WORKING PAPERS

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Evidence from the Czech Republic

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Abstract

Given the low levels of migration in the CEEC found in the literature, this paper raises the issue of who is willing to migrate in these countries. Using data on the willingness to migrate in the Czech Republic we show that variables measuring regional labour market conditions and amenities contribute little to explaining willingness to migrate, but that personal and household characteristics are more important. The least willing to migrate are the family-house owners, the less educated and the elderly as well as persons residing in regions above-average unemployment rates. Improving the efficiency of the housing market and focusing on the problems of peripheral regions should thus be primary foci of a policy aimed at improving labour-market adjustment through migration. These policies are, however, unlikely to yield rapid returns, since the willingness to migrate of all subgroups analysed (except for the less educated) reacts only weakly to regional labour market incentives and amenities.

I   Introduction

Recent research into labour market adjustment mechanisms of the Central and East European Countries (CEECs) suggests that low internal migration is one of the major impediments to reducing regional disparities. Fidrmuc (2004) finds that internal mobility in these countries is low, has been falling over the last decade and is inefficient in reducing regional disparities. Ederveen and Bardsley (2003) find that migration in the CEECs is less responsive to regional wage and income disparities than in the old EU member states. Huber (2004) shows that net migration in the CEECs would have to increase substantially to be comparable to that in the old EU member states, given the regional unemployment and wage disparities. Finally, Drinkwater (2003a) reports that among the larger CEECs only Poland ranks in the upper half in a list of 20 countries' willingness to migrate. Since low migration rates undermine the short run adjustment capabilities of regional labour markets and are likely to contribute to high nation-wide unemployment through regional mismatch, this suggests that increasing the willingness to migrate should be a primary policy concern in the CEECs. This would necessitate a clear understanding of what are the major impediments to migration and what could make the non-movers more willing to migrate.

A number of explanations such as liquidity constraints, housing market imperfections and a high share of owner-occupied housing as well as low search incentives for the (long term) unemployed have been put forward to explain the low migration in the CEEC's. Only few studies, however, have used individual-level migration data to address the issues of who are the migrants in the CEECs and what motivates them to migrate.[1] In this paper, we use data from a large sociological survey carried out in the Czech Republic throughout the 1990s, which inter alia addressed individuals' attitudes to moving. We formulate a simple model of job search with migration in the next section. This model shows that aside from individual factors, regional factors such as wage disparities should influence the willingness to migrate. Section 3 discusses the data while section 4 reports the results of our econometric analysis of the willingness to migrate. We find that the willingness to migrate in general has little relation to labour-market conditions. Among those least willing to migrate are the family-house owners, the less educated and the elderly as well as persons residing in regions with an above-average unemployment rate. Therefore, in section 5 we focus on the impediments to the willingness to migrate for these groups. We find that only the less educated are characterised

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by a higher responsiveness of the willingness to migrate to regional economic conditions than the overall workforce. Furthermore, the less educated and residents of high-unemployment regions are least willing to migrate when their regions are relatively remote from other potential destination regions. In Section 6 we thus conclude by arguing that housing-market inefficiencies as well as low migration incentives for middle-income groups are the most important impediments to migration in the Czech Republic and that any policy which focuses on increasing the willingness to migrate among the least mobile groups of the population is unlikely to yield rapid returns on account of the low responsiveness to economic conditions of these groups.

II The Model

We use data from the 11th Survey on Economic Expectations and Attitudes conducted in the Czech Republic in April 1998. Among the over 100 questions posed in this survey, the one of interest to us is: "In case you would not have a job but you would have a possibility to get a job and a flat in another, distant municipality, would you be ready to move?". Respondents had to choose between four possible answers: definitely yes, rather yes, rather not and definitely not.

To model the choices faced by the respondents, we consider an economy consisting of a number of regions sufficiently distant from each other to preclude commuting. In each region $i=1,...,I$ employed workers earn wages (w_i) facing an exogenous probability of job loss of (s). The unemployed by contrast search for jobs with constant search intensity and receive a fixed unemployment benefit (b). The probability for an unemployed to be matched to a job (p_i) is determined by a matching function, which depends on the unemployment (u_i) and vacancy rate (v_i) in region i such that:

$$p_i = f(u_i, v_i) \tag{1}$$

where $f()$ is decreasing in in u_i and increasing in v_i. Assuming linear homogeneity of $f()$, p_i depends only on the unemployment-vacancy ratio ($\theta_i = u_i / v_i$) such that $p_i = \varphi(\theta_i)$ with p_i decreasing in θ_i.

Individuals derive utility from income (which is either b or w_i) and amenities (a_i), which are a function of a vector of regional characteristics (z_i) (i.e. $a_i=a(z_i)$). We denote by V_i the presented discounted value of being employed in region i and by U_i the present discounted

value of being unemployed in the same region. As shown by Pissarides (1990), in steady state V_i and U_i satisfy:

$$rV_i = w_i + a_i + s[U_i - V_i] \tag{2}$$

$$rU_i = b + a_i + \varphi(\theta_i)[V_i - U_i] \tag{3}$$

with r being the nation wide interest rate. Solving (2) and (3) for V_i and U_i yields:

$$V_i = a_i + \frac{w_i(r + \varphi(\theta_i)) + sb}{r(r + s + \varphi(\theta_i))} \tag{4}$$

and

$$U_i = a_i + \frac{b(r + s) + \varphi(\theta_i)w_i}{r(r + s + \varphi(\theta_i))} \tag{5}$$

If an individual (k) moves from region i to j, we assume that she has to pay migration costs t_{ij}, which depend on the individual's characteristics (c^k) and the distance between the sending and receiving region (d_{ij}). Hence, a risk-neutral individual (k) unemployed in region i, which has an offer for a job and a flat in region j, as implied in the question, will prefer to move to region j rather than stay in region i (i.e. will be willing to migrate) if :

$$V_j - U_i > t_{ij}(c^k, d_{ij}) \tag{6}$$

or

$$y^* = a_j - a_i + \left[\frac{w_j(r + \varphi(\theta_i)) + sb}{r(r + s + \varphi(\theta_i))} - \frac{b(r + s) + w_i\varphi(\theta_i)}{r(r + s + \varphi(\theta_i))} \right] - t_{ij}(d_{ij}, c^k) > 0 \tag{7}$$

where y^* is the net gain from migrating and taking up employment in the destination region.

Thus aside from migration costs, which depend on the personal characteristics and distances between regions, the willingness to migrate will be influenced by regional characteristics such as the wage levels, unemployment-vacancy ratios as well as amenities in both receiving and sending regions.

To empirically implement the model we approximate (7) by a first order Taylor expansion around the mean, which yields:

$$\begin{aligned}
y^* \approx \bar{y}^* + \frac{\partial a(\bar{x})}{\partial z}(\tilde{a}_j - \tilde{a}_i) + \frac{(r + \varphi(\bar{\theta}_i))}{r(r + s + \varphi(\bar{\theta}_i))}\tilde{w}_j - \frac{\varphi(\bar{\theta})}{r(r + s + \varphi(\bar{\theta}))}\tilde{w}_i + \frac{\partial \varphi(\bar{\theta})}{\partial \theta}(\bar{w} - b)s\tilde{\theta}_j \\
- \frac{\partial \varphi(\bar{\theta})}{\partial \theta}(\bar{w} - b)(s + r)\tilde{\theta}_i - \frac{\partial t(\bar{d}, \bar{c}^k)}{\partial d}\tilde{d}_{ij} + \frac{\partial t(\bar{d}, \bar{c}^k)}{\partial d}\tilde{c}^k
\end{aligned} \tag{8}$$

or after collecting the parameter terms and adding an individual specific error term η^k.

$$y^* \approx \alpha + \beta_a(\tilde{a}_j - \tilde{a}_i) + \beta_{w_j}\tilde{w}_j - \beta_{w_j}\tilde{w}_i + \beta_{\theta_j}\tilde{\theta}_j - \beta_{\theta_i}\tilde{\theta}_i + \beta_d\tilde{d}_{ij} + \beta_{c_i}\tilde{c}_i^k + \eta^k \tag{8'}$$

where any variable $\tilde{x}$ is the deviation of x from its mean $\bar{x}$, (i.e. $\tilde{x} = x - \bar{x}$) and β_x is the partial derivative of $y*$ with respect to x evaluated at $\bar{x}$ with $x \in \{a_i, a_j, w_i, w_j, \theta_i, \theta_j, d_{ij}, c_j^k\}$.

The possible answers to the question were: definitely not, rather not, rather yes and definitely yes. We thus cannot observe $y*$ but only one of the four possible answers which are encoded 1 through 4 respectively. In consequence we assume that all individuals for whom (7) was fulfilled answered either by selecting the answer definitely yes (i.e. 4) or rather yes (i.e. 3), and that all other people answered rather not or definitely not (i.e. 2 or 1). Furthermore, we assume that the two extreme answers occurred if either $y*$ was very high (for definitely yes) or low (for definitely not). Denoting as μ_1, μ_2 and μ_3 the cut-off levels between choosing categories 4, 3, 2 and 1 respectively, we can write the behavioural model underlying the choice of answer (y) by:

$$
y = \begin{cases}
4 & if \quad y* \geq \mu_3 \\
3 & if \quad \mu_3 > y* \geq \mu_2 \\
2 & if \quad \mu_2 > y* \geq \mu_1 \\
1 & if \quad \mu_1 > y*
\end{cases}
\tag{9}
$$

Under the assumption that η^k follows a logistic distribution, equations (8') and (9) define a standard ordered logit model of the choice of answers to the question analysed.[2]

III   Data

The survey was administered to a representative sample of 1,075 individuals. The respondents were asked a wide range of questions about their households' financial and socio-economic position, employment experiences, their expectations of economic developments during the next two years and their attitudes and opinions concerning reforms as well as current political debates. We merge these data with regional indicators from statistical yearbooks coded at NUTS 4 level (so-called Okresy in Czech). These regions in average cover an area of 1,000 square kilometres and have approximately 130,000 inhabitants.

{Table 1 around here}

We focus exclusively on the economically active (unemployed and employed) and exclude all questionable observations[3], which leaves us with 796 observations.[4] Table 1

presents the answers to the question on the willingness to migrate. Only 18.3% of the 796 economically active respondents answered they would definitely move if unemployed and offered work and residence in a distant region. A further 25.3% indicated they would probably move; almost 24.9% stated they would definitely not move and a further 31.7% would rather not move. The descriptive statistics suggest also that the groups with the lowest willingness to migrate are the less educated, old persons and family-house owners. Also, persons residing in regions with above-average unemployment rates (high unemployment regions) are less willing to migrate than persons residing in low-unemployment regions.

We use both individual and region specific variables as explanatory variables in our econometric estimation. For the individual characteristics, in line with most of the literature on the willingness to migrate, we use gender, age, household structure (number of economically active and number of children in the household), highest completed education (elementary or less, vocational, secondary, university) and marital status (a dummy for married persons). The literature (see Ahn et al., 1999, Yang, 2000, and Drinkwater, 2003) generally finds that females, married, the elderly and less educated persons are less willing to migrate. We also include variables to measure current personal and household income and wealth (measured by a set of dichotomous variables to eschew problems of non-linearity) as well as an indicator concerning the type of residence of the household (family house as the base category, co-operative flat, rented flat, owner occupied flat and other). The residence and income variables are included because a number of authors have suggested that home owners may be less willing to migrate (e.g. Hughes and Mc McCormick, 1987) and that persons with low income may be liquidity constrained[5]. Furthermore, we include variables on the duration of unemployment in the last two years, because Jackman and Savouri (1992) as well as Gross and Schoening (1984) provide evidence that long term unemployed are less likely to migrate. We also control for labour market status (unemployed and employed) and entrepreneurial activity[6] of the individual. Finally, we include some less conventional variables such as the preferences for a certain economic system (socialism, social market economy, market economy) to capture differences in attitudes to flexibility, and a subjective measure of poverty by considering a question in which respondents were asked, whether they consider themselves poor or not.[7]

Among the regional variables, aside from both sending and receiving regions' unemployment-vacancy ratios and receiving region wages[8], we also include measures of crime (crimes committed per 1,000 inhabitants), environmental quality (tons of emissions of hazardous wastes per square kilometre[9]), variables measuring availability of public infrastructure (schools per 1,000 inhabitants, hospital beds per 10,000 inhabitants)[10] and a dummy variable which takes on the value one if the individual resides in Prague (the only large city with more than 1 million inhabitants in the Czech Republic). Furthermore, as a measure of the distance of the region of residence from the average receiving region, we take the average distance between the central city of the region of residence to all other regions' central cities.[11]

Finally, one of the assumptions in our model is that sending and receiving regions are far enough from each other to preclude commuting. This is unlikely to be realistic given the size of our regions, and Burda and Profit (1996) provide evidence that commuting is common in the Czech Republic. We thus also include regional labour market conditions and amenities in the average neighbouring region to account for the potential impacts of commuting possibilities of the willingness to migrate. [12]

Descriptive statistics for these variables (mean and standard deviations) are displayed in the first two columns of table 2. In general, our data set fits the aggregate statistics rather well. In our sample, 47% of the interviewed economically active are female. This accords well with the official statistics. There is, however, an under-representation of unemployed: according to the official statistics, registered unemployment in the Czech Republic was at around 7.5% in 1998 but in our survey only 4.3% were unemployed. This may be explained by the usual differences between interview based measures of unemployment and registered unemployment. Also in our data almost 3% of the economically active had unemployment spells exceeding the length of one year during the last two years, which accords with studies on labour market flows in the Czech Republic (see Storm and Terrell, 1997), which find low escape probabilities from unemployment and high long term unemployment rates. Finally, almost 40% of the interviewed in our sample live in a family house and another 8.5% own their flat. This suggests that the share of owner occupied housing in the Czech Republic approaches EU levels. According to Eurostat, the unweighted average share of owner

occupied housing in the EU is at around 60% and lies below 50% in countries such as the Netherlands, Germany or Sweden.

{Table 2 around here}

IV   Overall Results

Table 2 shows also the ordered logit results for the variables analysed.[13] In the column with the heading 'full sample' we include all observations while the following columns report results for men and women separately. Age,[14] income and house ownership appear to be the most important determinants of the willingness to migrate. Older people are significantly less willing to migrate. A higher income reduces the willingness to migrate but the decline decreases with rising income. Household income has no further impact on the willingness to migrate and the dummy variables measuring wealth remain insignificant throughout. Furthermore, income only has a significant impact on the willingness to migrate among the males. Housing variables, by contrast, are an important determinant of the willingness to migrate for both genders. Owners of family houses have a significantly lower willingness to migrate than persons with other types of housing arrangements. This could be explained by housing-market inefficiencies, which preclude the rapid sale of family houses without a financial loss.[15] For females other forms of residence (owner occupied apartments, rented houses or apartments, cooperative housing and others) do, however, not differ significantly from each other while for males owning a flat is statistically equal to owning a house.

Education has a significant impact on the willingness to migrate only for females, and even for them the effect is non-linear. Females who have completed more than the elementary education are significantly more willing to migrate. Females with completed university education, by contrast, are not significantly more willing to migrate than those with vocational or compulsory training. This suggests that a large part of the higher willingness to migrate of high education groups exhibited in the raw data (see Table 1) is captured by the higher income earned by these groups.

The time spent in unemployment in the last two years only has a marginally significant impact on the willingness to migrate. Persons who were unemployed for more than a year in the two-year period preceding the interview have a willingness to migrate which hardly

differs from that of persons who were never unemployed and for persons with 2 to 12 month unemployment experience. Furthermore, the negative impact on the willingness to migrate is significant for women only. This accords with the results of Ahn et al. (1999) who also find that discouragement effects of long term unemployment on search activities are not of particularly high relevance in explaining low willingness to migrate. Similarly, the number of children in a household is an insignificant deterrent to the willingness to migrate, while the number of economically active living in the household increases the willingness to migrate, especially for men.

Among the measures of regional characteristics, only the unemployment-vacancy ratio in the neighbouring regions turns out to have a significant impact and some variables (number of schools in the region, the unemployment-vacancy ratio in the average receiving region as well as the wages and crime rate in the neighbouring regions) have an unexpected albeit insignificant sign. This suggests that the overall impact of regional variables on the willingness to migrate is small and the significance of the neighbouring regions' unemployment-vacancy ratio may be an indication of the relevance of commuting as an alternative to migration.

Finally, the attitudinal variables concerning the preferred economic system and the subjective measure of poverty have a significant impact on the willingness to migrate. The more in favour of a market economy a person is the higher is the willingness to migrate – in particular for men - and males, who consider themselves members of a poor household are substantially more willing to migrate than males who do not.

In summary, our results thus indicate that the willingness to migrate is not highly responsive to regional characteristics and that personal characteristics such as income and housing arrangements are more important in determining the willingness to migrate. This in turn suggests that a combination of housing-market imperfections for prospective movers are crucial in keeping the willingness to migrate relatively low, By contrast, we find little evidence of discouragement effects for long term unemployed and some evidence that commuting may be a substitute to migration.

{Table 3: Around here}

These findings are confirmed by the marginal effects for the full sample reported in Table 3. For continuous variables, these marginal effects have the interpretation of the percentage change in the probability of an otherwise average person to answer in one of the respective categories, given a unit (one percent in the case of logarithmic variables) increase in the independent variable. For dummy variables, marginal effects measure the percent impact on the probability of answering in a particular category given a change of the dummy variable from zero to one for an individual with otherwise average characteristics. The coefficient on age, for instance, suggests that increasing the age of a person by one percent increases the chance of answering that she would definitely not be willing to move by 13.5%, while reducing her probability of being definitely willing to move by 10.3%. Increasing the number of active in a household by one person, by contrast, reduces the probability of answering 'definitely not' by 5.6% and increases chances of answering 'definitely yes' by 4.3%. Furthermore, owners of family houses are between 11.4% to 15.2% more likely to answer that they would definitely not move than respondents with other housing arrangements, while their likelihood to answer that they would rather not move is between 7.2% to 15.2% higher. Thus marginal effects suggest a rather substantial impact of housing variables on the willingness to migrate.

Finally, people who are in favour of a market system are also more likely to answer that they either would rather or definitely be willing to migrate, while regional variables (except for the unemployment-vacancy ratio in the neighbouring region) have no significant impact on the willingness to migrate. A 1% higher unemployment-vacancy ratio in the neighbouring regions, however, reduces the chances of being definitely unwilling to move by 8.8%, while increasing the chances of being definitely willing to move by 6.7%.

V   Differences among Subgroups

The results discussed above suggest that, among the economically active respondents, family house owners, individuals with low education (those who completed only vocational education or less) and the elderly (persons older than 39 years) belong to those least willing to migrate. In addition persons living in regions with above-average unemployment rates (i.e. those with registered unemployment rates above the national average) are no more willing to migrate than the regional average.

These groups are therefore particularly instrumental in explaining why the willingness to migrate is relatively low in the Czech Republic. Therefore, we are interested to what degree these groups differ from the overall workforce in the determinants of the willingness to migrate. Table 4 reports estimates of the models following equations (8') and (9) for these groups. As can be seen, there is some heterogeneity in the determinants of the willingness to migrate. In particular, the less educated as well as family-house owners with longer unemployment duration in the last two years have a significantly lower willingness to migrate, indicating that for these groups discouragement effects play an important role. Furthermore, the less educated are slightly more responsive to regional labour market conditions and amenities. For the less educated – in contrast to the overall sample – higher unemployment-vacancy ratios in the sending region as well as a lower supply of schools significantly increase the willingness to migrate. For the less educated as well as for persons residing in high unemployment regions, the willingness to migrate is significantly negatively influenced by the regions' average distance to the potential receiving regions. Thus remoteness from relevant labour market areas is an important additional deterrent to migration for these groups.

{Table 4 Around Here}

The major result of these regressions is, however, that for the majority of the groups analysed, willingness to migrate is not related to regional variables. This applies not only to medium income earners and the elderly (for whom even a number of personal characteristics, which are significant for the willingness to migrate for the overall workforce remain insignificant) but carries over to all other groups except for the less educated.

VI Conclusion

In this paper, we investigate personal and regional factors which affect individual willingness to migrate in a transition economy, using data from a large-scale survey conducted in the Czech Republic in 1998. We show that for the work force as a whole the willingness to migrate is low. Further, we find that while regional labour market conditions and amenities contribute little to explain the willingness to migrate, personal and household

characteristics such as income and owning a family house are more important. In particular, our results suggests that persons owning a family house are substantially less willing to migrate and that the willingness to migrate and decreases with income. This implies that housing market imperfections, high shares of owner occupied housing and low migration incentives for the medium income groups are an important component in explaining low migration. We also find that, on average, persons experiencing longer unemployment spells are not less willing to migrate, so that discouragement effects are unlikely to play a major role in reducing migration. Finally, we present evidence that the option of commuting may at least partially compensate for low willingness to migrate.

With the exception of the less educated, the willingness to migrate within all groups analysed in this paper does not appear to be related to regional labour market conditions and amenities. This implies that large groups of the population are unwilling to migrate irrespective of labour market conditions and reconfirms doubts about the viability of migration as a regional labour-market adjustment mechanism in the Czech Republic. Some of our evidence also indicates that the residents of high-unemployment regions (and the less educated) are particularly unwilling to migrate when their regions are remote from other potential receiving regions, which draws particular attention to the problems which may arise in peripheral high-unemployment regions in the future.

Our results therefore suggest that improving the efficiency of the housing market, increasing migration incentives for the medium income groups and focusing on the problems of peripheral regions should be the primary foci of a policy aimed at improving labour-market adjustment through migration. Policies which focus on increasing the willingness to migrate among the least mobile groups in the population, however, are unlikely to yield fast returns on account of the low responsiveness to economic conditions of these groups.

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Table 1: Distribution of Responses by selected personal and regional characteristics

	No	Rather Not	Rather Yes	Yes	Total
Overall	24.87	31.66	25.13	18.34	796
Male	23.64	31.68	25.30	19.39	423
Female	26.27	31.64	24.93	17.16	373
Married	18.18	26.79	33.97	21.05	209
Single	27.26	33.39	21.98	17.38	587
Elementary	26.26	35.35	23.23	15.15	99
Vocational	25.39	32.51	26.93	15.17	323
Secondary	22.76	29.85	24.63	22.76	268
University	27.36	30.19	22.64	19.81	106
family house	34.84	32.90	17.74	14.52	310
co-operative flat	19.70	34.85	28.79	16.67	132
rented flat	17.87	28.90	32.32	20.91	263
own flat	20.59	33.82	19.12	26.47	68
Other	13.04	21.74	39.13	26.09	23
age < 39	27.32	34.39	22.68	15.61	410
age > 40	22.28	28.76	27.72	21.24	386
low unemployment regions[a]	25.77	30.26	24.82	19.15	423
high unemloyment regions[b]	23.86	33.24	25.47	17.43	373

Notes: Table reports share of responses in % of all economically active in the respective subgroups in the sample. a) low-unemployment region are regions with registered unemployment rates below the national average b) high-unemployment regions are regions with unemployment rates above the national average.

Table 2: Logit - Regression Results (dependent variable willingness to migrate)

	Descriptives		Full Sample		Female		Male	
	Mean	SD	β	SE	β	SE	β	SE
ln(age)	3.634	0.280	-0.782***	0.284	-0.859***	0.381	-0.978**	0.449
ln(personal income)	9.082	0.507	-10.195***	3.680	-7.027	9.007	-14.360**	5.629
ln(personal income) squared			0.589***	0.203	0.392	0.491	0.843***	0.314
ln(household income)	3.634	0.280	-0.352	0.233	-0.221	0.324	-0.417	0.332
Female	0.469	0.499	-0.150	0.129				
Unemployed	0.043	0.202	0.717	0.494	0.620	0.714	0.980	0.781
Married	0.737	0.440	-0.188	0.207	-0.112	0.271	-0.376	0.317
No. Of kids in Household	0.977	0.925	-0.112	0.086	-0.044	0.142	-0.188	0.130
No. Of active in Household	1.861	0.705	0.325***	0.118	0.279	0.177	0.346*	0.194
Education - Elementary[a]	0.124	0.330						
- Vocational	0.406	0.491	0.321	0.247	0.263	0.306	0.388	0.398
- Secondary	0.337	0.473	0.523*	0.283	0.801**	0.367	0.236	0.444
- University	0.133	0.340	0.265	0.299	0.556	0.449	-0.241	0.446
Wealth <200000 KCS	0.104	0.306						
200000-399000 KCS	0.157	0.364	0.175	0.266	0.214	0.367	0.203	0.358
400000 – 499000 KCS	0.139	0.347	-0.103	0.246	0.035	0.347	-0.206	0.380
500000 – 999000 KCS	0.210	0.407	0.100	0.236	0.041	0.390	0.265	0.308
1 Million – 2.9 Million KCS	0.314	0.464	-0.098	0.279	-0.130	0.436	0.061	0.372
> 3 Million KCS	0.075	0.264	-0.425	0.456	-0.474	0.666	-0.181	0.648
Unemployment Experienci in last 2 years < 2	0.898	0.302						
2 - 12	0.073	0.260	-0.518*	0.268	-0.864**	0.475	-0.487	0.380
> 12	0.029	0.168	-0.864	0.595	-1.567	1.023	-0.433	0.731
Type of Residence Family house[a]	0.389	0.488						
Co-operative Flat	0.166	0.372	0.770***	0.196	0.837***	0.281	0.688**	0.315
Rented Flat	0.330	0.471	0.840***	0.190	0.895***	0.251	0.768**	0.307
Own Flat	0.085	0.280	0.815***	0.251	0.834**	0.377	0.716	0.590
Other	0.029	0.168	1.283***	0.405	0.332	0.627	1.622***	0.518
Poor Family definately yes	0.082	0.274						
rather yes	0.266	0.442	-0.739***	0.287	-0.586	0.557	-0.860**	0.422
rather not	0.455	0.498	-0.849***	0.300	-0.667	0.579	-0.978**	0.421
definatley not	0.197	0.398	-0.870***	0.321	-0.781	0.593	-0.868**	0.441
Preferred System Socialism	0.059	0.236						
Social Market Economy	0.627	0.484	0.856**	0.383	0.932	0.604	0.955	0.644
Market Economy	0.314	0.464	1.123**	0.437	0.919	0.646	1.600**	0.658
Income from private enterprise Yes: Primary	0.031	0.174	0.853**	0.384				
Yes Secondary	0.168	0.374	0.603	0.376	0.443	0.505	1.335	0.711
No	0.800	0.400			0.244	0.482	1.008	0.705
Large City	0.237	0.426	-0.487	0.326	-0.382	0.484	-0.365	0.416
ln(unemplyment vacany rate)	1.892	0.832	0.375	0.312	0.578	0.392	0.304	0.543
ln(crime rate)	-0.112	0.534	0.475	0.422	0.007	0.568	0.968	0.647
Ln(emissions)	-1.223	1.830	-0.026	0.042	-0.014	0.073	-0.054	0.067
Ln(schools)	1.261	0.530	-0.296*	0.172	-0.601**	0.291	-0.154	0.248
ln(unemplyment vacany rate others)	1.920	0.012	35.505*	18.216	46.799**	23.413	34.329	31.157
ln (wage others)	9.274	0.002	-53.959	70.466	-95.398	99.826	9.169	92.404
ln(average distance)	5.301	0.206	-0.896*	0.481	-1.211	0.788	-0.441	0.602
ln(unemplyment vacany rate neighbours)	1.818	0.661	0.509**	0.235	0.726**	0.355	0.323	0.315
Ln(wage neighbours)	9.286	0.045	2.015	2.947	5.499	4.920	-0.018	3.865
ln(crime rate)	-0.159	0.353	-0.464	0.437	-0.391	0.568	-0.617	0.714
Ln(emissions neighbours)	-1.037	1.362	0.047	0.081	-0.009	0.122	0.088	0.107
Ln(schools neighbours)	1.140	0.747	0.024	0.153	-0.027	0.215	0.118	0.205
Number of Observations	796		796		373		523	
Log Likelyhood			-1021.31		-540.78		-463.73	
H0: proportional odds (P-value)[b]			0.06		0.03		0.03	

Note: Columns labelled β report the estimated coefficients, columns labelled SE the associated standard errors of the estimate corrected for the effects of clustering of regional variables and columns labelled SD the standard deviation [a] Reference Category, * (**) (***) signifies significance at the 10% (5%) 1% level respectively, b) P-value for the Hausmann test of the log odds assumption underlying the ordered logit estimates

Table 3: Marginal Effects of Equation (3)

	Definately no β	SE	Rather No β	SE.	Rather Yes β	SE	rather No β	SE
	0.135***	0.050	0.056**	0.025	-0.088**	0.034	-0.103***	0.038
ln(personal income)	1.756***	0.626	0.734**	0.325	-1.145***	0.425	-1.346***	0.517
ln(personal income) squared	-0.101***	0.034	-0.042**	0.018	0.066***	0.024	0.078**	0.029
ln(household income)	0.061	0.040	0.025	0.019	-0.040	0.026	-0.046	0.032
Female	0.026	0.022	0.011	0.010	-0.017	0.015	-0.020	0.017
Unemployed	-0.101*	0.055	-0.076	0.065	0.061*	0.026	0.117	0.096
Married	0.032	0.034	0.015	0.017	-0.021	0.022	-0.026	0.029
No. Of kids in Household	0.019	0.015	0.008	0.007	-0.013	0.010	-0.015	0.011
No. Of active in Household	-0.056***	0.021	-0.023**	0.011	0.036***	0.014	0.043***	0.016
Education - Elementary [a]								
- Vocational	-0.054	0.042	-0.024	0.020	0.035	0.026	0.043	0.035
- Secondary	-0.086*	0.044	-0.043	0.027	0.055*	0.027	0.073	0.043
- University	-0.043	0.047	-0.022	0.028	0.028	0.029	0.037	0.045
Wealth <200000 KCS								
200000-399000 KCS	-0.029	0.043	-0.014	0.023	0.019	0.028	0.024	0.038
400000 – 499000 KCS	0.018	0.044	0.007	0.015	-0.012	0.029	-0.013	0.031
500000 – 999000 KCS	-0.017	0.039	-0.008	0.019	0.011	0.026	0.013	0.032
1 Million – 2.9 Million KCS	0.017	0.049	0.007	0.019	-0.011	0.032	-0.013	0.036
> 3 Million KCS	0.080	0.094	0.020*	0.011	-0.050	0.056	-0.049	0.046
Unemployment Experience last 2 years < 2								
2 - 12	0.100*	0.056	0.021**	0.009	-0.062**	0.033	-0.059**	0.027
> 12	0.180	0.140	0.009	0.034	-0.103	0.067	-0.086**	0.044
Type of Residence Family house [a]								
Co-operative Flat	-0.114***	0.026	-0.076***	0.025	0.070***	0.017	0.120***	0.036
Rented Flat	-0.133***	0.027	-0.072***	0.024	0.083***	0.018	0.122***	0.033
Own Flat	-0.115***	0.030	-0.086***	0.033	0.067***	0.016	0.133***	0.051
Other	-0.152***	0.031	-0.152***	0.055	0.064**	0.026	0.240**	0.098
Poor Family definately yes								
rather yes	0.139**	0.059	0.034**	0.014	-0.086**	0.034	-0.087***	0.032
rather not	0.149***	0.055	0.054***	0.020	-0.093***	0.031	-0.110***	0.041
definatley not	0.170**	0.070	0.028**	0.015	-0.102***	0.038	-0.096***	0.031
Preferred System Socialism								
Social Market Economy	-0.156**	0.072	-0.047**	0.020	0.097**	0.043	0.106**	0.045
Market Economy	-0.172***	0.058	-0.101**	0.048	0.102***	0.031	0.171**	0.077
Income from private enterprise Yes: Primary	-0.124***	0.047	-0.086*	0.048	0.075***	0.024	0.135*	0.073
Yes Secondary	-0.114	0.077	-0.027**	0.012	0.071	0.045	0.070*	0.040
No								
Large City	0.090	0.064	0.026**	0.013	-0.057	0.039	-0.059	0.036
ln(unemplyment vacany rate)	-0.065	0.053	-0.027	0.024	0.042	0.035	0.050	0.042
ln(crime rate)	-0.082	0.073	-0.034	0.032	0.053	0.047	0.063	0.056
Ln(emissions)	0.004	0.007	0.002	0.003	-0.003	0.005	-0.003	0.006
Ln(schools)	0.051	0.030	0.021	0.013	-0.033*	0.020	-0.039	0.023
ln(unemplyment vacany rate others)	-6.115	3.136	-2.557	1.482	3.987*	2.088	4.686*	2.454
ln (wage others)	9.294	12.223	3.886	4.840	-6.059	7.982	-7.122	9.356
ln(average distance)	0.154*	0.084	0.065*	0.037	-0.101*	0.056	-0.118*	0.064
ln(unemplyment vacany rate neighbours)	-0.088**	0.041	-0.037**	0.018	0.057**	0.028	0.067**	0.032
Ln(wage neighbours)	-0.347	0.505	-0.145	0.219	0.226	0.333	0.266	0.390
ln(crime rate)	0.080	0.076	0.033	0.032	-0.052	0.049	-0.061	0.058
Ln(emissions neighbours)	-0.008	0.014	-0.003	0.006	0.005	0.009	0.006	0.011
Ln(schools neighbours)	-0.004	0.026	-0.002	0.011	0.003	0.017	0.003	0.020

Note: Values in brackets are standard errors corrected for the effects of clustering of regional variables [a] Reference Category, * (**) (***) signifies significance at the 10% (5%) 1% level respectively, Columns labelled β report the estimated coefficients, columns labelled SE the associated standard errors of the estimate

Table 4: Estimates for Subgroups

	Low Education group[a]		Residence in high unemployment regions[b]		Family House owners		Older than 39	
	β	SE	β	SE	β	SE	β	SE
ln(age	-1.403***	0.371	-0.688*	0.399	-0.674*	0.395	-1.002	1.235
ln(personal income	-14.037***	4.366	-1.137	8.931	-16.600***	4.492	-11.579**	4.889
ln(personal income squared	0.814***	0.242	0.086	0.498	0.912***	0.237	0.687***	0.262
ln(household income	-0.393	0.344	-0.004	0.357	0.220	0.507	-0.530	0.426
Female	0.158	0.185	-0.169	0.221	-0.269	0.302	-0.044	0.218
Unemployed	0.898	0.578	0.771	0.615	0.967	0.873	1.550*	0.872
Married	0.044	0.261	-0.413	0.327	-0.215	0.361	-0.149	0.312
No. Of kids in Household	-0.186*	0.109	-0.106	0.127	-0.148	0.136	0.077	0.141
No. Of active in Household	0.236	0.158	0.058	0.180	0.071	0.244	0.556***	0.170
Education - Vocational	0.431	0.278	0.407	0.343	0.641*	0.382	0.641*	0.332
- Secondary			0.333	0.383	1.346***	0.503	1.025***	0.390
- University			0.206	0.492	0.728	0.488	0.354	0.379
Wealth 200000-399000 KCS	0.341	0.356	0.555*	0.324	0.433	0.627	0.718	0.505
400000 – 499000 KCS	-0.270	0.361	0.021	0.333	-0.828	0.645	0.281	0.459
500000 – 999000 KCS	0.058	0.328	0.354	0.299	-0.422	0.521	0.527	0.470
1 Million – 2.9 Million KCS	-0.326	0.389	0.082	0.490	-0.852	0.531	0.434	0.474
> 3 Million KCS	-0.659	0.735	-0.680	0.615	-1.113	0.833	0.710	0.696
Unemployment Experience in last 2 years 2 - 12	-0.740**	0.351	-0.658*	0.379	-1.558***	0.671	-0.517	0.466
> 12	-1.443**	0.716	-0.946	0.857	-2.693***	1.192	-0.625	0.733
Type of Residence Co-operative Flat	1.076***	0.248	1.288***	0.276			0.591*	0.302
Rented Flat	1.207***	0.278	1.160***	0.282			1.073***	0.311
Own Flat	1.140***	0.363	0.721	0.458			1.022***	0.363
Other	0.904	0.655	1.323**	0.645			1.810***	0.486
Poor Family rather yes	-0.779*	0.402	-1.221**	0.514	-0.494	0.590	-1.366***	0.480
rather not	-0.931*	0.464	-1.308**	0.531	-0.662	0.620	-1.516***	0.474
Definatley not	-1.121**	0.482	-1.422**	0.622	-0.760	0.696	-1.498***	0.526
Preferred System Social Market Economy	1.175**	0.469	1.249**	0.489	0.932	0.491	1.216***	0.510
Market Economy	1.427**	0.586	1.603**	0.545	1.112	0.537	1.500***	0.565
Income from private enterprise Yes Secondary	1.011*	0.558	0.216	0.641	0.997	0.609	0.949	0.586
No	0.821*	0.487	-0.217	0.736	0.567	0.590	1.030**	0.516
Large City	-0.753**	0.335	-0.440	0.382	-0.734	0.571	-0.446	0.629
ln(unemplyment vacany rate	1.286***	0.427	0.528	0.417	-0.340	0.574	0.441	0.403
ln(crime rate	1.111*	0.653	0.542	0.526	0.080	0.659	0.377	0.787
Ln(emissions	-0.075	0.067	-0.060*	0.081	-0.021*	0.077	-0.064	0.073
Ln(schools	-0.719**	0.303	-0.421	0.267	0.020	0.266	-0.295	0.242
ln(unemplyment vacany rate others	99.877***	26.394	25.035	33.685	-4.204	41.859	54.825*	28.023
ln (wage others	-172.520	128.676	-107.460	209.136	-53.058	132.152	-67.844	121.526
ln(average distance	-2.124**	0.862	-1.963**	0.884	-0.502	0.804	-0.051	0.753
ln(unemplyment vacany rate neighbours	1.104***	0.360	0.598	0.478	0.303	0.342	0.440	0.299
Ln(wage neighbours	3.714	4.187	-1.658	5.065	5.306	5.083	7.795	5.014
ln(crime rate	-1.259*	0.759	0.507	0.677	-0.561	0.804	-0.950	0.828
Ln(emissions neighbours	-0.053	0.116	-0.075	0.192	0.092	0.102	0.053	0.124
Ln(schools neighbours	0.221	0.229	0.182	0.409	-0.312	0.261	-0.138	0.198
Number of observations	422		373		310		410	
Log Likelyhood	-503,31		-473,46		-374.65		.-495,43	
H0: proportional odds (P-value [c]	0.03		0.00		0.08		0.00	

Note: Reference categories omitted (see table 2) Columns labelled β report the estimated coefficients, columns labelled SE the associated standard errors of the estimate, * (**) (***) signifies significance at the 10% (5%) 1% level respectively a) Low Education group = Persons with completed vocational education b) high unepmolyment regions = Regions with registered unemployment rates in excess of the national average c) P-value for the Hausmann test of the log odds assumption underlying the ordered logit estimates

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[1] Noteable exceptions include Hazans, 2003, Kwiatkowski, et al, 2004 and Fidrmuc, 2005.

[2] In this model μ_1, μ_2, μ_3 and α can not be separately identified, we thus normalize α to zero

[3] These include all observations for which one of the dependent variables used was not known as well as some cases in which the age was zero, or gender was unknown.

[4] We also ran regressions including the economically inactive. This decreases significance of economic determinants of migration, but leaves the qualitative results unchanged (see Fidrmuc and Huber, 2004).

[5] This may imply non linear relationships between income and the willingness to migrate as found in Burda et al (1998). We include personal income linearly and squared and household income only linearly. Experimentation with higher order terms rendered all income (both personal and household) variables insignificant.

[6] This is measured by a set of dummy variables taking the value 1 if the primary or secondary income is earned through private enterprise, respectively. The reference category is persons earning no income through private enterprise.

[7] These variables increase the explanatory power of our model substantially without changing the results obtained for the remaining explanatory variables.

[8] Sending region wages were dropped due to co-linearity with individual income earned.

[9] These are the sum of emissions of solids, SO2 and NOx in tons per km^2. Disagregating the emissions does not change results reported below.

[10] Ideally, all of these variables should be included both for sending and receiving regions. Since the question under consideration does not identify the receiving region j, we assume individuals consider the average amenities across all other regions: the average across all regions except the region of residence (i.e. $\hat{x}_i = \sum_{j \neq i} x_j /(I-1)$ with I being the number of regions). As suggested by equation (8), we measure amenities relative to these averages, while for wages and unemployment vacancy ratios we include them as separate variables.

[11] This is measured as $\sum_{i \neq j} d_{ij} /(I-1)$.

[12] These are defined $\sum_{l \in S_i} x_l / K$ (where S_i is the set of K regions bordering on region i) and are measured relative to the average receiving in the same way as the regional variables

[13] The standard errors of the estimates reported in these tables are robust to the clustering of regional variables. We also performed a number of tests to gauge the quality and robustness of results: Hausmann tests for the appropriateness of the proportional log odds assumption underlying the logit model are reported in the tables. These do not reject the null of proportional log odds. We also performed estimates both merging and excluding the intermediate categories and experimented

with additional variables (e.g. dummy variables for the immediate border regions, and additional indicators for the settlement size). This led to no further insights. Results of these additional estimates are available from the authors.

[14] Including higher order terms for age resulted in insignificant parameters.

[15] An alternative explanation could be self-selection of people less willing to migrate into family housing. In addition the wording of our question may add to the significance of the parameter, since house owners may be reluctant to move to a flat elsewhere.