

Understanding gendered aspects of migration aspiration and motives of university students by multivariate statistical methods

Đula Borozan^{1,*}

¹ Faculty of Economics in Osijek, Josip Juraj Strossmayer University of Osijek
Trg Lj. Gaja 7, HR-31 000 Osijek, Croatia
E-mail: {borozan@efos.hr}

Abstract. The paper deals with the application of multivariate analysis of variance and logistic regression in measuring, explaining and evaluating (i) gender differences in expressing migration aspirations, and (ii) a gender effect on migration motivation of university students in Croatia. The results supported the thesis that migration is a complex gendering process that assumes subjective assessment of the whole set of interrelated motives. According to logistic regression, gender is a significant predictor of migration aspirations among the selected demographic and socio-economic variables. A multivariate analysis of variance showed that gender and migration aspirations in interaction matter when it comes to migration motives, particularly related to the perceived importance of social networks. Females, and especially those who aspire to migrate, assessed these motives as more important than males.

Key words: migration aspirations, migration motives, multivariate methods, gender

Received: October 7, 2013; accepted: February 4, 2014; available online: March 6, 2014

1. Introduction

Feminization of migration (in terms of an increasing number of women that migrate and qualitative changes in the migration pattern, motives, consequences, etc.) supported by the greater visibility of female immigrants has become a recent phenomenon in migration, especially in the last decade and in developed countries [7]. Women currently make up around half of the world's permanent migrant population [24, 19] and in some economies, like the Eastern European ones, they make twice as many migrants [33]. OECD [37] also indicates that women account for the majority of the immigrant population in many OECD countries, and that there are significant differences by region.

Prior to the 1990s, women were primarily considered as accompanying persons in migration. Migration concerned particularly young men looking for work or a better paying and more intriguing job. Women usually came after the head of the household (husband or father) in the process of family reunification, or eventually, migration for the purpose of marriage (family formation) was emphasized. However, many recent studies discover that women are increasingly migrating to find a job

*Corresponding author.

as individuals and for the sake of their own career. Thus, a remarkable diversity of migration motives and patterns among women has begun to unfold (see, for example, [55]). Such diversity has increased along with recent economic, social and political changes at both sending and receiving locations, including the changing roles of women in society. Consequently, a relationship between gender and migration has recently attracted a lot of interest among scholars from different fields (for a review, see [13]).

However, so much is still unknown regarding gender and migration. For example, although it is valuable for scholars and primarily for policy-makers to know about who wants to migrate and why before actual migration occurs, only few studies aim to estimate the effects of gender on migration motives [13, 26], especially when it comes to Central and Eastern Europe [33, 25, 35, 39]. This is also true for the case of Croatia where the current study takes place.

This paper deals with the application of different multivariate statistical methods in measuring, explaining and evaluating (*i*) gender differences in expressing migration aspirations, and (*ii*) a gender effect on migration motivation of university students in Croatia. In the present context, motivation is related to the process that guides people to move, while aspiration is treated as an important precondition for migration to actually take place. Recent findings support the thesis on a strong relationship between aspirations and migration indicating that individuals with a higher capacity to aspire are more likely to consider migration as a valuable option (see, for example, [11]). Although a significant migration aspiration does not necessarily lead to migration, it may be an appropriate framework for migration decision-making research [11].

The data used in this research were collected by means of a pilot study of opinions and attitudes of young people, i.e. students of J. J. Strossmayer University of Osijek, through a survey conducted twice in 2010. They were analyzed by using two kinds of multivariate methods: prediction method (logistic regression) and group difference method (multivariate analysis of variance (MANOVA)). The other authors (e.g. Aryal [1], Wallace & Vincent [54] or Rokib et al. [45]) also employed logistic regression analysis in studying migration, particularly to find which factors are most important in determining migration. Although MANOVA is used very often in exploring the effect of gender, most of the studies noted above did not consider it by using this method. There are only few exceptions; for example, LI et al. [29] examine whether career orientation, place attachment, and neophilia are significant predictors for a desire for long-term international migration of both men and women. Borozan & Barković Bojanić [2] tested whether gender has a significant multivariate effect on the linear combination of the stay motives perceived by university students.

Osijek is the capital of the Osijek-Baranja county which is located in the north-east part of the Republic of Croatia. Croatia has been facing an especially severe ongoing recession which began in late 2008, contributing to the migration flows. A recent socio-economic and political overview of migration in Croatia is given in [34]. Croatia had the negative net migration with foreign countries that amounted to -4,165 in 2011, and out of the total number of emigrants there were more men (53.3 per cent) [9]. The Osijek-Baranja county lags behind the Croatian average; its gross domestic product per capita was, 7,539 in 2010 compared with the national average

of 10,057 in the same year [10]. The county also faces the negative net migration amounting to -210 in 2011 [9]. However, there is a lack of data and research on gender-specific migration in Croatia and the Osijek-Baranja county in particular.

Oishy [38] and Boyd & Grieco [6] stress that migration theory failed to adequately address gender-specific migration experiences. By exploring the effect of gender on migration aspirations and motives in a region lagging behind and in a post-transitional economy, this paper adds new insights into the individual decision making process and predicting future migration flows.

The remainder of this paper is organized as follows: the next section provides a brief insight into migration theories with particular regard to gender issues. Section 3 describes the measurement instrument, data and methods, while Section 4 presents and discusses the results. The paper concludes with Section 5.

2. Research background

Migration is not only a complex phenomenon, but also a complex process that assumes subjective assessment and reassessment of the whole set of mutually correlated motives. The motives are gendered as shown by several studies [6, 39].

More recently, economists have also acknowledged the necessity to incorporate gender into economic migration theories [42]. As stated by Schwenken & Eberhards [46], until the late 20th century migration studies neither dealt with gender differences nor negated them explicitly. For example, a classical approach can be found in Ravenstein's laws of migration [44] or in Lee's theory of push and pull factors [27] (that is a revised version of Ravenstein's laws), while modern theories classify them into more categories. Push factors refer to conditions that drive people to leave their homes (e.g. poverty, economic crises, unemployment, wars), while pull factors refer to conditions that attract people to a new place (e.g. more job opportunities, better living conditions and economic prosperity). Although this theory was concentrated on the individual, the male migrant was set as a default migration unit and women were considered to be dependent on men [41].

A modern theory of migration is related to the second half of the 20th century (for an overview, see [20, 23, 4]). According to Bodvarsson and van den Berg [4], it can be divided into three main streams depending on the predominant motive for migration.

The first stream of theories is concerned with a migrant offering his/her services [47, 53], who chooses a location (place) enabling him/her to achieve the highest net income, or the one that is expected to do so. The initial approach of that stream of theories is a neoclassical approach that sees in a migrant an individual and a rational subject guided primarily by an estimation of economic factors [23] and acting on his belief that it is best for his/her own future [53]. This theory assumes that the way in which human capital is translated into salaries and earnings is the same for women and men [52]. Following Kociszky et al. [26], if one sex is over-represented amongst the migrants, this can be explained by higher net gains of migration for that sex. However, the position of female migrants in the theory was the same as stated for the classical theory.

The second stream of theories is focused on a migrant who is primarily a user

of internal amenities and public goods offered by some location [20, 36]. According to this theory, sometimes called the quality of life model, locations with various amenities, i.e. specific desired goods not available in other locations (e.g. pleasant climate, clean air and water, appropriate quality of public goods) attract migrants, i.e. users of these goods. Some scholars, like Florida [16], have argued that young and well-educated people prefer places that offer specific urban milieus corresponding to their lifestyle and career development. However, research on gender-specific preferences for location factors have remained on margins.

The third stream of theories focuses on a migrant as a producer of his/her own household goods and services aiming to maximize the household income and survival chances. A location that can enable production of the best combination of household goods and services will be the most attractive destination for a migrant. This stream is based on the so-called new household economics [48]. Within this stream, the role of gender and power dynamics within the household may come to expression [5]. However, gender is largely absent from the analysis again [41].

In addition to the aforementioned theories, there also exist other streams that are likely to explain the decision to emigrate by other factors important for this paper. For example, social capital can play an important role in making a decision to emigrate, and therein it is the existence of migrant networks (communities of a similar ethnic or regional origin that have already moved to a certain location) or friends' networks (communities made up of families and/or friends that have already moved to a certain location) [31, 18]. This is social capital, in addition to physical and human capital, an important migration resource. However, network theorists have mostly failed to concern migration as gender-specific [51], although there is a growing body of empirical literature that supports the thesis that women tend to rely on their personal networks more than men do [38].

This paper is based on the conceptual framework of migration developed in [2, 3]. It combines the aforementioned theoretical findings with the empirical ones, implying that a decision to migrate is influenced by numerous motives and factors being time and space contested. By using the results of t-tests for an independent sample, factor analysis (exploratory and confirmatory) and reliability analysis, Borozan & Barković Bojanić [2] classify them into four factors: 1) economic situation (including traditional economic variables related to efficiency and conditions for the functioning of the labor market, available jobs and incomes, the cost of living, and also housing opportunities indirectly dependent on them), 2) social networks (incorporating variables such as the vicinity of parents and friends, roots, familiarity with the area and people living there), 3) insider advantages (obtaining inherited amenities (lifestyle, natural beauty, environmental cleanliness, etc.) and public-safety conditions (such as the quality of public services, safety, crime rate), and 4) the wealth of opportunities (incorporating variables such as cultural opportunities, educational, recreational and sport opportunities, entertainment opportunities in general, as well as job quality).

3. Measurement instrument, data and methods

A pilot study examining attitudes and opinions of students on migration was firstly conducted in June 2010 and then in October 2010 on a convenient sample consisting

of 148 and 35 students of the University of Osijek, respectively. The data were collected by means of a questionnaire applied in [2, 3]. The questionnaire consists of three parts. The first part includes seven questions, mostly with closed answers, that refer to the background characteristics of respondents. The second part covers open and closed questions in relation to migration aspirations of respondents and assessment of the attractiveness of Osijek as a place to live, and finally a question (in the last part of the survey) which refers to assessment of the importance of motives affecting a decision to emigrate or to stay in Osijek. The scale of migration motives consists of 24 variables (see Figure 1 for its structure) that are measured by means of a five-point Likert scale. Their perceived level of importance was assessed by all respondents ("Assess the level of importance the motives from the table below have on your decision to migrate from Osijek by grading the answers on the scale from 1 (completely unimportant) to 5 (completely important)"). The scale of migration motives was tested for its content validity, reliability and dimensionality, and the confirmatory and reliability analysis confirms that the scale is a multidimensional construct that represents migration motives relatively well [2].

To explore the role of background variables, particularly gender, in influencing migration aspirations of university students, they were split into two categories, i.e. demographic (gender, number of siblings) and socio-economic ones (monthly personal and family income, possession of flat or house and housing issue, job expectations), and set as the main independent variables (predictors). Migration aspiration, expressed thorough the question: "Do you want to live permanently in the place other than Osijek?" with binary answers "Yes" or "No", was the dependent variable.

To test the relationships between them, two types of analyses were employed in this paper: bivariate analysis and logistic regression analysis. The bivariate analysis is the simultaneous analysis of two variables. It explores the association between two variables by applying the chi-square test. Since the bivariate analysis does not allow for testing the strength of different demographic and socio-economic variables on migration aspirations, logistic regression analysis is employed. It is a form of multiple regression applied when the dependent variable is binary, i.e. when it has only two different possible values. Logistic regression estimates the probability of a certain event occurring based on a set of independent variables (X_1, X_2, \dots, X_k) that can be continuous and categorical. In the case of multiple predictors, the multiple logistic regression model has the form

$$\ln \left(\frac{P(y=1)}{1-P(y=1)} \right) = \text{logit}(P(y=1)) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k, \quad (1)$$

where $\alpha, \beta_1, \dots, \beta_k$ are parameters that should be estimated (α is the Y intercept and β s are slope parameters) by the maximum likelihood method. It maximizes the likelihood of obtaining the data given its parameter estimates. The ratio $\frac{P(y=1)}{1-P(y=1)}$ equals the odds. The *logit* is the natural logarithm (\ln) of odds of y . p is the likelihood that the outcome of interest occurs. The probability of the outcome of interest being expressed directly is

$$P(y=1) = \frac{e^{\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k}}{1 + e^{\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k}}. \quad (2)$$

The null hypothesis (H_0) states that all β s equal zero. A rejection of H_0 implies that at least one β does not equal zero in the population. The dependent variable, i.e. migration aspiration, has a value of 1 if a student expressed migration aspiration and 0 if otherwise. The aforementioned seven predictors were regressed against this binary (dichotomous) dependent variable. Hence, the logistic regression model (also called a logit model) is specified as follows:

$$\begin{aligned} \text{logit}(P = y) = & \alpha + \beta_1 \text{gender} + \beta_2 \text{siblings number} + \beta_3 \text{persons income} + \\ & + \beta_4 \text{family income} + \beta_5 \text{flat owning} + \beta_6 \text{housing issue} + \\ & + \beta_7 \text{job expectations}, \end{aligned} \quad (3)$$

where $\alpha, \beta_1, \dots, \beta_7$ are once again parameters that should be estimated, p is the likelihood that the outcome of interest occurs - aspiration for migration.

The diagnosis of the logit model (3) is based on: (i) multicollinearity detection, (ii) overall model evaluation, and (iii) checking the statistical significance of individual predictors. As suggested by [32], tolerance and variance inflation factors (VIFs) are used for multicollinearity testing. Evaluation of the overall model is done by comparing it with the null, i.e. with the intercept-only model. The likelihood ratio (LR) test is used to find out whether the model provides a better fit to data. The Hosmer-Lerneshow test (H-L test), McFadden R^2 and Nagelkerke R^2 are used to assess how well a logistic model fits a set of observations. Statistical significance of individual regression coefficients is tested by using the Wald χ^2 statistic. Additionally, the success and failure rates are used to test whether the proportion of cases is correctly classified, using the default 0.5 cut-off value. Detailed technical descriptions of logistic regression can be found in [32].

To explore whether migration motives (dependent variables), i.e. their linear combination, vary with respect to gender (independent variable), or gender and migration aspirations (independent variables), a multivariate analysis of variance (MANOVA) was employed. MANOVA can have the following general form [21].

$$Y_1 + Y_2 + \dots + Y_k = X_1 + X_2 + \dots + X_k, \quad (4)$$

where Y s denote a set of metric dependent variables and X s a set of categorical (nonmetric) independent variables. MANOVA assesses group differences across multiple metric dependent variables simultaneously. Hair Jr et al. [21] note that each treatment group is observed on two or more dependent variables.

Univariate tests were also used to look at each of these motives in isolation. The results of these analyses applied in our study reveal whether male students differ from female in general with respect to their cognitive responses to migration motives and which specific motives there are across which male and female students may differ.

The diagnostic of the MANOVA output requires that the following should be determined: (i) if the assumptions of the technique are met (e.g. appropriate variables and group (cell) size, independence of observations, multivariate normality, absence of outliers, linearity and moderate collinearity among all pairs of dependent variables, as well as homogeneity of the variance-covariance matrix), and (ii) if any effects are statistically significant. The assumptions should be tested prior to the MANOVA with the process of data screening, except the last one (homogeneity of

the variance-covariance matrix) which should be tested when running the method itself. The method is explained in [8] or in [50].

The population variance and covariance among the dependent variables should be the same across the groups. The Box's M test can be used as a statistical test for equality of variance-covariance matrices of the dependent variables across the groups. In practice, the observed significance level of the test statistic is compared with the threshold value. If a 0.01 level is considered the threshold level for indicating violations of the assumption, values greater than 0.01 would be considered acceptable because they indicate no differences between groups. The Levene's test can be used for testing the homogeneity of error variances. If this assumption is violated, a *p-value* is less than 0.05.

To determine whether the MANOVA is statistically significant, the Pillai's test is used since it is the most robust of the tests, especially when the assumptions of similar variance-covariance matrices and multivariate normality might be violated and when there is a small sample size or unequal cell size [40]. If a *p-value* is less than 0.05, the set of dependent variables is significantly dependent on the independent variable(s). The test of between-subjects effect should be conducted to explore how the dependent variables differ from the independent variable(s). If the F statistics and the corresponding *p-value* is less than 0.05, the independent variable has a statistically significant effect on the particular dependent variable.

4. Results and discussion

4.1. Association between migration aspirations and gender

The sample consists of 183 respondents, 49.18 per cent of whom would like to live permanently somewhere else, while 50.82 per cent would like to stay in a place. There are more female respondents who would like to migrate (51.61 per cent) than males (48.39 per cent). The Pearson's chi-square indicates that there is a statistically significant relationship between gender and student's aspirations to stay in a place or migrate somewhere (chi-square (χ^2) = 11.93, $df = 1$, $p = 0.001$). This means that males and females do not equally express their migration aspirations.

A bivariate analysis was based on checking the strength of association between migration aspirations and the selected demographic and socio-economic variables. Table 1 provides an insight into descriptive statistics for these variables.

The strength of an association between migration aspirations and the demographic and socio-economic variables is measured by the point biserial correlation (Pearson's chi square) in case of a continuous variable, by Phi in case of a discrete, dichotomous variable and by Cramer's *V* in case of a discrete variable when there is more than a 2x2 contingency. Table 2 presents the results.

The results indicate that there is a statistically significant association between migration aspirations and the following predictors: gender, family's monthly income, ownership of flat/house and solved housing problem.

To estimate the probability that a respondent expresses his/her migration aspiration, and also to check the effect of gender, logistic regression analysis on the model expressed by equation (3) was conducted. Preliminary analysis for multicollinearity

Variable	Type of variable	Descriptive statistics			Collinearity statistics	
		Category	Frequency	Relative frequency (%)	Tolerance	VIF
Gender	Discrete (categorical nominal)-dichotomous	Male	72	39.3	0.83	1.21
		Female	111	60.7		
Monthly personal income (in HRK)	Continuous (numeric)	Less than 1,000	73	39.9	0.77	1.30
		1,001-2,500	45	24.6		
		2,501-3,500	19	10.4		
		3,501 and over	6	3.3		
		Missing	22	12.0		
Monthly family's income (in HRK)	Continuous (numeric)	Less than 5,000	58	31.7	0.79	1.27
		5,001-10,000	66	36.1		
		10,001-15,000	26	14.2		
		15,001 and over	11	6.0		
		Missing	22	12.0		
Number of siblings	Discrete (numeric)	1.59* (SD=0.85)	1**	6***	0.94	1.06
Own flat/house	Discrete (categorical nominal)-dichotomous	Yes	61	33.3	0.63	1.58
		No	111	60.7		
		Missing	11	6.0		
Solved housing	Discrete (categorical nominal)-dichotomous	Yes	61	33.3	0.63	1.58
		Temporarily	29	47.5		
		Missing	1	1.6		
Job's expectations-expected difficulties in finding a job	Discrete (categorical ordinal)	Expected difficulties			0.83	1.21
		None	12	6.6		
		Small	23	12.6		
		Medium	89	48.6		
Migration aspiration	Discrete (categorical nominal)-dichotomous	Large	59	32.2		
		Stay in a place	93	50.8		
		Emigrate	90	49.2		

Note: * mean; ** minimum; ***maximum; SD = standard deviation

Table 1: Descriptive and collinearity statistics for background variables

Demographic predictor	χ^2 Phi, V statistics	Socio-economic predictor	χ^2 Phi, V statistics
Gender	-0.245*	Personal income	0.122
Number of siblings	0.003	Family's income	0.334*
Place of birth	0.081	Own flat or house	-0.248*
		Solved housing problems	0.243**

Note: * Significant at the 1% level; ** significant at the 5% level

Table 2: Values of Pearson's chi square, Phi and Cramer's V statistics on cross-classifying demographic and socio-economic characteristics with migration aspirations

indicated that it is not present in the model since all VIFs are less than 2.5, and tolerances are high (Table 1). The results of logistic regression, being the best fit of the data with respect to the goodness-of-fit statistics, are reported in equation (5).

$$\text{logit}(P(y = 1)) = -1.965 + 0.935\textit{female} - 0.782\textit{family's income} - 0.788\textit{flat} \quad (5)$$

	(15.908)	(6.124)	(11.122)	(4.133)
ORs		[2.547]	[0.458]	[0.455]

LR stat ($df = 3, p = 0.00000192$) = 29.31723; H-L stat ($df = 5, p = 0.284$) = 7.417
 McFadden $R^2 = 0.142307$; Nagelkerke $R^2 = 0.238$.

Note: the Wald statistics are given in parentheses, while the odds ratios (ORs) are given in square brackets.

Equation 5 shows the variables that turned out to be statistically significant (at the 0.05 level) for predicting the likelihood of university students to express whether they have migration aspirations. Female students are 2.5 times more likely to express their migration aspirations than males, all other things are constant. Regarding the family's income, the odds ratio indicates that a one-unit increase in family's income level decreases the odds of migration aspiration for 0.458 when other variables are controlled. Considering the possession of a flat/house, students who possess a flat/house are more likely to stay in a place, all other things are constant.

Overall, the predictions were correct 95 out of 149 times, for an overall success rate of 63.3 per cent. The sensitivity of prediction (the percentage of occurrences correctly predicted) was 64.3 per cent, while the specificity of prediction (the percentage of nonoccurrences correctly predicted) was 63.3 per cent. Additionally, the prediction was wrong 25 times, for a false positive rate of $25/75 = 33.3$ per cent. It was wrong 29 times, for a false negative rate $29/74 = 39.2$ per cent.

Migration aspirations of university students are obviously gender-specific. Hence, the issue of gender in the migration decision making process should be studied further. Females are more likely to express their migration aspirations than males, and higher family's income and ownership of flat/house reduce the chance of spatial mobility. Certainly, it is expensive to sell real estate and move somewhere else, and there is always a risk of having desirable affordable housing and lifestyle as well as of working conditions somewhere else. Filipić [14] found out that although owning a flat or a house is perceived as the main goal for an individual in Croatia, for the society this leads to lower efficiency of production factors and decreases mobility of labor force. This is in accordance with traditional migration theories that explain immobility by transport and transaction costs (for review, see [20]).

It is interesting to note that despite the severe recession in Croatia and poor job opportunities, migration aspirations are not significantly influenced by the perception of Osijek's future job market developments and the availability of the first job. It seems that respondents are self-confident and optimistic and that is usually characteristic of this population.

These findings are mostly in line with empirical studies. They also found that migration takes place as a response of particular demographic, socio-economic, psychological, political, and other factors (see [12] or for the context of Central and Eastern Europe, see [49]). For example, Zhelyazkova [55] identifies a broad range of

characteristics of migrants living in the European Union (EU) and the European Free Trade Association countries, and stresses, among others, that migrants have (i) a lower level of income, and particularly those from outside the EU have a significantly increased risk of poverty or social exclusion, even if they are employed, (ii) less favorable housing conditions, in particular with regard to overcrowding. Rokib et al. [55], who also employed the logistic regression analysis, stress that respondent's age, education, monthly income and the number of family members have significant effects on causes of migration.

As already mentioned in this paper and confirmed by statistical data in Croatia, a significant migration aspiration does not necessary lead to migration. So, Wallace & Vincent [54] find out that men were twice as likely to migrate as women.

4.2. Gender impact on migration motives

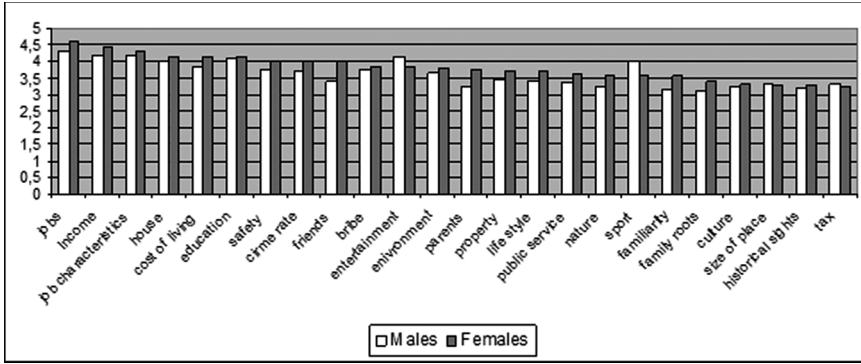
The paper also aims to determine the multivariate effect of gender on the perceived importance of migration motives by employing the MANOVA procedure. LI et al. [29], who also tested gender differences with MANOVA, found out that the multivariate effect for gender was not significant, i.e. that men and women who want to migrate are motivated by similar reasons. Conversely, Frieze & LI [17] suggest that as there are often gender differences in predictors for migration, men and women might have different predictors for general mobility.

Prior to running the MANOVA, within the process of data screening, the issue of outliers, multivariate normality, and multicollinearity among all pairs of dependent variables has to be checked.

For identifying multivariate outliers, the Mahalanobis distance procedure was used. Since the critical value is 51.18 ($p \leq 0.001$) in the case with 24 dependent variables and the calculated Mahalanobis distance statistics is 23.84, three outliers were identified. They were removed in further analysis.

The Shapiro-Wilk test, which was used to test for normality, indicates that data (migration motives) do not come from a normal distribution. However, as suggested by Leech et al. (2011), the MANOVA is robust to violations of multivariate normality and homogeneity of variance-covariance matrices if groups are of nearly equal size (the number of the largest group is no more than 1.5 times the number of the smallest group). In our case, the sample size of each group differs. There are 72 male (40.22 per cent) and 107 female (59.78 per cent) respondents, meaning that the number of female respondents is no more than 1.5 times greater than the number of male respondents. Figure 1 displays mean values of male and female respondents concerning the analyzed migration motives. Visually, male and female university students differ in the perception of the importance of migration motives which may be, according to Borozan & Barković Bojanić [2], clustered into the factors called social networks (including motives such as the vicinity of parents and friends, familiarity with people, places, etc.) and inherited amenities (including motives such as historical insights, natural beauties, etc.).

The Wilcoxon-Mann-Whitney test was used for testing whether the means of two groups differ, i.e. whether migration motives differ based on gender, since it is robust to normality and homogeneity of variance hypothesis. Based on gender, there



Note: Migration motives are sorted by females in descending order.
 Figure 1: Perceived importance of migration motives based on gender

are statistically significant differences between the perceptions of migration motives related to social networks: the vicinity of parents ($U = 3,158, p = 0.028$) and friends ($U = 2,949, p = 0.005$), followed by entertainment opportunities ($U = 2,801, p = 0.009$) and recreational and sport opportunities ($U = 2,538, p = 0.000$). Female respondents perceive motives associated with social networks more important than their male counterparts, while entertainment opportunities and recreational and sport opportunities are less important to them.

Dependent variables should be related conceptually, and they should be lowly or moderately correlated as suggested by Leech et al. (2011). The bivariate correlation, the Spearman's correlation test, is appropriate for use when two variables are not normally distributed. The applied tests suggest that most of migration motives are lowly to moderately correlated, and as such they may be meaningfully entered into the MANOVA. However, some of them (e.g. bribery and crime rate (0.664), availability of jobs and income (0.728), friends and parents (0.647), parents and roots (0.650), friends and roots (0.624), familiarity and roots (0.701)) are highly correlated. Consequently, we eliminated 11 motives and kept 13 motives (family roots, housing opportunities, availability of jobs, property, size of place, quality of public services, cultural opportunities, recreational and sport opportunities, natural beauties, crime rate, environmental cleanness, educational opportunities, job characteristics).

In order to explore the gender effect on linear combination of 13 migration motives perceived by university students, the one-way MANOVA was conducted by running the general linear model procedure in the statistical program SPSS 18. Simultaneously with running the procedure, the assumption on the homogeneity of variance-covariance was checked, and particular migration motives influencing it were eliminated. In the end, seven migration motives (housing opportunities, property (e.g. real estate), availability of jobs, cultural opportunities, natural beauties, crime rate and sport and recreational opportunities) were kept. The Box's test of equality of covariance matrices confirms that the assumption of the homogeneity of covariance was not violated (Box's $M = 49.132, F(28, 67960.081) = 1.670, p = 0.015 > \alpha(0.001)$). The Pillai's criterion, $F(7, 157) = 5.040, p = 0.000$, Pillai's trace = 0.183, suggests that there is a significant multivariate main effect for gen-

der. Migration motives, considered as a group, are significantly dependent on gender, meaning that there are significant differences among gender on a linear combination of these variables.

The multivariate effect size was estimated at 0.183, which implies that 18.3 per cent of the variance in the combined dependent variables was accounted for by gender. Following Cohen [8], the size of the effect is large. The observed power, which is a measure of the probability of not making a type II error (falsely accepting the null) is 0.997, meaning that there is a 0.3 per cent of chance to make this error. As Cohen [8] suggests, it should be at least 0.80.

Since the Pillai's criterion showed a significant overall effect, we continued with the analysis to determine the effects of gender on each of the different dependent variables. For that purpose, the Levene's test of equality of error variances was conducted and the table of tests of between-subjects effects was created (see Table 3). The Levene's tests indicate that the homogeneity of variance assumption can be considered relatively satisfactory. Due to violation of assumptions for certain variables ($p < 0.05$), a more conservative alpha level of 0.025/0.0125 was set rather than the traditional 0.05 as suggested by Tabachnick & Fidell [50] for such a situation. Follow-up univariate ANOVAs indicated that natural beauties, availability of jobs and recreational and sport opportunities are significantly different for gender ($p < 0.05$). This means that significant univariate main effects for gender are obtained for these migration motives.

Dependent variables	Levene's		ANOVAs		η^2	Males		Females	
	F(1,163)	p	F(1,163)	p		Mean	SD	Mean	SD
Housing opportunities	0.228	0.634	1.416	0.236	0.009	4.00	1.02	4.18	0.92
Property	3.239	0.074	2.249	0.136	0.014	3.45	1.29	3.74	0.95
Cultural opportunities	5.612	0.019	1.120	0.291	0.007	3.58	1.14	3.76	1.11
Availability of jobs	6.698	0.011	3.997	0.047	0.024	4.30	1.04	4.58	0.72
Natural beauties	7.481	0.007	5.795	0.017	0.034	3.18	1.28	3.59	0.88
Sport and recreational opportunities	0.497	0.482	10.096	0.002	0.058	4.06	1.19	3.54	0.93
Crime rate	5.274	0.023	3.657	0.058	0.022	3.67	1.33	4.02	1.04

Note: η^2 = partial eta squared; SD = standard deviation; the F-test is the form $F(df1, df2)$

Table 3: *Perceived importance of migration motives based on gender*

The univariate (between subjects) test also provides a measure of effect size (η^2). It shows how much variance in each migration motive is a result of gender. With regards to the criteria for partial eta-squared suggested by Cohen [8], the effect size ranges from small to medium.

To examine the interaction effect of gender and migration aspirations on migration motives, a two-way MANOVA was also conducted. The interaction effect showed statistically significant (the Pillai's criterion, $F(7, 157) = 2.154$, $p = 0.041$, Pillai's trace = 0.088), indicating that a linear combination of housing opportunities, availability of jobs, quality of public services, crime rate, size of place, recreational and sport opportunities and family roots is affected by gender and migration as-

pirations. The interaction (joint) effect is of moderate size ($\eta^2 = 0.088$). The tests of between subjects effects indicate that the perception of the importance of family roots is an important particular predictor occurring in the interaction effect ($F = 5.504$, $p = 0.02$). Women consider family roots a more important migration motive than men in general, whereas women, who aspire to move, perceived this motive still as more important than women who aspire to stay (means 3.49 and 3.33, respectively). Men who express their migration aspirations assess family roots as a relatively unimportant migration motive (mean 2.81 on a five-point Likert scale) compared with men who want to stay.

Both multivariate main effects are also significant (for gender: the Pillai's criterion, $F(7, 157) = 3.126$, $p = 0.004$, Pillai's trace = 0.122; for migration aspirations: the Pillai's criterion, $F(7, 157) = 2.039$, $p = 0.034$, Pillai's trace = 0.091), and large ($\eta^2 = 0.112$ and $\eta^2 = 0.91$, respectively). When it comes to the main effect of gender, females perceive sport and recreational opportunities as less important than men. This motive is more important for men who express their migration aspirations. The main effect of migration aspirations is important particularly for the perception of the quality of public services. Females perceive it as more important than men. Generally, for men and women who want to migrate, this motive is more important than for those who want to stay.

The results of this empirical research imply that migration motives are remarkably diverse, interrelated and mutually dependent. Migration motives cross-cut different theoretical and empirical findings, depending upon socio-economic situation, expectations, aspirations and demographic characteristics of a migration unit. Additionally, they are gendered.

Men perceive motives differently than women. When it comes to variables related to social networks and inherited advantages of a place, women place more importance to them, although both sexes found them relatively important in the migration decision making process in general. The exception is entertainment, sport and recreational opportunities, which are generally more important to men than women, and to men who want to move. Borozan & Barković Bojanić [2] found that social networks have the 'pull' effect for the city of Osijek in this process, whereas the economic factor proved to demonstrate the 'push' power. On the contrary, insider advantages were not perceived as especially attractive. It seems that a gap between gendered migration aspirations and making as well as realizing a decision to migrate may be partially explained by the power of pull variables. Although female respondents are more likely to express their migration aspirations than their counterparts, women, and especially women who aspire to move, found established social networks (consisting primarily of friends and parents and parental ties), and some inherited features of home place (such as crime rate or quality of public services) more important. Furthermore, they qualify them as 'pull' factors, i.e. as the factors that contribute ultimately to their immobility.

When considering social networks and insider advantages influencing people to migrate or not, one can notice that they are mostly researched in the sphere of target destination (e.g. [43]), and that there is a lack of research that connects gender and social networks with stay (or stick) motives and home place. Only several studies explored this topic, and most of them without gender-specific considerations. For

example, Malmberg [30] stresses that strong ties to places and people are constraints to migration. Fischer et al. [15] explain why most Europeans prefer to stay by the insider advantages approach. Since many assets and abilities are location-specific and cannot be transferred to other places of residence, migration will turn such effort into lost sunk cost. They argue that the more insider advantages people have accumulated, the less likely they are to move. However, Olofsson & Westin [39] reveal that male migrants state mostly economic motives for their migration decision, while women's motives are much more diverse and tend to be more social or family-driven.

Economic motives, encompassed by the economic situation factor, are perceived in this study as the most important drivers of migration. They are also gendered, particularly when it comes to the perception of availability of jobs and housing opportunities. For women, and especially for women who want to move, these motives have a stronger impact on the decision to migrate than they have for men. This is not strange taking into consideration the consequences of the current deep and severe recession in Croatia. Certainly, it is well documented worldwide and also in Croatia that in the recession job availability declines because many establishments are forced to slow down or freeze hiring and others have to go out of business. On the other hand, the number of people looking for a job, especially of young women, increases. In Croatia, women have a lower activity and participation rate, a lower employment rate, a higher unemployment rate, and lower monthly earnings than men, and these differences are higher for younger and older women [22]. This is also a situation that holds for the city of Osijek. Discrimination on the labor market also translates to the real estate market. Women face more difficulties than men in obtaining capital, and this could be extended to financing housing opportunities. Although Croatian women have a fairly equal status, Croatia is still a relatively patriarchal society in which a man is a head of the family. He has the role of the breadwinner/provider and it is more important that he achieves economic independence, and hence in the family he has a priority to solve his housing issue.

5. Conclusion

In current migration processes worldwide, women have been recognized as active actors with their own migration aspirations and motives, and not as followers who usually come after the head of the household. Hence, a remarkable diversity of migration motives and patterns among women, that is markedly different than for men, has begun to unfold. Currently, they have not been fully understood, in particular when it comes to the region lagging behind and a post-transitional economy, which is Croatia, i.e. the Osijek-Baranja county and the city of Osijek.

This paper explored migration aspirations and motives of university students in Osijek by using multivariate analysis tools: prediction method (logistic regression) and group difference method (MANOVA). The results supported the thesis that gender matters when it comes to both migration aspirations and motives. More precisely, according to logistic regression, females are more likely to express their migration aspirations than males. However, Croatian statistical data indicate that men migrate more than women. Aspirations are not constant, and men and women react differently to similar external circumstances and stimuli. Based on gender, the

Wilcoxon-Mann-Whitney test indicated statistically significant differences between the perceptions of migration motives particularly related to social networks: the vicinity of parents and friends, family roots, familiarity with people and places as well as lifestyle.

A two-way MANOVA unveiled significant multivariate main effects and the interactive one for gender and migration aspirations, respectively. This was confirmed by the Pillai's traces, and the powers to detect the effects were statistically significant. Women (and especially women who aspire to move) perceive motives differently than men, particularly when it comes to family roots, a variable related to social networks. Since the perception of family roots is highly correlated with other social network migration motives, it is likely that the significance of univariate joint effects also refers to them. Motives related to insider advantages, as supported by the results of the one-way MANOVA, turned out to be perceived differently by men and women, too. A significant univariate main effect for gender was obtained for natural beauties, availability of jobs and recreational and sport opportunities. In general, these motives are more important for women than for men, with the exception of sport and recreational opportunities. While the multivariate test (η^2) indicates the large effect size for a linear combination of migration motives, the univariate (between subjects) tests (η^2) and main effect tests mostly indicate medium effect sizes.

Women place more importance to motives related to social networks and inherited advantages of a place. However, these motives have the 'pull' effect for the city of Osijek, what may partially explain a gap between gendered migration aspirations and making as well as realizing a decision to migrate. Economic motives are perceived as the most important drivers of migration. They are also gendered, particularly when it comes to the perception of availability of jobs and housing opportunities. Women, and women who want to migrate, consider them more important than men, maybe due to fact that women are discriminated in the labor market and by obtaining capital. Further research should explore the reasons for that.

In general, this paper supported the thesis that migration is not only a complex gendered phenomenon, but also a complex gendering process that assumes subjective assessment and reassessment of the whole set of interrelated, dependent and gendered motives.

References

- [1] Aryal, T.R. (2005). Determinants of rural out-migration at household level: Logistic regression analysis. *Economic Journal of Nepal*, 28(3), 169–177.
- [2] Borozan, Đ., Barković Bojanić, I. (2012a). Meta-ethnography of literature on migration in Croatia. *Review of Business Research*, 12(2), 85–91.
- [3] Borozan, Đ., Barković Bojanić, I. (2012b). Migration motives of university students: An empirical research. *International Migration*. DOI: 10.1111/imig.12016
- [4] Bodvarsson, O., Van den Berg, H. (2009). *The Economics of Immigration: Theory and policy*. Berlin: Springer Verlag.
- [5] Boyd, M. (1989). Family and personal networks in international migration: Recent developments and new agendas. *International Migration Review*, 23(3), 638–671.

- [6] Boyd, M., Grieco, E. (2003). *Women and migration: Incorporating gender into international migration theory*. Washington D.C.: Migration Policy Institute, Migration Information Source.
- [7] Castles, S., Miller, M.J. (1998). *The age of migration: International population movements in the modern world*. New York: The Guilford Press.
- [8] Cohen, J. (1988). *Statistical power for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- [9] CBS (Croatian Bureau of Statistics) (2012a). First release. Zagreb: CBS, No. 7.1.2.
- [10] CBS (Croatian Bureau of Statistics) (2012b). First release. Zagreb: CBS, No. 12.1.2.
- [11] Czaika, M., Vothknecht, M. (2012). *Migration as cause and consequence of aspirations*. Oxford: International Migration Institute, IMI Working Paper No. 57-2012.
- [12] Deshingkar, P., Grimm, S. (2005). *Internal migration and development: A global perspective*. Geneva: International Organization for Migration, IOM Migration Research Paper No. 19.
- [13] Dumont, J.C., Martin, J.P., Spielvogel, G. (2007). *Women on the move: The neglected gender dimension of the brain drain*. Bonn: Institute for the Study of Labour, IZA Discussion Paper No. 2920.
- [14] Filipić, P. (2007). *Uvod u makroekonomiju stanovanja (Introduction to the macroeconomics of the household sector)*. *Ekonomski pregled*, 58(7-8), 393-420.
- [15] Fischer, P. A., Holm, E., Malmberg, G., Straubhaar, T. (2000). *Why do people stay? Insider advantages and immobility*. Hamburg: Hamburg Institute of International Economics, HWWA Discussion Paper No. 112.
- [16] Florida, R. (2002). *The rise of the creative class: And how it's transforming work, leisure, community and everyday life*. New York: Basic Books.
- [17] Frieze, I.H., LI, M.Y. (2010). *Mobility and personality*. In: S.C. Carr (Ed.), *The psychology of global mobility*, 87-104. New York: Springer.
- [18] Garip, F. (2008). *Social capital and migration: How do similar resources lead to divergent outcomes?* *Demography*, 45(3): 591-617.
- [19] Ghosh, J. (2009). *Migration and gender empowerment: Recent trends and emerging issues*. New York: HDR Office, Human Development Research Paper No. 2009/4.
- [20] Greenwood, M.J. (1997). *Internal migration in developed countries*. In: M.R. Rosenzweig and O. Stark (Eds.), *Handbook of population and family economics*, 647-720, Vol. 1B. Amsterdam: Elsevier.
- [21] Hair Jr, J.F., Black, W.C., Babin, B.J., Anderson, R.E. (2009). *Multivariate data analysis*, 7th Edition, Prentice Hall.
- [22] Hazl, V., Crnković Pozaić, S., Meštrović, B., Taylor, A. (2011). *Current position of women in the Croatian labour markets, Synopsis, Women in the Labour Market, Europe Aid 128290/D/SER/HR, The EU's IPA Programme for Croatia*.
- [23] De Haas, H. (2008). *Migration and development: A theoretical perspective*. Oxford: International Migration Institute, IMI Working Paper No. 9-2008.
- [24] IOM (International Organization for Migration) (2002). *Gender and migration*, Geneva: IOM, No. 96/2002.
- [25] Kaczmarczyk, P., Okólski, M. (2005). *International migration in Central and Eastern Europe: Current and future trends*. United Nations Expert Group Meeting on International Migration and Development. New York: Population Division, UN Secretariat, 5 July, UN/POP/PD/2005/12.
- [26] Kocziszky, G., Nagy, Z., Rauhut, D., Györffy, I. (2012). *Gender related out-migration tendencies in Northern Hungary and in VC sternorrland, Sweden, the Regional Studies Association's Conference, 13th-16th May, Delft, the Netherlands*.
- [27] Lee, E.S. (1966). *A theory of migration*. *Demography*, 3, 47-57.

- [28] Leech, N.L., Barrett, K.C., Morgan, G.A. (2011). *IBM SPSS for intermediate Statistics: use and interpretation*. London: Routledge Academic.
- [29] LI, M.Y., Frieze, I.H., Horvat, J., Mijoč, J., Olson, J.E. (2012). Reasons for Leaving Home: Comparing Predictors of Wanting to Migrate and Travel in Croatian Undergraduates, *Migracijske i etnicke teme*, 28 (1), 7–27.
- [30] Malmberg, G. (1997). Time and space in international migration. In: T. Hammar, G. Brochmann, K. Tamas, & T. Faist (Eds.), *International Migration, Immobility and Development* 21–48. Oxford: Berg.
- [31] Massey, D.S. (1990). Social structure, household strategies, and the cumulative causation of migration. *Population Index*, 56(1), 3–26.
- [32] Menard, S.W. (2009). *Logistic regression from introductory to advanced concepts and applications* (2nd ed.). Thousand Oaks: Sage Publications.
- [33] Morokvašić-Mueller, M. (2002). Post communist migrations in Europe and gender. *Journal of Gender Studies*, 5, 15–45.
- [34] Meznarić, S., Stubbs, P. (2012). Social impact of emigration and rural-urban migration in Central and Eastern Europe, Final Country Report, Croatia, Köln: Gesellschaft für Versicherungswissenschaft und Gestaltung. VT/2010/001.
- [35] Mezt-Goeckel, S., Morokvašić, M., Meunst, A.S. (2008). Migration and mobility in enlarged Europe: A gender perspective. Opladen: Barbara Budrich-Esser Publishers.
- [36] Moss, L.A.G. (Ed.) (2006). *The amenity migrants: Seeking and sustaining mountains and their cultures*. Wallingford: CABI Publishing.
- [37] OECD (Organization for Economic Cooperation and Development) (2013). *International migration outlook 2012*. Paris: OECD Publishing.
- [38] Oishi, N. (2002). *Gender and migration: An integrative approach*. San Diego: The Center for Comparative Immigration Studies, Working Paper No. 49.
- [39] Olofsson, J., Westin, K. (2011). East-Central European migrants in Sweden - Migration motives and migration outcome. *Social Space*, 2, 75–103.
- [40] Olson, C. L. (1976). On choosing a test statistic in multivariate analyses of variance. *Psychological Bulletin*, 83, 579–586.
- [41] Pessar P. R. (1999). The role of gender, households, and social networks in the migration process. In: C. Hirschman et al. (Eds.), *Handbook of international migration* 53–70. New York: Russell Sage Foundation.
- [42] Pfeiffer, L.M., Richter, S.M., Fletcher, P., Taylor, J.E. (2007). Gender in economic research on international migration and its impacts: A critical review. In: A.R. Morrison, M. Schiff, & M. Sjoebloom (Eds.), *The international migration of women*. Washington, DC: World Bank.
- [43] Poros, M.V. (2011). *Migrant social networks: Vehicles for migration, integration, and development*. Washington, DC: Migration Policy Institute.
- [44] Ravenstein, E.G. (1889). The laws of migration. *Journal of the Royal Statistical Society*, 52, 214–301.
- [45] Rokib, A., Alam, R., Goni, A. (2011). Influencing factors of socio-economic and demographic characteristics on female migrants study of Meherpur Sadar Thana, Bangladesh. *The Social Sciences*, 6(3), 194–197.
- [46] Schwenken, H., Eberhardt, P. (2008). Gender knowledge in economic migration theories and in migration practices. Coventry: Garnet Network of Excellence, GARNET Working Paper No. 58/08.
- [47] Sjaastad, A.H. (1962). The costs and returns of human migration. *Journal of Political Economy*, 70, 80–93.
- [48] Stark, O., Bloom, D. (1985). The new economics of labour migration. *American Economic Review*, 75, 173–178.

- [49] Szczepanikova, A., Canek, M., Grill, J. (Eds.) (2006). Migration processes in Central and Eastern Europe: Unpacking the diversity. Prague: Multikulturni centrum Praha.
- [50] Tabachnick, B. G., Fidell, L.S. (2012). Using multivariate statistics. New York: Harper & Row.
- [51] Taylor, J.E. (1986). Differential migration, networks, information and risk. In: O. Stark (Ed.), Migration theory, human capital and development, 147–71. Greenwich, CT: JAI Press.
- [52] Taylor, J.E. (1987). Undocumented Mexico-US migration and the returns to households in rural Mexico. *American Journal of Agricultural Economics*, 69, 626–638.
- [53] Todaro, M.P. (1976). Internal migration in developing countries. Geneva: ILO.
- [54] Wallace, C., Vincent, K. (2009). Recent migration from the new European bordelands. In: H. Fassmann (Ed.), Migration and mobility in Europe: Trends, patterns and control. Edward Elgar Pub.
- [55] Zhelyazkova, A. (2008). Female Migrants: The new nomads in the old Europe: The gender specific dimension of migration. Sofia: The International Center for Minority Studies and Intercultural Relations. Final Report.