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Regional Differences in Spatial Flexibility: Long Commutes and Job Related Migration Intentions in the Netherlands

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Abstract Spatial flexibility of the workforce is important in clearing regional labour markets. Workers' spatial flexibility is limited and many European countries are developing policies to enhance the spatial flexibility of the labour force. Using the 2002 Netherlands Housing Demand Survey and logistic regression models, this paper examines the determinants of both long commutes and intentions to migrate for a job. The results show that living in the highly urbanized western part of the Netherlands increases the probability that workers opt for long commutes. Living in the more peripheral regions increases the probability that workers think about moving residence. The results further show that workers with long commutes are more likely to have the intention to move residence in the near future than workers with short commutes. This indicates that long commutes are suboptimal at the individual level.

Keywords Commuting · Job related migration · Job access · Regional labour markets · The Netherlands

Introduction

In an ideal (neoclassical) labour market, mobility of workers or employers acts as an equilibrating force, clearing regional labour markets. However, workers and employers are limited in their spatial flexibility and therefore employment is to a large extent regionally fixed (Blau and Duncan 1967). Phelps (1970) pictured the

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economy as a group of ‘local labour-market islands’ between which moves are costly. The cost of employers relocating, or workers covering the distances between islands inhibits mobility of labour and job opportunities. Because the costs associated with the relocation of employers are very high, the question if regional labour markets clear is to a large extent dependent on the spatial flexibility of workers—their possibility to accept jobs on other labour market islands (Van Ham 2002). The limited spatial flexibility of the workforce can explain (temporary) spatial mismatches of workers and jobs, leading to regional differences in unemployment and wages (Kain 1968; Simpson 1992).

Workers have two inter-related options when accepting a job on a different labour market. The first is to accept a long commute. Some workers develop long-term strategies, for example, working from home on one or more days a week, to accommodate long commutes. However, for most workers long commutes are suboptimal and therefore only a temporary solution. Workers might only accept a long commute because, for example, they know they are close to retirement or because they are anticipating a future residential move or even another change of employer. Van Ommeren (1996) has shown that long commuting trips lead to increased search intensity on the labour market. For society as a whole, long commutes are also suboptimal because they lead to more pressure on infrastructure. A second option workers have to accept a job on a distant labour market is to migrate. For some workers accepting a long commute and job related migration will be chronologically linked as they accept a long commute and then move residence to reduce the burden of commuting. Job related migration brings along high monetary and non-monetary costs. This is the case especially for homeowners who might therefore be more likely to accept long commutes (Helderman et al. 2004).

To get insight in the way regional labour markets react to external demand and supply-side shocks it is necessary to get insight in which workers opt for longer commutes and which workers are willing to move residence for a job. Whether or not workers are spatially flexible depends on both preferences and restrictions. Labour market economists generally focus on restrictions in the form of commuting costs or the costs of residential mobility in relation to the expected gains of labour market mobility (Van Ommeren 1996). Other literature focuses on restrictions originating from individual and household characteristics (e.g. Hanson and Pratt 1995). Also the regional structure of the labour market can be expected to influence the spatial flexibility of the labour force. The polynucleated urban structure of the Randstad in the Western part of the Netherlands offers workers several large concentrations of employment opportunities to choose from, which is likely influence their commuting and migration decisions (Clark and Kuijpers-Linde 1994; Dieleman and Faludi 1998a, b).

The aim of this paper is to come to a better understanding of regional variations in long distance commuting and job related migration in the Netherlands. This understanding will help policy makers to develop strategies to remove barriers to spatial flexibility. The first question to be answered in this paper is to what extent long commuting trips can be explained by individual characteristics, household characteristics and regional characteristics of the labour market. The second question is which workers are willing to move residence for their work and to what extent long commutes trigger job related migration intentions. To answer these questions

we use individual-level data from the 2002 Netherlands Housing Demand Survey (WBO) and logistic regression models.

Literature Review

Urban Form, Job Access, and Spatial Flexibility

The more jobs a worker can reach within acceptable commuting time, the lower the necessity to be spatially flexible (Van Ham 2002). Access to jobs depends on the geographical distribution of job opportunities relative to the residential location of the worker, and on the worker's commuting tolerance—the maximum time a worker is willing or able to spend on commuting. A generally accepted standard for commuting tolerance is 45 min for a single work trip (Wachs et al. 1993; Van Ommeren 1996). However, many workers will prefer (much) shorter commutes (see Van Ham et al. 2001a). Cities traditionally offer maximum access to job opportunities and numerous studies show that living in or moving to a city leads to occupational achievement and reduces the need of costly migration for future job mobility (see for example, Blau and Duncan 1967 for the USA; Wagner 1989 for Germany; Fielding 1992 for England; Lelievre and Bonvalet 1994 for France; Mulder and Van Ham 2005 for The Netherlands).

In polynucleated urban systems—systems with several large concentrations of employment opportunities—not the central cities, but the residential locations in between offer the highest job access (Van Ham et al. 2001a). Examples of such regions are the Rhine–Ruhr metropolitan region in Germany, the Flemish Diamond in Belgium, and the Randstad in the Netherlands (Dieleman and Faludi 1998a, b). This can be illustrated with Table 1 (Van Ham et al. 2001a) which shows the number of jobs within reach over the road for a selection of postcodes in the Netherlands (see Fig. 1 for the geographical location of the postcodes). The first row of the table gives the average number of jobs that can be reached within 15, 30 and 45 min. With an increase in commuting tolerance from 15 to 30 min job access increases with a factor 5 and with a factor 12 as job access increases to 45 min.

At a commuting tolerance of 15 min the number of jobs within reach nearly follows the rank size rule of the places involved. The four main cities (numbers 1 to 4 in Fig. 1) show the highest job access. As commuting tolerance increases to 30 and 45 min, the distribution of locations by job access shifts dramatically. An increase in commuting tolerance has a much larger effect in the polynucleated metropolitan region of the Randstad, where commuter sheds overlap, than in the single urban regions in the more peripheral parts of the country (Van Ham et al. 2001a, b). For example, for a location in the centre of the Randstad (number 15) job access increases from only 6,000 at 15 min to 1.9 million at 45 min. The city of Groningen, with a more traditional urban form (number 8) shows a much more modest increase from 128,000 jobs at 15 min to 433,000 at 45 min. The pattern of job access as observed closely resembles the classical regional division between Randstad, Intermediate zone and Periphery, which is based on economic regional performance (see Fig. 1).

It has frequently been suggested that polycentric urban systems could contribute to reducing commuting because they allow workers to locate within or close to an

Table 1 Number of jobs within reach by commuting tolerance

	15 min	30 min	45 min
Average job access	73,000	361,000	862,000
Amsterdam (1)	410,000	858,000	1,714,000
Rotterdam (2)	349,000	1,045,000	1,844,000
Utrecht (3)	293,000	1,081,000	2,947,000
The Hague (4)	293,000	945,000	1,818,000
Eindhoven (5)	206,000	470,000	961,000
Amersfoort (6)	173,000	808,000	1,888,000
Almere (7)	134,000	974,000	1,696,000
Groningen (8)	128,000	267,000	433,000
Woerden (9)	118,000	904,000	2,673,000
Nijmegen (10)	106,000	400,000	874,000
Arnhem (11)	96,000	398,000	1,139,000
Zwolle (12)	69,000	233,000	626,000
Leeuwarden (13)	65,000	173,000	323,000
Hoogeveen (14)	28,000	134,000	456,000
Centre of green heart (15)	6,000	217,000	1,897,000

Based on Van Ham, 2002

employment sub-centre. Although some studies have concluded that this is the case, others have come to the opposite conclusion (Schwanen et al. 2002). For example, Clark and Kuijpers-Linde (1994) concluded that during the transition to a polycentric urban system in the Randstad there will be more congestion and increased commuting times (see also Aguilera 2005; Williams 2005).

We expect that workers in the Randstad are the least likely to be willing to move for job reasons. These are the workers with good access to employment opportunities and with relatively small investments in commuting they can reach a large number of potential jobs, both now and in the future. Workers in the periphery of the Netherlands can not gain much in terms of job access by increasing their commuting tolerance. It is therefore expected that these workers are more likely to choose for job related migration. There are two possible effects of job access on commuting. On the one hand it can be expected that good access to jobs reduces the need for commuting. Those with the best access to jobs can be expected to have the shortest trips. On the other hand, workers with good access to jobs might use commuting as a substitute for residential mobility. Living in a strategic residential location between several cities reduces the need to move for a job as long as they are willing to invest in commuting.

Individual and Household Determinants of Spatial Flexibility

Potentially, an increase in commuting time can cause a huge increase in job access. Not everyone, however, is able or willing to stretch his or her commuting tolerance to the same extent. Neo-classical economics expresses commuting tolerance by the cost of commuting relative to the (potential) wage of a job. If the costs are too high, workers will not accept the job. Hägerstrand (1970) recognized that, besides monetary costs, commuting *time* is also an important constraint on spatial behaviour. Whether or not workers can accept long commutes depends largely



Source: Based on van Ham, 2002

Fig. 1 Map of the Netherlands

on the time they have available for commuting. Women are found to have shorter commuting trips than men (Madden 1981; Gordon et al. 1989; Turner and Niemeijer 1997) because of the severe day-to-day space–time constraints experienced by many women, especially when there are children present in the household (Hanson and Pratt 1992).

Higher educated workers can be expected to be more likely to have long commutes because jobs requiring a high level of education are more spatially concentrated in a limited number of locations than jobs requiring a low level of education (Börsch-Supan 1990; Simpson 1992). For workers with a high income, the relative costs of commuting drop and therefore it is more profitable to accept long

commuting trips. Also, the more hours someone works a day, the more likely they are to accept long commutes (Schwanen and Dijst 2002). Although this is only true up to a certain threshold as capability and coupling constraints limit the maximum time available for commuting.

The alternative to long commutes is job related migration (Termote 1980). As indicated in the introduction, long commutes and job related moves can be chronologically linked as some workers accept a long commute in anticipation of a residential move. Alternatively, commuting time might increase or decrease as a result of recent migration. The link between commuting and migration is most apparent in the case of dual-earner households. Because dual-earner households have to combine two workplaces with one residential location, they have a lower propensity to move than couples or families with a single breadwinner (Mulder 1993; Mulder and Hooimeijer 1999; Jarvis 1999). At the same time, dual-earner households can be expected to have a relatively high commuting tolerance to counterbalance the lack of migration tolerance. The low migration tolerance and the high commuting tolerance of dual-earners can be expected to increase the popularity of living on strategic residential locations in between large concentrations of job opportunities (Van Ham 2002).

The probability that workers are willing to accept a job over a longer distance can be expected to decrease with age (Topel and Ward 1992; Booth et al. 1999) because the gains of job mobility are lower and the costs are higher for older workers (Becker 1962; Davanzo 1981; Polachek and Hovarth 1977; Sjaastad 1962). Skill has a double-edged impact on job mobility (Börsch-Supan 1990). Higher educated workers are less likely to change job, but if they do, they are more likely to accept a job over long distance. For both men and women, having a partner can be expected to have a negative effect on job-related migration because of greater direct moving costs, the need to offset the psychological costs for both spouses, and the likelihood that a move may result in lost employment or income for the tied mover (Mincer 1978; Polachek and Hovarth 1977; Davanzo 1981). Having children also leads to higher direct and indirect moving costs (Mulder 1993). Research consistently shows that adults with children are substantially less mobile compared with childless couples. When people with children move these are typically local moves, triggered by the need of a larger dwelling (Fisher and Malmberg 2001). The presence of children was therefore expected to decrease the probability of job-related migration.

Homeownership and Spatial Flexibility

Housing tenure is the single most important predictor of residential mobility and migration (Rossi 1955; Mulder 1993; Helderma et al. 2004) and homeowners are consistently found to move less than renters (Clark and Dieleman 1996; Dieleman 2001; Speare et al. 1975; Van Leuvensteijn and Koning 2000; Helderma et al. 2004). Homeowners are less likely to move than renters because they are more likely to live in better quality homes and neighbourhoods than renters, and because transaction costs related to moving in the owner-occupied sector are high in the Netherlands, typically 10% of the price of the dwelling (Helderma et al. 2005).

The literature suggests an important link between homeownership and the labour market behaviour of workers. Oswald (unpublished manuscript) hypothesizes that regions and countries with high homeownership rates will also have high levels of unemployment because home-owners lack the spatial flexibility to move residence for employment reasons. Most studies testing Oswald's hypothesis use macro level data (Van Leuvensteijn and Koning 2004). Green and Henderschott (2001) show for the US that home-ownership constraints labour mobility, and increases unemployment for middle-aged workers. Nickell (1998) finds similar results using data for OECD countries. These macro-level findings however, do not reveal the underlying micro-level processes. Using individual level data, Van Leuvensteijn and Koning (2004) did not find homeowners to change job less often than renters do, and they did not find evidence of home-ownership affecting the risk of unemployment. They give various explanations for their findings. First, given the small size of the Netherlands and the high job density, people often change jobs without changing residence. Second, strong increases in housing prices in recent years may have compensated the moving costs of homeowners. And third, renters may also face considerable restrictions because of the regulation of the social renting sector and the resulting high moving costs for renters. Based on the above we expect homeownership to have a strong negative effect on job related moving intentions. We also expect that a lack of spatial flexibility among homeowners might lead them to accept longer commutes than renters (Van Ommeren et al. 2000; Yapa et al. 1971).

Data and Methodology

The individual-level data (75,043 respondents) were assembled from the 2002 Housing Demand Survey (WBO) of the Ministry of Housing, Spatial Planning and the Environment (VROM), which is available through the Netherlands Scientific Statistical Agency. The research sample was representative of the Netherlands' population aged 18 and over and not living in an institution. A unique feature of the WBO is that the four-digit postal codes of the respondents are known. This unique feature makes it possible to link characteristics of local and regional labour and housing markets to the individuals on several spatial levels.

To model the effect of individual and household characteristics on commuting times there are two possible strategies. The first is to analyse commuting as a continuous variable. Models of this kind usually perform poorly because people are indifferent towards commuting up to a certain threshold. We used a second strategy, analysing whether people spend more time on commuting than a predefined threshold. In the literature a generally accepted daily commuting tolerance is 90 min (45 min one-way). However, for most people 90 min is the absolute maximum time they want (or are able) to spend on commuting (see the literature review). We have tested our models of long commuting trips for several definitions of 'long commutes' and the results showed that models using 75 min two-way as a threshold performed the best in explanatory power. Our definition is therefore a bit less stringent than the usual threshold of 90 min. For the analysis of commuting times all working respondents aged between 18–60 with a job of 12 h a week or more and a

fixed work location were selected. This resulted in 37,225 respondents of which 6,369 respondents commute more than 75 min two-way.

For the analysis of job related moving intentions respondents aged 18–60 with a job of 12 h a week or more were selected. This selection resulted in 31,942 respondents of which 1,104 respondents consider a job related move. The respondents who intended to move for other reasons than work (mostly related to housing) were not included in the analysis. The dependent variable indicates whether (1) or not (0) respondents have the intention to move for job reasons in the two years after the interview. Of all respondents who stated to have the intention to move for job reasons, 36% wants to do so because of a (future) job change, 37% because they (or their partner) want to live closer to work and the rest of the households have other job related reasons. Ideally we would have liked to analyse actual job related moves, but that would require data which includes characteristics of the respondent and his or her employment status before the job change. Unfortunately this data was not available.

The use of the WBO data poses a restriction, which has to be taken into account when interpreting the results. Residential mobility intentions, including the main reason, are measured at the household level. This implies that for two-worker couples it is not possible to determine which of the two careers triggered a job related moving intention. We only know that the intention to move is job related. When we model moving intentions we do so based on the characteristics of the respondent, while in reality the career of the partner of the respondent might have triggered the intention to move. Because we know from the literature that most job related moves are made for the career of the male partner it is likely that some job related moving behaviour is attributed to females while they should be attributed to males. This problem is likely to mainly affect the gender parameter in the models. We minimised the bias by including only employed respondents in the models. Further, we tested all the models for men and women separately and did not find differences which caused concern.

We used a measure of job access as developed by Van Ham (2002) using data on job opportunities from the National Information System of Employment (LISA). This is a registry of nearly all jobs, by location, including government and other non-commercial organizations. The measure of job access was calculated with the GIS extension Flowmap (De Jong and Floor 1993). As a proxy for residential locations, very small administrative regions were used: the almost 4000 four-digit postal code areas in the Netherlands. The size of the potential labour market that can be reached from these postal code areas is determined by commuting tolerance. For the purpose of this study, all jobs within 45 min of the centre of each postal code area (over the road network by car) were counted. This measure of job access was allotted to all respondents on the basis of their 4-digit postal code.

For all analyses we used logistic regression to model whether (1) or not (0) respondents have a long commute and whether (1) or not (0) respondents have a job related moving intention. The models included both individual level characteristics and postal code level characteristics and the data included multiple individuals per postcode. Therefore, we adjusted the standard errors for clustering of individuals on the postcode level (see, for example, Moulton 1990; Statacorp 2001). Table 2 shows the variable summary statistics for the models of commuting time and job related moving intentions.

Table 2 Variable summary statistics

	Model long commutes <i>N</i> =37,225			Model moving intentions <i>N</i> =31,942		
	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range
Dependent variable	0.17		0–1	0.035		0–1
Age	37.10	11.05	18–60	38.98	10.80	18–60
Female	0.46		0–1	0.43		0–1
Child	0.40		0–1	0.45		0–1
Couple one earner	0.09		0–1	0.11		0–1
Single earner	0.38		0–1	0.31		0–1
Couple dual earner	0.53		0–1	0.58		0–1
Living with parents	0.14		0–1	0.09		0–1
Immigrant	0.07		0–1	0.06		0–1
Primary education	0.04		0–1	0.04		0–1
Lower secondary education	0.13		0–1	0.15		0–1
Upper secondary education	0.13		0–1	0.13		0–1
Higher vocational education	0.39		0–1	0.37		0–1
University education	0.32		0–1	0.32		0–1
Household income €1000	31.07	19.51	0–337	32.74	20.21	0–544
Hours work per week	35.22	10.90	12–100	Not in model		
Self employed	0.07		0–1	0.09		0–1
Work at home	0.07		0–1	0.10		0–1
Homeowner	0.65		0–1	0.70		0–1
Recent mover (in last 4 years)	0.32		0–1	0.31		0–1
Attached to neighbourhood	Not in model			0.10		0–1
Satisfied with neighbourhood	Not in model			0.80		0–1
Satisfied with home	Not in model			0.86		0–1
Commute by car	0.56		0–1	Not in model		
Commute by train	0.05		0–1	Not in model		
Commute by other	0.39		0–1	Not in model		
Periphery	0.30		0–1	0.30		0–1
Intermediate zone	0.33		0–1	0.35		0–1
Randstad	0.37		0–1	0.35		0–1
Job access 45 min/100,000	11.82	7.02	0.01–29.84	11.52	6.99	0.01–29.84
Long commute	Dependent in this model			0.17		0–1

WBO 2002, own calculations

Results

Long Commuting Trips

Before presenting the results of our regression models we give some basic insight in commuting patterns in the Netherlands. The results presented in Table 3 are weighted to make them representative of the Netherlands population aged 18 years

Table 3 Distribution of commuting times (two-way) for population (weighted)

Commuting time	Population	Percentage of population
Not employed (or job<12 h per week)	4,950,000	40.1
No fixed work location	1,040,000	8.4
0–14 min	1,240,000	10.1
15–29 min	1,220,000	9.9
30–44 min	1,520,000	12.4
45–59 min	411,000	3.3
60–74 min	872,000	7.1
75–89 min	154,000	1.3
90+ min	922,000	7.5
Total	12,329,000	100

WBO 2002 (own calculations). The category 45–59 min and 75–89 min are underrepresented because many respondents round off their commuting time to 60 or 90 min.

or older. Just over 40% of the Netherlands population is not employed and just over 8% does not have a fixed work location. The data shows that almost 4 million workers (31.6% of the population) commute more than 30 min a day (two-way) and more than 900,000 workers (7.5% of the population) commute more than 1.5 hour a day.

Table 4 shows a breakdown of average commuting times by region and gender. Our data confirms that on average women (41 min per day) have shorter commuting trips than men (49 min per day). Men and women living in the Randstad have the longest commuting trips and men and women living in the Periphery have the shortest commuting trips. It is interesting that without controlling for individual characteristics, workers living in locations with good access to employment opportunities (the Randstad) spend most time on commuting.

Table 5 shows the results of three logistic regression models. The dependent variable measures whether (1) or not (0) people commute more than 75 min two-way. Model 1 shows no age effect on the probability of having a long commute. Females are less likely to have a long commute than men. There is no general effect of having children on long commutes, but the interaction effect between female and child shows that mothers have a much lower probability to commute more than 75 min two-way than women without children and men. Workers in one-earner households have the highest probability to commute more than 75 min two-way. Dual earners have a lower probability and especially women in dual earner households have a low probability to have a long commute. In short, working

Table 4 Average commuting times (two-way in minutes) by gender and region

Region	Women	Men	Total
Periphery	34.6	42.4	38.9
Intermediate zone	41.2	51.4	46.7
Randstad	45.5	52.6	49.1
Total	41.1	49.1	45.4

WBO 2002 (own calculations)

Table 5 Logistic regression of long commuting trips ($N=37,225$)

	Model 1		Model 2		Model 3	
	B	Exp (B)	B	Exp (B)	B	Exp (B)
Age	0.021	1.021	0.020	1.020	0.020	1.021
Agesquare	0.000	1.000	0.000	1.000	0.000	1.000
Female (ref = male)	-0.117 **	0.889	-0.136 ***	0.873	-0.135 ***	0.873
Child (ref = no child)	0.039	1.040	0.040	1.040	0.041	1.042
Female*child	-0.306 ***	0.736	-0.310 ***	0.734	-0.310 ***	0.733
Single earner (ref = couple 1 earner)	-0.113	0.893	-0.136 *	0.873	-0.132 *	0.876
Single earner*child	-0.082	0.921	-0.079	0.924	-0.079	0.924
Couple dual earner (ref = couple 1 earner)	-0.150 ***	0.861	-0.144 ***	0.866	-0.143 ***	0.867
Couple dualearn*female	-0.220 ***	0.803	-0.213 ***	0.808	-0.213 ***	0.808
Living with parents (ref = not with parents)	-0.025	0.975	-0.022	0.979	-0.023	0.978
Immigrant (ref = not immigrant)	0.254 ***	1.289	0.172 ***	1.188	0.177 ***	1.194
Lower secondary educ (ref = primary educ)	-0.159	0.853	-0.153	0.858	-0.154	0.857
Upper secondary educ (ref = primary educ)	0.153	1.165	0.143	1.153	0.142	1.153
Higher vocational educ (ref = primary educ)	0.224 **	1.251	0.222 **	1.249	0.221 **	1.247
University education (ref = primary educ)	0.706 ***	2.026	0.691 ***	1.996	0.693 ***	2.000
Household income	0.006 ***	1.006	0.005 ***	1.005	0.005 ***	1.005
Hours work per week	0.010 ***	1.010	0.010 ***	1.010	0.010 ***	1.010
Self employed (ref = not self employed)	-0.719 ***	0.487	-0.711 ***	0.491	-0.713 ***	0.490
Work at home (ref = not work at home)	0.326 ***	1.385	0.323 ***	1.381	0.325 ***	1.385
Homeowner (ref = renter)	0.025	1.025	0.059	1.061	0.056	1.058
Recent mover (ref = no recent mover)	0.157 ***	1.170	0.164 ***	1.179	0.165 ***	1.180
Commute by train (ref = commute by car)	2.295 ***	9.921	2.242 ***	9.408	2.250 ***	9.485
Commute by other (ref = commute by car)	-0.844 ***	0.430	-0.859 ***	0.424	-0.857 ***	0.424
Intermediate zone (ref = periphery)			0.504 ***	1.655	0.576 ***	1.779
Randstad (ref = periphery)			0.570 ***	1.769	0.701 ***	2.016
Job access 45 min					-0.009 ***	0.991
Constant	-2.610 ***	0.074	-2.947 ***	0.053	-2.916 ***	0.054
Model -2 Likelihood (initial=33,182)	28,409		28,176		28,170	
Improvement	4,773	$df=23, p=0.00$	5,006	$df=25, p=0.00$	5,012	$df=26, p=0.00$

WBO 2002 (own calculations)

* $p<0.10$; ** $p<0.05$; *** $p<0.01$

women in dual earner households with children have the lowest probability to have a long commute.

Immigrants are more likely to have long commutes than non-immigrants, suggesting that they have more problems finding a job on the local labour market. With increasing level of education, income and hours worked per week the probability to commute more than 75 min increases. Self employed workers are less likely to commute more than 75 min than other workers. This most likely reflects that self-employed workers have more freedom to choose their place of work than other workers. Workers who work at home every now and then more often commute more than 75 min. This is most likely a matter of reversed causality where workers with long commutes use working from home as a strategy to cope with the long commute. Contrary to what we expected, the effect of homeownership on the probability of having a long commute is small and not significant. The effect of the recent mover status variable indicates that workers who moved in the four years before the interview are significantly more likely to have a long commute than workers who have not moved recently. A possible explanation for this effect is that workers who have moved residence recently have not yet adjusted their work location and therefore temporarily have a long commute. Another possible explanation is that the recent move was triggered by an unsustainable long commute and that the move resulted in a shorter commute which still falls in our definition of long commutes. We also tested the effect of a recent move for work reasons only (828 cases) on the probability of having a long commute (results not shown). The results show that the effect is still positive, but not significant. Unfortunately the data we use does not allow us to investigate this further as longitudinal data including information on the ordering of migration and commuting decisions would be required. Finally, model 1 shows that people who commute by train have by far the longest commuting trips. Also here it has to be noted that this is not a 'causal' relationship in the sense that travelling by train causes long commuting trips.

In model 2 regional dummies are added to the model. After controlling for individual and household characteristics, workers living in the Randstad—the region with the best access to employment opportunities—are the most likely to have a long commute. Two factors might explain this result. The first is that in regions with good access to jobs traffic congestion causes commuting trips to be longer. The second factor might be that residential locations in the Randstad are seen as strategic locations and people living there might use commuting as a substitute for migration. Those living in the Periphery of the Netherlands are the least likely to have a long commute: for them investing in a long commute does not substantially increase their access to jobs.

In model 3 we add the variable job access to the model. Interestingly, this does not change the regional effects as found in model 2. This indicates that regional differences in job access do not explain regional differences in the occurrence of long commutes. The effect of job access is small, but significant, indicating that after controlling for region, those workers with good access to employment opportunities have a lower probability to commute more than 75 min two-way. The unchanged regional effect suggests that factors as congestion and strategic choice of residential locations cause workers in the Randstad to have longer commutes.

Job Related Moving Intentions

Based on the literature review it was expected that workers with long commutes are more likely to have a job related moving intention than workers with short commutes. It was further expected that workers with good access to employment opportunities are the least likely to have the intention to move.

Table 6 shows three logistic regressions of job related moving intentions. The results show no major age effect. Females are found to be less likely to consider a job related move than to men. This is in line with the literature, but it is difficult to give a meaning to this result because for dual earner couples we do not know which career triggers the wish to move. The presence of children in the household decreases the probability that people consider a job related move. Compared to one-earner couples, single parents (interaction between no partner and child) and dual-earner couples are less likely to consider a move. The category of workers still living with their parents forms an interesting group. They are by far the least likely to consider a move for employment reasons. This is probably caused by the fact that most moving intentions for this group are related to housing. There is no significant effect for being an immigrant. With increasing level of education and increasing household income the probability that people consider a job related move increases.

Contrary to what we expected, being self-employed increases the probability to have a job related moving intention. Also working at home regularly increases the probability that people consider a move. This might indicate that people see working at home as a temporary solution for long commutes. As expected, homeowners are much less likely to consider a job related move than renters. This indicates that being a homeowner is a very important barrier to labour market flexibility. The effect of the recent mover status variable is not significant but in the expected direction: recent movers are less likely to consider a job related move. People who are attached to their neighbourhood or who are satisfied with their neighbourhood or dwelling are less likely to state that they want to move for work than others. This shows that housing market behaviour and labour market behaviour cannot easily be separated.

Living in the Intermediate zone, and especially living in the Randstad decreases the probability that people consider a job related move. This is what we expected based on the literature review. The results confirm the hypothesis that residential locations in the Randstad are seen as strategic residential locations which reduce the need for migration. As expected, the effects of the regional dummies disappear when the job access variable is included in Model 2. Again, in line with what we expected, the more jobs people can reach within 45 min, the lower the probability that they want to move for their work. Good access to job opportunities reduces the need to migrate for work reasons. Finally, Model 3 includes a dummy indicating if respondents commute more than 75 min two-way. The results show that, as expected, having a long commute significantly increases the probability that people consider a job related move. This indicates that for most workers a long commute is only a temporary solution. Interestingly, introducing the long commute variable in the moving intention model has no real effect on any of the other variables included in the model. This indicates that long commutes have an independent effect on migration intentions.

Table 6 Logistic regression of job related moving intentions ($N=31,942$)

	Model 1		Model 2		Model 3	
	B	Exp (B)	B	Exp (B)	B	Exp (B)
Age	0.025	1.025	0.026	1.027	0.021	1.022
Agesquare	-0.001 ***	0.999	-0.001 ***	0.999	-0.001 ***	0.999
Female (ref = male)	-0.239 ***	0.787	-0.240 ***	0.787	-0.209 ***	0.811
Child (ref = no child)	-0.405 ***	0.667	-0.406 ***	0.666	-0.389 ***	0.678
Single earner (ref = couple 1 earner)	0.051	1.052	0.056	1.058	0.098	1.103
Single earner*child	-0.739 ***	0.478	-0.742 ***	0.476	-0.733 ***	0.481
Couple dual earner (ref = couple 1 earner)	-0.321 ***	0.726	-0.318 ***	0.728	-0.282 **	0.754
Living with parents (ref = not with parents)	-2.773 ***	0.062	-2.774 ***	0.062	-2.756 ***	0.064
Immigrant (ref = not immigrant)	-0.179	0.836	-0.171	0.843	-0.183	0.833
Lower secondary educ (ref = primary educ)	-0.350	0.705	-0.353	0.703	-0.351	0.704
Upper secondary educ (ref = primary educ)	-0.085	0.919	-0.087	0.917	-0.123	0.884
Higher vocational educ (ref = primary educ)	0.434 *	1.544	0.435 *	1.545	0.387	1.472
University education (ref = primary educ)	1.279 ***	3.592	1.287 ***	3.621	1.166 ***	3.209
Household income	0.008 ***	1.008	0.008 ***	1.008	0.007 ***	1.007
Self employed (ref = not self employed)	0.289 ***	1.335	0.282 ***	1.326	0.393 ***	1.482
Work at home (ref = not work at home)	0.401 ***	1.494	0.403 ***	1.496	0.400 ***	1.492
Homeowner (ref = renter)	-0.773 ***	0.462	-0.778 ***	0.459	-0.794 ***	0.452
Recent mover (ref = no recent mover)	-0.100	0.904	-0.099	0.905	-0.115	0.891
Neighbourhood attached (ref = not attached)	-0.704 ***	0.495	-0.708 ***	0.493	-0.696 ***	0.499
Satisfied neighbourhood (ref = not satisfied)	-0.695 ***	0.499	-0.698 ***	0.497	-0.704 ***	0.495
Satisfied home (ref = not satisfied)	-0.843 ***	0.430	-0.842 ***	0.431	-0.834 ***	0.435
Intermediate zone (ref = periphery)	-0.174 **	0.840	-0.040	0.961	-0.098	0.906
Randstad (ref = periphery)	-0.331 ***	0.718	-0.082	0.921	-0.162	0.851
Job access 45min			-0.017 **	0.983	-0.017 **	0.983
Long commute (ref = not long commute)					0.725 ***	2.064
Constant	-1.078 *	0.340	-1.039 *	0.354	-1.028 *	0.358
Model -2 Likelihood (Initial = 9,556)	8,152		8,148		8,060	
Improvement	1,404	$df=23, p=0.00$	1,408	$df=24, p=0.00$	1,496	$df=25, p=0.00$

WBO 2002 (own calculations)

* $p<0.10$; ** $p<0.05$; *** $p<0.01$

Conclusion and Discussion

In this paper we argued the importance of long distance commuting and job related in spatially matching supply to demand on the labour market. From the geographical literature various barriers are known which hamper long commutes and job related migration. Many of these take the form of monetary or time budget restrictions at the individual and household level. Other barriers arise from constraints in the housing market or the spatial structure of the labour market. Our findings confirm that individual and household characteristics are important determinants of spatial flexibility. Women in general and particularly those having children have shorter commutes than men in the same household position. Having children also clearly reduces the willingness to migrate for a job. Those in more traditional family settings—with a single breadwinner—are more mobile than dual-earner households and single-parent households, both in terms of commuting and migration.

The results clearly show the importance of monetary restrictions: long commutes are more common among workers with a high income than among those with lower incomes. A high income also contributes to the willingness to migrate for a job. The role of education is very prominent in explaining both commuting and migration. Long commutes are twice as common among the highly educated than among those with a lower level of education and the odds of the willingness to migrate are close to four to one. As expected, homeowners are less willing to migrate for a job than renters. The literature gives two explanations for this effect. The first is that homeowners generally have better quality housing and neighbourhoods and are therefore more likely to stay where they are. The second is that transaction costs are very high in the owner-occupied sector. To isolate the effect of transaction costs, we included separate indicators of residential satisfaction with both the dwelling and the neighbourhood and an indicator of psychological attachment to the residential location. Part of the effect of homeownership on the willingness to migrate is indeed due to residential satisfaction and attachment, but the effect of homeownership remained strong indicating that high transaction costs are a major restriction to migration for homeowners. Because homeowners are less likely to indicate an intention to migrate, we expected homeowners to be more likely to have long commutes. This however turned out not to be the case. Because the low migration tolerance of homeowners is not compensated by longer commutes, homeownership in the Netherlands is a serious barrier to the spatial flexibility of workers. This should worry policymakers because the levels of homeownership have been rising fast over the last few decades, which might cause the workforce to become less spatially flexible (see also Oswald unpublished manuscript).

With respect to the effects of the spatial structure of the labour market on commuting and migration, we found that workers living in the Randstad have longer commutes and are less willing to migrate for a job than workers in the rest of the country. Part of this effect can be explained by regional differences in job access. When controlled for access to employment opportunities, the effect of living in the Randstad on the willingness to migrate for a job disappears, indicating that access to employment opportunities decreases the need to move residence. The effect of living in the Randstad on commuting did not disappear after controlling for job access.

This might partly be explained by the polynucleated urban structure in the Randstad. Because of this structure, a long commute is very effective in increasing the number of jobs that can be accessed and therefore the number of vacancies for which one can apply. Polycentric labour markets offer great flexibility to those willing to accept a long commute, while monocentric labour markets offer limited opportunities and therefore increase the probability of job related migration. Another factor that is likely to contribute to the long commutes of those living in the Randstad is congestion.

Policies to enhance the flexibility of workers are prominent on the political agenda in most European countries. They encompass among others, schooling programmes, restructuring of unemployment and disability benefits and subsidizing childcare facilities. Most of these programmes are aimed at increasing the labour force participation of the population. Relatively little attention has been paid to stimulating the spatial flexibility of the labour force at the regional and the national level. We found that many individual restrictions arise from limited time and monetary budgets of workers. These budgets could provide a starting point for policies aimed at stimulating migration and commuting. Overall, stabilising the costs of commuting, reducing the costs of migration, providing rapid and frequent public transport and adjusting the housing market to enable homeowners to be more flexible seems a combined strategy that could contribute to more spatial flexibility in our regional labour markets.

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