spouses whose workplace is in close proximity to the couple's place of residence. Results show, however, that having either 'partner with fulltime job' or 'partner with fulltime job within 10 km commuting distance' gives virtually identical results.

of his or her family ties, which are proxied by marital status, the number of children, and the employment status of the partner[5].

The higher a person's salary is, the more opportunities this person has on the housing market. This holds true for rented places which may be of a specific quality or in a specific neighborhood, but also applies to buying one's own home. Individuals with higher earnings might consequently be more likely to move, as they will be able to afford the kind of residence they have envisioned. We therefore hypothesize that the utility which an employee derives from relocating increases with the financial remuneration the employee currently receives.

As previously argued, individuals also derive (dis)utility from the distance between their place of residence and workplace (Zax, 1991). Employees confronted with long commuting distances will thus be inclined to adjust their current situation by either changing jobs, or by relocating. Hence, we assume that the utility which an employee derives from relocating increases with the commuting distance between the employee's place of residence and current workplace.

Being situated within a densely populated, metropolitan area may also affect individuals' propensity to relocate (Kim et al., 2005; Nivalainen, 2004;

[5] In addition, changes regarding the structure of one's household (e.g. gaining/losing a partner/child) can be assumed to strongly foster residential mobility (e.g. Dieleman et al., 2000; Feijten and Van Ham, 2007; Linneman and Graves, 1983; Quigley and Weinberg, 1977). We verified these assumptions for the dataset at hand. However, with the available data, causality could not be established, since information on both household dynamics and mobility is only available for the same timespan (from reference date in 2003 to reference date in 2004). Hence, we would not be able to determine whether e.g. getting married induces individuals to relocate, or whether they move together and subsequently decide to formalize their relationship. Therefore, after having confirmed that this has hardly any effect on our findings, we decided to drop variables concerning household dynamics from our analysis.

van Huis et al., 1999). Residents of densely inhabited neighborhoods (Kim et al., 2005) respectively large cities (van Huis et al., 1999) have been found to have an increased likelihood to relocate. These findings may be attributed to the fact that in densely populated urban areas, individuals are able to relocate without having to change jobs. We thus hypothesize that the utility which an employee derives from relocating increases for those being located in the municipality of a large city.

2.4 Job and residential mobility

Interfirm mobility is likely to be primarily influenced by employees' personal characteristics (e.g. previously accumulated human capital), while residential mobility should predominantly be determined by the composition of their families (hence their family ties). It follows that a joint change of one's job and place of residence ought to be conditional not only upon employees' individual traits, but also upon the structure of the household they are part of. The determinants of joint job and residential mobility should therefore generally constitute an 'aggregate' of those shaping job mobility, and those affecting relocation.

Regarding the effect of commuting distance on joint job and housing mobility, however, different factors might be at play. One could reason that job and residential mobility should substitute for each other (Zax, 1991), since both

job changes and residential moves are costly. Individuals who intend to reduce the time and money spent on their daily commute thus ought to be inclined to either adjust their place of residence, or their workplace. As joint job and housing mobility would entail comparatively higher costs than changing jobs or migrating, it could therefore be assumed that in case of a long commuting distance, a joint job and residence change is the more unlikely outcome. On the other hand, employees who have to cover long distances between their places of residence and workplaces might search more intensively in both the job and the housing market, and may therefore be more likely to spot interesting 'offers'. Additionally, these individuals might not fully commit to both their social and professional environments, and could therefore more willingly change jobs and relocate.

If being situated in a densely populated urban region facilitates job mobility due to the fact that an individual does not have to change houses in order to realize a job change (and vice versa), the effects of being located in such an area on joint job and residentiual mobility may be twofold: On the one hand, individuals may be more inclined to change jobs and residences because of the (unrelated) abundance of possible alternatives. On the other hand, job and residence changes may serve as substitutes, e.g. in order to decrease commuting time within, to or from the highly congested municipality of a large city. We therefore intend to ascertain which factors are at play with

respect to the effect of being situated in the municipality of one of the four largest Dutch cities on joint job and residential mobility.

Furthermore, we aim to establish the effect of an individual's salary on joint job and residential mobility, as the proposed negative effect of one's earnings on job mobility and the assumed positive effect of salary on residential mobility may conflict. We assume employees to derive utility from the financial remuneration they receive for their work. Since the likelihood to find a job which is even better paid decreases with the magnitude of the present salary, interfirm mobility can be assumed to be lower for employees with higher wages (e.g. Bergin, 2008; Boockmann and Steffes, 2007; Burdett, 1978; Henneberger and Sousa-Poza, 2002). Furthermore, joint job and residential mobility can be expected to be particularly costly, since both the employee's place of residence and workplace have to be adjusted. A potential new employer would thus have to match the employee's present salary, and to make up for the costs involved. On the other hand, individuals with higher earnings have a higher chance to be able to afford their ideal type of residence in their preferred neigborhood, city, or region, and might therefore be more willing to realize a combined job and residence change.

We expect that employees who previously invested in the accumulation of firm-specific human capital will be less inclined to change employers. Furthermore, as demonstrated by Linneman and Graves (1983), firm tenure also has a negative impact on the propensity to relocate. This finding suggests

a general mobility-inhibiting effect of firm tenure which does not necessarily have to be explained by the accumulation of human capital, but may suggest that certain individuals generally prefer ‘stability’ or ‘continuity’, while others are more ‘adventurous’. Thus, we propose that the utility which an employee derives from changing jobs and relocating decreases with the strength of the employee’s ties with the current employer, which is proxied by firm tenure.

A high level of education has unequivocally been found to have a positive impact on an employee’s probability to jointly change employer and place of residence (e.g. Bartel, 1979; Börsch-Supan, 1990; Eliasson et al., 2003; Linneman and Graves, 1983). As previously argued, we assume that the external opportunities available to an employee increase with his or her level of education, since highly educated inviduals will be more proficient regarding the collection and processing of information regarding possible career opportunities, as well as the utilization of their knowledge in different environments (Bergin, 2008; Börsch-Supan, 1990; Eliasson et al., 2003; Weiss, 1984). Individuals with a high level of education may also be less geographically constrained, as they have been argued to adapt more easily to new locations (Bartel, 1979) due to their ‘readiness to move’ (Ritsilä and Ovaskainen, 2001, p. 318). Moreover, highly educated individuals may relocate to more productive locations in order to put their knowledge and skills to use (Chen and Rosenthal, 2008). We thus propose that the utility which an employee derives from changing jobs and relocating increases with the

available external career opportunities, which are proxied by the employee's level of education.

Being married, having children, and having a partner with a fulltime job is, as predicted by Mincer (1978), generally found to impede joint job and residential mobility (e.g. Cohen 1999; Eliasson et al., 2003; Kan, 2003; Kirschenbaum and Weisberg, 1991; Kirschenbaum and Weisberg, 2001; Linneman and Graves, 1983; Nivalainen, 2004). An employee with a family can reasonably be assumed to care about the interests of other household members, as those might object to the residential move which accompanies a job change, especially since job-related relocations have been found to be likely to be long-distance moves (Jackman and Savouri, 1992). We suggest that an employee with strong family ties will behave altruistically, and will 'refrain from moving to another community where his earnings would be higher' (Becker, 1981, p.4) if this action endangered the welfare of all family members. Thus, we propose that the utility which an employee derives from changing jobs and relocating decreases with the strength of his or her family ties, which are proxied by marital status, the number of children, and the employment status of the partner.

3 Data

3.1 Data sources

The data employed in this study were provided by Statistics Netherlands (CBS). Information on employees and households originates from the Social Statistical Database (SSB) which is compiled on the basis of register and survey data from two main sources. Personal information (e.g. date of birth, gender, address) within the SSB stems from the municipal registration system (GBA), which also holds information regarding one's marital status, registered cohabitation, and household composition. Information regarding employees' jobs (e.g. employer, duration of employment, salary) is provided by the Fibase, a database delivered by the Dutch Tax Administration. Furthermore, data concerning individuals' level of education originate from the Dutch central student register (CRIHO), which is based on information originating from the Informatie Beheer Groep, a Dutch governmental institution.

Information regarding firms – on the level of the business unit (BE), defined on the basis of its economic activity – originates from the business register (ABR), the Survey on Employment and Wages (EWL), and the Survey Production Statistics (SBS and STS).

Since the location of both workplace and place of residence is known for each employee on the level of the municipality[6], we use the respective distances between the cores of the municipalities as a measure of commuting distance[7]. Demographical information regarding the Dutch municipalities was provided by Statistics Netherlands (2003), allowing us to determine whether an employee lived and/or worked in one of the four largest (in terms of population) Dutch municipalities in 2003 (The Hague, Amsterdam, Rotterdam and Utrecht)[8]. This information was used in order to construct a CITY dummy (1 = located in the four cities previously mentioned and 0 = located elsewhere).

3.2 Data description

In order to analyze job and residential mobility between the years 2003 and 2004, we constructed samples of employees working in 22 industrial sectors in 2003. There are five manufacturing sectors, namely NACE[9] 15, 22, 24, 25/26 and 28/29[10], two construction sectors, namely NACE 452 and 453/454[11], three

[6] In 2003, the Netherlands consisted of 489 municipalities. The average number of residents within a municipality was 33,114, ranging from 1,000 inhabitants (Schiermonnikoog) to 736,562 inhabitants (Amsterdam). The average surface area of a municipality amounted to 69.09 km², ranging from 1.75 km² (Bennebroek) to 460.05 km² (Noordoostpolder).
[7] For intra-municipal commutes, the commuting distance is thus zero.
[8] The number of inhabitants for these municipialities in 2003 amounted to 463,826 (The Hague), 736,562 (Amsterdam), 599.651 (Rotterdam) and 265.151 (Utrecht). Each of these four municipialities exhibited a population density of more than 2,770 residents per km².
[9] Nomenclature statistique des activités économiques dans la Communauté Européenne
[10] These five sectors cover manufacture of food and beverages; publishing, printing and reproduction of recorded media; manufacture of chemicals and chemical products; manufacture of rubber and plastic products & other non-metallic mineral products; and manufacture of fabricated metal products & machinery and equipment n.e.c.
[11] These two sectors cover building of complete constructions or parts thereof; civil engineering; and building installation & completion.

wholesale and retail trade sectors, namely NACE 50, 513/514 and 52[12], the hotels and restaurants sector with NACE 55, and freight transport by road with NACE 6024. Furthermore, we included one financial intermediation sector, namely NACE 65[13], two real estate, renting and business activities sectors, namely NACE 72 and 7412[14], and two public services sectors, namely NACE 7511 and 7523/7524[15]. Finally, there are three education sectors, namely NACE 801, 802, and 803[16], and two health and social work sectors, namely NACE 851 and 853[17].

The above variety of industries was selected in order to investigate possible variation in the determinants of mobility across different sectors, especially since labor markets may vary considerably. As the share of female employees varies considerably between industries, we were also able to examine and compare the determinants of mobility in both male- and female-dominated sectors.

The data consist of information regarding personal characteristics, household composition and employment in the years 2003 and 2004. Information regarding employees' duration of employment is available with exact start and end dates, while individuals' personal characteristics, personal

[12] These three sectors cover sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel; wholesale of food, beverage and tobacco & household goods; retail trade, except for motor vehicles; and repair of personal and household goods.
[13] This sector covers financial intermediation, except for insurance and pension funding.
[14] These two sectors cover computer and related activities; accounting, book-keeping and auditing activities; and tax consultancy.
[15] These two sectors cover general overall public service activities; justice and judicial activities & public security; and law and order activities.
[16] These sectors cover primary, secondary, and tertiary education (e.g. universities).
[17] These sectors cover human health activities; and social work activities (e.g. hospitals).

relations, and household composition are determined once a year (last Friday in September). We therefore limited our analysis to employees holding jobs in the Netherlands in both September 2003 and September 2004, since only at those points in time, reliable information regarding all variables of interest is available.

We selected only fulltime workers (at least 0.8 FTE), as it is difficult to investigate job mobility if employees hold more than one job at the same time. In order to compare 'stayers' to 'movers', employees who quit their job between the reference dates in 2003 and 2004 without starting a new job were removed from the samples, as well as all records for which information on any of the relevant variables (e.g. age, number of children, address) was missing[18]. The samples were restricted to individuals aged 15 and older, as it is impossible to hold a fulltime job in the Netherlands at a younger age. Furthermore, only employees working in firms with an average number of at least one employee in 2003 were selected.

It became apparent that the information on salary for the year 2003 was not always fully reliable for those employees who changed jobs within that year, since bonus payments (e.g. compensation of unused hours of leave, 'golden handshake') might falsefully suggest that job changers received higher salaries in their previous positions than it was actually the case. Hence, we selected only employees who had worked in the job which they held at the

[18] Roughly 3% of the cases were removed, as there was little occurence of missing information.

reference date in 2003 already for some time in 2002, and the information on salary for the year 2002 was used. Since the information on salary was found to be unreliable for jobs which had lasted only a few days in 2002, only employees who had held their job for at least 16 days in 2002 were selected[19].

Since information regarding higher education (university/college degree) is only available and reliable for employees who were older than 21 and younger than 41 in 2003, we limited our analysis to employees aged 22-40 in order to allow for the inclusion of educational level as an explanatory variable. The samples range from 16,682 (NACE 803) to 85,821 (NACE 52) employees[20].

4 Model and variables

4.1 Model

We developed and estimated a multinomial model in order to analyze the determinants of job and residential mobility[21]. A multinomial logit is a model with unordered outcomes which incorporates only individual-specific characteristics (e.g. age, gender, level of education), not choice-specific

[19] Due to this restriction, approximately 15% of the cases were removed.
[20] We also performed the analysis - excluding educational level as an explanatory variable - without imposing any restrictions on employees' age. These unrestricted samples ranged from 43,283 (NACE 803) to 205,492 (NACE 7511) records. The results of the analysis are very much in line with those discussed in section 5, and are available from the authors upon request.
[21] We also tried a multinomial probit model (MNP), and obtained very similar results. The Hausman and Small-Hsiao tests of the IIA assumption suggest that MNL and MNP outcomes should be very close, as the null hypothesis of the odds being independent of other alternatives is either not rejected, or only marginally so.

attributes. In the framework of utility maximization, one assumes that given a choice between M alternatives (indexed, j = 1, …, M), the utility that the i^{th} person (i = 1, …, N) derives from the j^{th} alternative can be represented as U_{ij}. These alternatives do not signify possible available jobs and residences, but represent the four options 'keep job and residence', 'change job and keep residence', 'keep job and change residence', and 'change job and residence'.

We assume that the utility of keeping/changing one's job/place of residence depends on the strength of the employee's ties with the current employer (C), the existing internal (I) as well as the expected external (E) career opportunities, the financial remuneration which the employee receives (R), the strength of the employee's family ties (F), the commuting distance (D) between the employee's place of residence and workplace[22], and the location of the employee's current workplace and/or place of residence (L). The model is specified as follows (ε_{ij} is the error term):

$$U_{ij} = U_j (C_i , I_i , E_i , R_i , F_i , D_i, L_i) + \varepsilon_{ij} , j = 1, \ldots, 4$$

where 1 = keep job and residence, 2 = change job/keep residence, 3 = keep job/change residence, and 4 = change job and residence.

[22] It may be argued that the decision of whether to be mobile or not is also influenced by the (expected) costs of moving (e.g. Linneman and Graves, 1983). Following this line of reasoning, strong family ties or a low salary could be considered barriers to mobility. Furthermore, individuals' level of risk-averseness can be assumed to have an impact on their probability to be mobile (e.g. Kan, 2003). In the present framework of utility maximization, relevant 'barriers' such as an employee's marital status, number of children, or salary are incorporated - from a rather positive point of view – as 'ties' or 'opportunities'.

Let Y_i be a random variable whose value (j = 1, …, 4) indicates the choice made by person i, then the probability that this person prefers to keep both his or her job and place of residence (m = 1), to change jobs (m = 2) or houses (m = 3), or to change both (m = 4) is

$$\mathbf{Pr}\,(Y_i = m) = \mathbf{Pr}\,(U_{im} > U_{ij}) \text{ for all } j = 1, \ldots, 4,\ j \neq m$$

An individual logically chooses the option for which the expected utility will be highest. In case ε_{ij} is Gumbel distributed, we have the multinomial logit model.

4.2 Variables

The dependent variable is MOBILITY. Table 1 displays the four alternatives as specified in the multinomial logit model, and their respective frequencies for the full samples, and Table 2 provides the same information for the restricted samples. The first category is 'keep job and residence', consisting of individuals who changed neither their job, nor their place of residence between September 2003 and 2004. The next category, 'change job/keep residence', comprises job changers who did not migrate between the reference dates in 2003 and 2004. The third category - 'keep job/change residence' - encompasses those who moved houses without changing employers, while the last category - 'change job and residence' - consists of those who changed employers and relocated within the period of reference. In total, 800,443

(80.5%) individuals changed neither their job nor their place of residence between the reference dates in 2003 and 2004, while 59,747 (6.0%) changed their jobs without migrating. 121,978 (12.3%) persons moved houses without changing employers, and 12,706 (1.3%) changed jobs and relocated within the period of reference (Table 1). The highest share of job changers was observed in sectors 55 (10.2%) and 72 (8.8%), while the largest fraction of those having changed their place of residence was found in sectors 7523/7524 (15.6%) and 801 (14.9%). The highest percentage of employees having changed both their job and place of residence was observed in sectors 55 (2.8%) and 803 (1.8%).

Table 2 presents the explanatory and control variables employed in the analysis. FIRM_TENURE - the proxy for the strength of the employee's ties with the current employer - is the number of years the employee had been employed with the same firm in 2003, while HIGH_EDUCATION - proxying external opportunities - denotes whether the employee holds a degree in higher education or not. FIRM_SIZE_LOG - the proxy for internal opportunities - is the natural logarithm of the average number of employees working for the employee's employer in 2003, and SALARY_LOG is the natural logarithm of the employee's daily salary in 2002. PARTNER - proxying the strength of the employee's family ties - measures whether the employee had a registered partner in 2003, N_OF_CHILDREN - also a proxy for family ties - denotes the number of children in the employee's household in 2003, and PARTNER_JOB - likewise proxying the strength of the employee's family ties - indicates

whether the employee had a partner with a fulltime job (at least 0.8 FTE) in 2003. The variable DISTANCE measures the commuting distance (in 10 kilometers) between the employee's place of residence and workplace in 2003[23], and CITY indicates whether the employee lived and/or worked in the municipality of one of the four largest (with respect to the number of inhabitants) Dutch cities - namely The Hague, Amsterdam, Rotterdam and Utrecht[24] - in 2003.

We control for age, since it is commonly found to impede both job and residential mobility (e.g. Bergin, 2008; Henneberger and Sousa-Poza, 2002; Linneman and Graves, 1983; Nivalainen, 2004; Ritsilä and Ovaskainen, 2001; Schneider, 2007). The significance of locational ties has been argued to increase with age (Ritsilä and Ovaskainen, 2001), and older individuals are assumed to have accumulated larger stocks of specific human capital, causing interfirm mobility to be progressively disadvantageous (e.g. Schneider, 2007). AGE therefore indicates the age (in years) of the employee in 2003. We also control for gender, although it has been reasoned that the effect of gender on mobility may be ambiguous (Ritsilä and Ovaskainen, 2001), or even absent (Bergin, 2007). FEMALE thus denotes the gender of the employee.

[23] Especially in the case of larger organizations, a firm (BE) can have more than one location. The establishment in which a specific employee is working, however, cannot be determined. If an employee was found to be employed with a firm having multiple establishments, the location closest to the employee's place of residence was selected as the most probable workplace.

[24] These cities are located in the so-called 'Randstad', a densely populated region in the Western part the Netherlands with about seven million inhabitants. More than 40% of the Dutch population live in this area, although it accounts for only about 20% of the country's surface.

The descriptive statistics for the explanatory and control variables used in the study are displayed in Table 3. (Note: for all dummy variables, the value '1' signifies 'yes', while the value '0' denotes 'no'.) On average, employees had been employed with their current employer for 5.29 years, and worked in firms having 3773 employees. Some 22% of the workforce had a degree in higher education, and the average daily salary amounted to € 83.40. Two thirds of these employees had a registered partner in 2003, on average 0.85 children were living in an employee's household, and about one third of the employees had a partner who was also working in a fulltime position. The average commuting distance was 11.4 kilometers (one-way), and 19% of the employees were living and/or working in one of the four largest Dutch municipalities. Employees were on average 31.88 years old, and about 31% of the workforce were female[25].

5 Results and discussion

5.1 The determinants of job mobility

Tables 4-6 present the results of the multinomial regressions. The explanatory power proved to be rather constant across sectors, with values for the Nagelkerke R^2 ranging from 0.061 to 0.096. The signs of the coefficient

[25] The relatively low share of females can be explained by the fact that many Dutch women have parttime jobs.

estimates indicate the direction of change in the relative risk-ratio - Pr ($Y_i = j$)/Pr ($Y_i = 1$) - in response to a ceteris paribus change in the value of the variable to which the coefficient is attached. The base category ($Y_i = 1$) is 'keep job and residence'.

We first discuss the determinants of job mobility (Table 4). The estimation results confirm our hypothesis regarding the negative effect of the strength of an employee's ties with the current employer on the propensity to change jobs, as job mobility indeed decreases with firm tenure. Interfirm mobility also tends to decrease with firm size, indicating that larger firms indeed offer better career opportunities within the firm. This also confirms our assumptions. However, these findings do not hold for sectors 7412 (Accounting, book-keeping and auditing activities; tax consultancy), 7523/7524 (Justice and judicial activities & public security, law and order activities) and 802 (Secondary education). For employees in these sectors, job mobility becomes more likely with increasing firm size. A possible explanation might be that for employees in sectors 7523/7524 and 802, a 'smaller firm' equals a smaller institution or school as employer, which may be perceived as a more pleasant work environment. Employees working in sector 7412 might have a tendency to leave their current (large) employer in order to set up their own (smaller) consultancy firm. We further established that employees with a degree in higher education are generally more likely to change jobs, hence our hypothesis with respect to the effect of employees' external opportunities on

their propensity to change employers was also confirmed. These results are in line with human capital theory, since indicators of specific human capital (e.g. firm tenure, firm size) were found to have the expected negative effects on interfirm mobility, while the positive effect of general human capital (education) on job mobility could also be verified.

Our findings regarding the effect of employee's current financial remuneration on their propensity to change jobs are inconclusive. The assumed negative effect of salary on interfirm mobility was established for three sectors, whereas we found this effect to be positive and significant for seven other sectors. Thus, our assumptions were only partly confirmed: in some sectors, employees indeed appear to be more content with their current position because of the comparatively high financial remuneration they receive, and will therefore be less likely to switch to another employer. Conversely, the predominant positive effect of one's salary on the propensity to change jobs suggests that individuals already in high-ranking positions decide upon changing employers in order to further advance their careers. This finding corresponds with human capital theory, assuming that a person's salary reflects his or her work-related expertise not already corrected for by observables like educational level and firm tenure.

In line with our propositions, the distance[26] between an employee's place of residence and workplace was found to be a significant determinant of

[26] We also investigated the impact of distance² in order to check for non-linear effects of commuting distance on mobility, but did not find improved statistical fit.

a consequent job change, suggesting that employees derive a high utility from a reduced commuting time and the lower costs associated with it. Furthermore, individuals living and/or working in the municipality of one of the four largest Dutch cities were - as expected - generally found to be more likely to change employers.

The propensity to change employers is lower for older and generally also for female employees. Our findings regarding the effect of age on interfirm mobility are in line with, for example, Bergin (2008), Henneberger and Sousa-Poza (2002), and Schneider (2007), as older employees are expected to have accumulated higher amounts of occupation-specific knowledge, and are therefore more inclined to stay with their current employer, especially since they have less time to recoup the costs associated with moving.

5.2 The determinants of residential mobility

With respect to residential mobility (Table 5), the results illustrate that the propensity to relocate is indeed lower for married individuals, and generally also decreases with the number of children. Hence, the results confirm our proposition regarding the negative effect of the strength of an employee's family ties (marital status, family size) on the propensity to move, and lend support to our assumption that individuals behave altruistically towards members of their families.

Contrary to our expectations, however, we found that employees with a partner who also works fulltime are in general more likely to change houses. Having a partner with a fulltime job obviously does not hamper residential mobility (e.g. preventing one's partner from having to cope with a longer commuting distance), but double-earners are actually more likely to be geographically mobile. Since households with a double income are in general more affluent than those with a single income, we assume that residential mobility is facilitated by the financial means available, and may be motivated by the desire to relocate to a comparatively more agreeable place of residence and/or neighborhood.

As hypothesized, we found that employees earning comparatively high salaries are generally more likely to migrate, indicating the precondition of having the necessary financial means in order to realize a residential move. Also confirming our propositions, longer commuting distances tend to facilitate migration. However, we found commuting distance to have a greater impact on job than residential mobility, indicating that employees who face long journeys to and from work are more likely to change employers than to relocate. Furthermore, as expected, individuals living and/or working in the municipality of one of the four largest Dutch cities are generally more likely to change their place of residence.

We also established that employees with a higher level of education appear to be more likely to move. These findings are in line with Börsch-Supan

(1990), and lend support to the argument that the social and psychological costs of migration are reduced by the availability of skills (Cellini, 2007). Age was also found to inhibit residential mobility. As suggested by Linneman and Graves (1983), this might 'reflect the shorter time period over which to realize any adjustment benefits (…) associated with residence site choice'. Older individuals are also more likely to have 'settled down', and can therefore be expected to feel more strongly attached to the neighborhood they live in.

5.3 The determinants of job and residential mobility

As expected, the inclination to change both job and place of residence (Table 6) decreases across all industries with the strength of an employee's ties with the current employer, the existing internal career opportunities, and generally also the strength of the employee's family ties, while it increases with the assumed external career opportunities.

While employees with a partner who also works fulltime were found to be more likely to change houses, having a partner with a fulltime job does not promote joint job and residential mobility. This may illustrate the expected altruistic behavior on the part of the employee, since residential relocation most likely reflects intraregional moves (e.g. to a nicer house or a more pleasant environment), while joint job and residential mobility is more likely to

indicate a job-induced, interregional move which may require the partner to give up his or her job.

Individuals with a high income and/or a degree in higher education are generally more likely to change both their workplace and place of residence. These findings - along the lines of Chen and Rosenthal (2008), who found that 'individuals with high human capital move to productive locations (…) in order to take advantage of their skills' (p. 520) - suggest that especially ambitious (highly-educated, already well-paid) individuals who aim to advance their careers are also willing to simultaneously relocate.

Furthermore, we established that larger distances between one's place of residence and place of work not only encourage job changes or migration, but also joint job and residential mobility. These findings indicate that employees who have to commute long distances might indeed search more intensively in both the job and the housing market, thereby being more likely to come across interesting 'offers'. In addition, these individuals might more willingly change jobs and relocate because they feel comparatively less attached to both their social and professional environments. We also found that employees living and/or working in the municipality of one of the four largest Dutch cities appear to either switch jobs, or to change houses, but not necessarily both. These findings suggest that in the highly congested areas of the four largest Dutch municipalities, job and residence changes often serve as substitutes, possibly in order to decrease individuals' commuting burden.

Age was found to also inhibit joint job and residential mobility, suggesting that older individuals are aware of the fact that they are facing a shorter period of time over which they may be able to realize any adjustment benefits (Linneman and Graves, 1983).

5.4 Limitations

This study is, however, not without limitations. First of all, an analysis of the determinants of job mobility would benefit from a differentiation between voluntary and involuntary job changes. Unfortunately, the data available do not provide information regarding the reasons underlying employees' job changes[27].

Next, since changes between the reference dates in two consecutive years are used in the analysis, any information referring to the timespan in between those two points in time (e.g. additional jobs) gets lost. Furthermore, since the samples were restricted to fulltime employees, job changes to parttime jobs or the reduction of an existing job from fulltime to parttime were recorded as 'moveouts', and the records were deleted from the samples.

Given that the information on salary in 2002 was used, only employees with jobs already existing in 2002 could be selected. As, however, previous

[27] A possible solution for this problem could be to only regard those employees as voluntary job changers whose period of unemployment between jobs did not exceed a specific timespan (Schneider, 2007). A preliminary analysis revealed that about 15-20% of the 'movers' had been unemployed more than 90 days between jobs, thus, in line with this reasoning, not more than 1/5 of the moves could be considered unintended.

mobility is argued to induce further mobility (e.g. Linneman and Graves, 1983; Nivalainen, 2004), this may lead to some sample selection bias, since the records of frequent job changers were more likely to be removed from the samples.

Especially in the case of larger organizations, a firm (BE) can have more than one location. The establishment in which a specific employee is working, however, cannot be determined from the available data. If an employee was found to be employed with a firm having multiple establishments, the location closest to the employee's place of residence was selected as the most probable workplace.

6 Conclusion

The results of the empirical analysis illustrate that individuals apparently assess the advantages and disadvantages of changing one's job and/or place of residence by taking into account the strength of their family- and job-related ties. Furthermore, as predicted by human capital theory, the presence of internal career opportunities impedes job changes, while mobility is promoted by the existence of external options.

A high salary was found to facilitate relocation, however, our findings regarding the effect of salary on interfirm mobility were inconclusive. These results may suggest that, as put forward by Henneberger and Sousa-Poza

(2002), individuals assess the merits and shortcomings of their present position not only on the basis of the absolute salary they receive, but also consider their relative income compared to other workers on a similar hierarchical level, as well as the qualities of the offers which might have been made by prospective future employers. Then again, these findings might also simply indicate that employees have other criteria next to the financial remuneration they receive, and may be willing to accept a comparatively lower salary in order to enjoy working in a position which endows them with other, comparatively more important benefits (e.g. a lower commuting distance, better internal career opportunities). Yet, we further established that a high salary generally encourages joint job and residential mobility, suggesting that skilled, ambitious individuals already in advantageous positions decide to switch employers in order to further advance their careers.

We also found that employees are likely to derive a high utility from a reduced commuting distance and the associated lower costs, as a long distance between one's place of residence and workplace was found to effectively encourage job or housing mobility. Our findings also indicate that employees who have to commute long distances not necessarily view job and residential moves as substitutes, since long commuting distances also have a positive impact on joint job and housing mobility. As these employees can be assumed to search more intensively in both the job and the housing market, they might be more likely to spot attractive vacancies. Furthermore, it may be

the case that these individuals feel comparatively less attached to both their social and professional environments, and might therefore more willingly change jobs and relocate.

We further established that individuals living and/or working in the municipality of one of the four largest Dutch cities have an increased likelihood to change jobs or houses, but not necessarily both. These findings suggest that in the highly congested areas of the four largest Dutch municipalities, individuals make use of the abundance of nearby alternative offers on the job and housing markets while simultaneously aiming to reduce their commuting burden.

Our findings illustrate the need to differentiate between interfirm mobility not involving migration, and job changes requiring the residential relocation of the employee and possible additional family members. While job mobility not including geographical relocation is to a great extent determined by a worker's personal characteristics (e.g. the accumulated human capital, or the strength of one's ties with the current employer), joint interfirm and residential mobility is also influenced by the structure of the household the employee is part of. Accordingly, since migration affects all members of the household, a prospective job changer is presumed to take the welfare of these into consideration when assessing the benefits and shortcomings of a possible job change including residential relocation. Furthermore, the results illustrate

the importance of locational characteristics such as commuting distance or urbanization on the propensity to change jobs and/or houses.

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Appendix

Table 1: MOBILITY

NACE	Keep job and residence	Change job/ keep residence	Keep job/ change residence	Change job and residence	Total
15	32,674	2,067	4,203	380	39,324
22	19,215	1,669	2,868	309	24,061
24	20,476	957	2,551	174	24,158
25/26	19,611	973	2,217	131	22,932
28/29	56,183	3,958	6,520	559	67,220
452	57,869	5,125	7,088	772	70,854
453/454	54,207	4,578	7,217	800	66,802
50	35,212	3,511	5,083	679	44,485
513/514	42,531	3,537	6,492	741	53,301
52	67,720	5,384	11,457	1,260	85,821
55	24,017	3,349	4,496	924	32,786
6024	30,430	3,158	3,742	543	37,873
65	40,091	1,737	6,791	404	49,023
72	40,745	4,627	6,149	845	52,366
7412	24,438	2,418	4,235	547	31,638
7511	57,158	3,422	8,413	738	69,731
7523/7524	28,160	834	5,419	233	34,646
801	18,919	1,138	3,571	350	23,978
802	14,652	937	2,379	190	18,158
803	13,316	812	2,254	300	16,682
851	52,019	3,225	9,669	1,143	66,056
853	50,800	2,331	9,164	684	62,979

Table 2: Definitions of variables used in the analysis

Variable	Definition
FIRM_TENURE	Firm tenure (in years) in 2003
FIRM_SIZE_LOG	Natural logarithm of firm size (average number of employees) in 2003
HIGH_EDUCATION	1 = university/college degree and 0 = otherwise [used in restricted samples]
SALARY_LOG	Natural logarithm of daily salary (in €) in 2002
PARTNER	1 = registered partnership and 0 = otherwise (in 2003)
N_OF_CHILDREN	Number of children in the household in 2003
PARTNER_JOB	1 = partner with fulltime job (at least 0.8 FTE) in 2003 and 0 = otherwise
DISTANCE	Distance between place of residence and place of work (in 2003, in 10 km)
CITY	1 = living and/or working in the municipality of one of the four largest Dutch cities and 0 = otherwise
AGE	Age (in years) of employee in 2003
FEMALE	1 = female and 0 = male

Table 3: Descriptive statistics (pooled)

	Minimum	Maximum	Mean	Std. Deviation
FIRM_TENURE	1	26	5.29	4.277
FIRM_SIZE	1	49,779	3,773.06	9,717.868
FIRM_SIZE_LOG	0	10.82	5.65	2.545
HIGH_EDUCATION	0	1	0.22	0.415
SALARY	20.61	23,048.90	83.401	46.963
SALARY_LOG	3.03	10.05	4.363	0.331
PARTNER	0	1	0.66	0.475
N_OF_CHILDREN	0	16	0.85	1.061
PARTNER_JOB	0	1	0,31	0.462
DISTANCE	0	31.50	1.14	1.999
CITY	0	1	0.19	0.392
AGE	22	40	31.88	5.156
FEMALE	0	1	0,31	0.464

Number of observations: 994,874

Table 4: Multinomial logit regression model: change job/keep residence (restricted samples)

NACE	15		22		24		25/26		28/29		452		453/454		50		513/514		52		55	
	Coefficient		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*	
FIRM_TENURE	-0.083	*	-0.096	*	-0.072	*	-0.116	*	-0.107	*	-0.111	*	-0.124	*	-0.130	*	-0.120	*	-0.110	*	-0.166	*
FIRM_SIZE_LOG	-0.098	*	-0.006		-0.196	*	-0.233	*	-0.137	*	-0.062	*	-0.084	*	-0.014		-0.118	*	-0.035	*	-0.086	*
HIGH_EDUCATION	0.298	*	-0.053		0.409	*	0.539	*	0.135	*	0.033		0.261	*	0.051		0.174	*	0.326	*	0.141	
SALARY_LOG	0.156		0.079		-0.195		-0.099		-0.062		-0.427	*	-0.115		0.047		0.059		-0.018		0.250	*
PARTNER	-0.029		-0.076		0.015		-0.017		0.047		0.084	*	0.061		-0.040		0.037		0.024		-0.003	
N_OF_CHILDREN	-0.060	*	-0.073	*	0.004		-0.080	*	-0.048	*	-0.049	*	-0.057	*	-0.092	*	-0.056	*	-0.068	*	-0.071	*
PARTNER_JOB	-0.002		0.027		0.126		-0.074		-0.022		-0.087	*	-0.127	*	-0.014		-0.153	*	-0.128	*	0.002	
DISTANCE	0.075	*	0.056	*	0.069	*	0.084	*	0.040	*	0.034	*	0.052	*	0.075	*	0.055	*	0.072	*	0.047	*
CITY	0.086		0.072		0.258	*	0.187		0.207	*	0.081		0.156	*	0.032		0.110	*	0.025		0.138	*
AGE	-0.030	*	-0.019	*	0.010		-0.015		-0.012	*	-0.005		-0.009	*	-0.018	*	-0.032	*	-0.036	*	-0.055	*
FEMALE	-0.180	*	-0.169	*	-0.108		-0.211		-0.184	*	-0.327	*	-0.232	*	-0.305	*	0.010		-0.327	*	-0.336	*

NACE	6024		65		72		7412		7511		7523/7524		801		802		803		851		853	
	Coefficient		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*	
FIRM_TENURE	-0.129	*	-0.125	*	-0.122	*	-0.092	*	-0.050	*	-0.040	*	0.003		-0.005		-0.052	*	-0.162	*	-0.104	*
FIRM_SIZE_LOG	-0.132	*	-0.062	*	-0.068	*	0.050	*	-0.022		0.112	*	-0.155	*	0.113	*	-0.001		-0.047	*	-0.042	*
HIGH_EDUCATION	0.188		-0.012		0.030		0.204	*	0.180	*	0.296	*	0.259	*	-0.524	*	0.425	*	0.384	*	0.246	*
SALARY_LOG	-0.192	*	-0.174	*	0.071		0.248	*	-0.114		0.956	*	0.437	*	0.042		0.516	*	0.581	*	0.422	*
PARTNER	-0.083		-0.123		0.080		-0.056		-0.073		-0.202	*	-0.033		-0.243	*	0.053		-0.038		-0.148	*
N_OF_CHILDREN	-0.016		-0.014		0.000		-0.058	*	-0.011		-0.012		-0.018		0.129	*	-0.156	*	-0.052	*	-0.019	
PARTNER_JOB	-0.035		-0.049		0.051		-0.011		-0.047		0.048		0.168		0.035		0.160		-0.016		0.064	
DISTANCE	0.046	*	0.121	*	0.060	*	0.016		0.119	*	0.160	*	0.269	*	0.110	*	0.102	*	0.125	*	0.087	*
CITY	0.061		0.086		0.181	*	0.211	*	0.106	*	-0.052		0.344	*	0.824	*	0.050		0.194	*	0.320	*
AGE	-0.014	*	-0.036	*	-0.026	*	-0.018	*	-0.053	*	-0.075	*	-0.018	*	-0.061	*	-0.055	*	-0.007		-0.015	*
FEMALE	-0.360	*	-0.071		0.105	*	-0.032		0.020		-0.239	*	-0.391	*	-0.320	*	0.059		-0.159	*	-0.349	*

The reference category is 'keep job and residence'. * indicates significance at the 5%-level.

Table 5: Multinomial logit regression model: keep job/change residence (restricted samples)

NACE	15		22		24		25/26		28/29		452		453/454		50		513/514		52		55	
	Coefficient		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*	
FIRM_TENURE	-0.039	*	-0.033	*	-0.036	*	-0.038	*	-0.039	*	-0.031	*	-0.027	*	-0.033	*	-0.036	*	-0.038	*	-0.046	*
FIRM_SIZE_LOG	0.018		0.021		-0.003		0.016		0.022	*	0.014		0.000		0.016		-0.008		0.012	*	0.010	
HIGH_EDUCATION	0.020		0.127	*	0.117	*	0.015		0.091	*	0.218	*	-0.012		0.249	*	0.057		0.053		0.030	
SALARY_LOG	0.068		0.010		-0.045		0.252	*	0.271	*	0.193	*	0.353	*	0.271	*	0.226	*	0.284	*	0.012	
PARTNER	-0.608	*	-0.511	*	-0.605	*	-0.676	*	-0.575	*	-0.724	*	-0.643	*	-0.677	*	-0.560	*	-0.577	*	-0.486	*
N_OF_CHILDREN	-0.044	*	-0.045		-0.026		-0.066	*	-0.057	*	-0.036	*	-0.064	*	-0.074	*	-0.078	*	-0.043	*	-0.033	
PARTNER_JOB	0.076		0.090		0.066		0.012		0.061		0.088	*	0.065		0.150	*	0.039		0.016		0.116	*
DISTANCE	0.036	*	0.019		0.025	*	0.018		0.013	*	-0.003		0.013	*	0.014		0.035	*	0.008		0.028	*
CITY	0.135	*	0.069		0.165	*	0.267	*	0.241	*	0.198	*	0.163	*	0.144	*	0.168	*	0.044		0.114	*
AGE	-0.057	*	-0.061	*	-0.066	*	-0.063	*	-0.065	*	-0.064	*	-0.067	*	-0.062	*	-0.062	*	-0.070	*	-0.055	*
FEMALE	0.041		-0.028		-0.033		0.038		0.140	*	0.161	*	0.207	*	0.064		0.069	*	0.044		-0.028	

NACE	6024		65		72		7412		7511		7523/7524		801		802		803		851		853	
	Coefficient		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*	
FIRM_TENURE	-0.037	*	-0.024	*	-0.042	*	-0.036	*	-0.031	*	-0.028	*	-0.036	*	-0.054	*	-0.059	*	-0.035	*	-0.036	*
FIRM_SIZE_LOG	0.019		0.019	*	0.010		0.021	*	0.031	*	-0.012		0.050	*	0.042	*	-0.007		-0.002		0.002	
HIGH_EDUCATION	0.037		0.074	*	-0.017		0.135	*	0.079	*	-0.013		0.135	*	0.228	*	-0.028		0.106	*	0.134	*
SALARY_LOG	0.049		0.038		0.003		0.148	*	0.000		-0.046		-0.241	*	-0.261	*	-0.255	*	-0.016		0.069	
PARTNER	-0.744	*	-0.567	*	-0.533	*	-0.581	*	-0.550	*	-0.572	*	-0.596	*	-0.575	*	-0.466	*	-0.621	*	-0.633	*
N_OF_CHILDREN	-0.028		0.019		-0.035	*	0.006		-0.053	*	-0.018		0.028		0.001		-0.023		0.034	*	0.024	*
PARTNER_JOB	0.106		0.061		0.125	*	-0.012		0.077	*	0.179	*	0.051		0.101		-0.039		0.023		0.036	
DISTANCE	0.006		0.006		0.009		0.002		0.052	*	0.012		0.054	*	0.035	*	0.031	*	0.019	*	0.019	*
CITY	0.162	*	0.126	*	0.156	*	0.139	*	0.089	*	0.143	*	-0.025		0.272	*	0.064		0.085	*	-0.014	
AGE	-0.063	*	-0.068	*	-0.064	*	-0.064	*	-0.063	*	-0.064	*	-0.074	*	-0.063	*	-0.056	*	-0.075	*	-0.076	*
FEMALE	0.139	*	-0.017		0.077	*	0.036		0.062	*	-0.049		-0.024		-0.001		0.003		-0.060	*	-0.157	*

The reference category is 'keep job and residence'. * indicates significance at the 5%-level.

Table 6: Multinomial logit regression model: change job and residence (restricted samples)

NACE	15		22		24		25/26		28/29		452		453/454		50		513/514		52		55	
	Coefficient		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*	
FIRM_TENURE	-0.166	*	-0.166	*	-0.150	*	-0.153	*	-0.150	*	-0.142	*	-0.168	*	-0.181	*	-0.192	*	-0.170	*	-0.238	*
FIRM_SIZE_LOG	-0.095	*	0.007		-0.150	*	-0.123		-0.056		-0.094	*	-0.063	*	0.017		-0.092	*	-0.032	*	-0.060	*
HIGH_EDUCATION	0.436	*	0.091		0.427	*	0.121		0.023		0.225		0.248		-0.194		0.351	*	0.350	*	0.353	*
SALARY_LOG	0.193		0.724	*	0.662	*	0.038		0.209		-0.267		-0.081		0.554	*	-0.006		0.217		0.079	
PARTNER	-0.649	*	-0.812	*	-0.138		-0.747	*	-0.548	*	-0.892	*	-0.635	*	-0.743	*	-0.661	*	-0.691	*	-0.613	*
N_OF_CHILDREN	-0.057		-0.157	*	-0.136		-0.422	*	-0.168	*	-0.199	*	-0.160	*	-0.209	*	-0.106	*	-0.136	*	-0.199	*
PARTNER_JOB	-0.051		0.379	*	-0.418		-0.084		-0.121		0.093		0.100		0.051		-0.115		-0.063		-0.068	
DISTANCE	0.074	*	0.052	*	0.089	*	0.128	*	0.053	*	0.049	*	0.070	*	0.113	*	0.055	*	0.068	*	0.039	*
CITY	0.125		-0.055		-0.018		0.172		0.344		0.422	*	0.310	*	0.180		0.183	*	0.058		0.049	
AGE	-0.077	*	-0.098	*	-0.098	*	-0.051	*	-0.084	*	-0.058	*	-0.079	*	-0.087	*	-0.068	*	-0.078	*	-0.079	*
FEMALE	0.178		-0.171		0.323		0.485	*	0.235		0.013		-0.098		0.016		0.173	*	-0.099		-0.055	

NACE	6024		65		72		7412		7511		7523/7524		801		802		803		851		853	
	Coefficient		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*		*Coefficient*	
FIRM_TENURE	-0.214	*	-0.181	*	-0.190	*	-0.155	*	-0.075	*	-0.050	*	-0.018		-0.064		-0.020		-0.140	*	-0.105	*
FIRM_SIZE_LOG	-0.142	*	-0.039	*	-0.054	*	0.028		-0.002		0.131	*	-0.156	*	-0.049		-0.133	*	0.035		-0.035	
HIGH_EDUCATION	0.325		-0.272	*	0.132		0.131		0.260	*	0.232		0.536	*	-0.302		0.416	*	0.293	*	0.135	
SALARY_LOG	-0.260		-0.054		-0.230		0.196		0.379	*	0.972	*	0.190		-0.212		0.808	*	1.091	*	0.776	*
PARTNER	-0.713	*	-0.753	*	-0.581	*	-0.678	*	-0.745	*	-1.079	*	-0.731	*	-0.486	*	-0.727	*	-0.712	*	-1.099	*
N_OF_CHILDREN	-0.099	*	-0.029		-0.160	*	-0.127	*	-0.022		0.064		-0.082		0.098		-0.102		-0.091	*	-0.030	
PARTNER_JOB	0.032		-0.021		0.231	*	-0.173		0.092		0.594	*	0.021		0.121		-0.026		-0.227	*	0.240	
DISTANCE	0.062	*	0.133	*	0.069	*	0.032		0.024		0.130	*	0.256	*	0.113	*	0.086	*	0.096	*	0.035	
CITY	0.120		0.172		0.297	*	0.152		-0.127		-0.131		0.551	*	0.894	*	-0.182		0.057		0.266	*
AGE	-0.063	*	-0.099	*	-0.072	*	-0.063	*	-0.113	*	-0.101	*	-0.045	*	-0.093	*	-0.111	*	-0.083	*	-0.082	*
FEMALE	-0.284		-0.080		0.270	*	0.115		0.016		-0.271		-0.237		-0.344	*	-0.288	*	-0.077		-0.219	*

The reference category is 'keep job and residence'. * indicates significance at the 5%-level