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Attractiveness of the Czech regions: Does economic and social welfare matter?

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Abstract

The main objective of this paper targets to the relationship between attractiveness of the Czech regions for living on one hand and economic and social conditions of the Czech regions on the other. In accord with this objective, the net migration scores of the regions is evaluated, as well as three indicators related to economic and social welfare – employment rate, criminality rate and quality of housing. Methodological approach is based on descriptive, comparative and correlation analyses and PCA analysis. The empirical results provide some evidence on the positive relationship between net migration scores and employment rate. The other empirical results are ambiguous.

Keywords: Region; Economic and Social Welfare; Net Migration; Regional Attractiveness; the Czech Republic

1. Introduction

The issue of regional attractiveness for living is in the centre of this paper. Thus, we evaluate the relationship between regional net migration, which is understood as the indicator of regional attractiveness for living, and particular regional characteristics connected to economic and social welfare. The main objective of this evaluation is to reveal, whether the most attractive regions, respectively regions with highest net migration, tend to have the best economic and social welfare scores.

Regional attractiveness for living, in other words the ability of regions to attract new inhabitants, is broadly considered as one of the important assumptions of regional development from all viewpoints – economic, social, environmental and institutional (Capello and Nijkamp 2010). The question is, whether it exists a relationship between regional attractiveness, expressed by net migration score, and economic and social welfare provided by the region. In other words, have the regions with the best scores of economic and social welfare also the highest immigration scores? The answer to that question is not clearly formulated so far.

Outlined problem attracts the attention of academics, as well as the politicians and public authorities, whose aim is to build regions with the best living conditions and attract new inhabitants. Consequently, the regional development targets are followed and aspired. On the other hand, the practical realization of such goals requires high embeddedness and knowledge of factors, which influence migration processes and regional development as a whole.

Above-mentioned issues are essential for this paper, which tries to contribute to these phenomena and enhance the relevant knowledge.

Structure of the paper is designed as follows:

- first part focuses on theoretical framework of the real estate market issues
- second part introduces methodology
- third part examines the results of empirical analysis of the real estate market of Olomouc and Zlín regions from broader perspective
- the final part of the paper concludes

2. Theoretical framework

In this part of the paper, theoretical framework is introduced. Attention is paid especially to the issues related to regional development and its sources – regional attractiveness for living, and economic and social welfare, which enable inhabitant in-flows and accelerate further processes of sustainable development of regions (e.g. Wennekers et al. 2005 or Benneworth 2004 or Fritsch 2007). Thus, the research topic of the paper is justified.

In this paper, the proxy variable of regional attractiveness is expressed as net migration. The ability of particular region to attract the interest of potential inhabitants is essential in this regard. Many of scholars agree the connection between net migration scores and regional socio-economic conditions and development (e.g., Delfmann et al. 2013, Wagner and Sternberg 2004). This is also premise adopted in this paper. Regions with positive net migration scores indicates good economic and social status, utilize agglomeration economies and provide prominent living conditions, compared to other regions.

Current research on regional development usually postulate following ideas, in relationship to inter-regional migration:

- Negative net migration is indicated in lagging regions with remarkable development problems. The opposite is true for regions with positive migration outcome (e.g. Delfmann et al. 2013; Fotopoulos 2013 or Lee, Florida and Acs 2004).
- Reasons for inter-regional migration usually lay in two dimensions – economic dimension and living conditions dimension. Economic dimension is connected with regional wage rate (Wyrwich 2012 or Bishop 2012), opportunities on labour market and utilization of agglomeration economies (see, e.g. Audretsch and Fritsch 1994; Armington and Acs 2002 or Delfmann et al. 2013 for further discussion). The dimension of living conditions is usually connected with quality of particular services, like education, health and social care, quality of housing, possibilities of leisure time activities and quality of community life. All of these motives can be considered as economic and social welfare. For discussion of these factors, see Davidsson and Wiklund (1997) or Delfmann et al. (2014)
- Particular authors stress, that the issue is much more complex and point at migration in opposite direction, it means into lagging regions or regions with poorer economic and social conditions (Delfmann et al. 2014; Audretsch, Dohse and Niebuhr 2010 or Malecki 1994). Motives for this migration can lay in lower costs of living in this type of regions or opportunities resulting from lower level of socio-economic development, such as entrepreneurial opportunities in specific industry fields, absence of competitors, lower real-estate prices and service prices etc.

Now let turn the attention to particular factors, which influence the inhabitants' willingness and likeliness to live in particular region. It is possible to summarize these factors as economic and social welfare indicators. From the both mentioned viewpoints, the indicators connected to regional employment, respectively unemployment, are usually evaluated

(Delfmann et al. 2013; Armington and Acs 2002; Bishop 2012; Audretsch and Fritsch 1994 and others). In economic perspective, rates of employment and unemployment indicates the performance of regional economy and regional wealth. These indicators are correlated also with regional GDP values, which are other traditionally used indicators of economic performance and health of regions (Delfmann et al. 2014). High scores in employment rates, respectively low unemployment rates, are able to attract not only potential inhabitants but also other actors, like entrepreneurs or firms, big corporations prospectively (e.g. Armington and Acs or Bishop 2012). Thus, the regional output and economic performance is furtherly accelerated. The whole process has cycled character. From social perspective, employment, respectively unemployment rates indicates also welfare and social status of the inhabitants. Delfmann et al. (2014) conclude, that regions with high employment rates, respectively low unemployment rates, tend to attract more attention between potential inhabitants and provide overall better living conditions. Note, that many authors consider high unemployment rate to be one of the most important indicator of social deprivation and exclusion of the area (e.g. Gallie, Paugam and Jacobs 2003).

Another indicator, representing social conditions of the regions, is the level of criminality. Thus, scholarly literature mention the relationship between poor social status of areas and higher rates of criminality (see, e.g. Brantingham and Brantingham 1995 for broad discussion). On the other hand, Gribanova and Vulfovich (2017) mention, that higher criminality rates indicates also regions, usually considered as economically strongest, such as biggest agglomerations and economic hotspots. This phenomenon is related to high population density and agglomeration economies theory and represents the dark side of the issue. Overall, criminality is understood as undesirable societal feature, which is negatively correlated with regional attractiveness for living (Brantingham and Brantingham 1995).

Regional attractiveness of living can be remarkably affected by the housing conditions and quality of housing units (Keall et al. 2010). This indicator provides evidence about both, economic and social conditions of the region. The first issue is related to status of regional economy and purchasing power of inhabitants. The second issue is related to social status of regional population but also the condition of local public authorities, which hold remarkable share of housing units in the Czech Republic and have the power to influence housing portfolio (e.g. Salet, Thornley and Kreukels 2003). Thus, regions with poor quality of housing units are usually less likely to attract interest of potential inhabitants – in other words tend to have low migration scores. Further discussion about this issue provide Keall et al. (2010) or Harrison (2003).

3. Methodology

The chapter introduces methodological framework of this paper. The main objective of the research is to recognize, whether it exists relationship between positive migration on one hand and indicators connected with economic and social welfare of the regions on the other. For this study, administrative districts of the Czech Republic were used as a regional decomposition level (regions hereafter). Because of official data availability for particular indicators construction, year 2011 was chosen. Thus, official statistical data form Census 2011 of the Czech Statistical Office (CSO hereafter) were used.

Based on abovementioned literature review, indicators related to migration and economic and social welfare were constructed. The logics of variables construction is given in table 1. Hypotheses about mutual relationships between dependent and independent variables are indicated as well.

Table 1: Variables construction and rationale

Variable	Type	Rationale	Construction	Hypotheses
Net migration	Dependent	Net migration is used as a proxy variable indicating overall attractiveness of the region for living. Thus, regions with negative values of net migration are considered to be less attractive than the others.	Variation between incoming and out-coming inhabitants	Not applicable
Employment rate	Independent	Employment rate is used as a proxy variable representing economic and social conditions of the region. Thus, higher employment rate indicates better economic and social conditions.	Total employed economically active population per total population of the region.	Positive relationship between dependent variable and employment rate.
Criminality rate	Independent	Criminality rate is used as a proxy variable related to social welfare in the region. Thus, the regions with lower criminality rate are considered to have better social conditions.	Amount of registered delicts per thousand inhabitants of the region.	Inverse relationship between dependent variable and criminality rate.
Quality of housing	Independent	Quality of housing is used as a proxy variable representing social and economic conditions of the regions. Thus, the better is the quality of housing, the better are is regional economy and social welfare.	Ration between housing units of standard quality and housing units with poor quality. Defined by the CSO.	Positive relationship between dependent variable and quality of housing ratio.

Source: own elaboration

For evaluation of attractiveness of particular regions of the Czech Republic, the comparative, descriptive and correlation analysis were employed. Methodological approach followed this steps:

1) Analysis of regions according to the values of dependent variable was developed in the first step. In this regard, the ranking of regions with the best and the worst values was made. The results of this analysis were illustrated in tables.
2) In the second step, the descriptive statistics of particular variables was applied. Thus, values of weighted average, standard deviation and variation coefficient were calculated, the highest and the lowest values are indicated. The results of this analysis were illustrated in tables.
3) The third step of methodological approach targeted to relationships between dependent variable and particular independent variables. Regarding this idea, correlation analysis was employed. Values of Pearson´s coefficient and Spearman´s rho were calculated (e.g. Field 2009 for more details). The results of this analysis were illustrated in tables.
4) In the final step of methodological approach, it was evaluated, whether or not the regions with the best scores of net migration have also anticipated scores of

independent variables and vice versa. The component of economic and social welfare was extracted from three indicators introduced above. It was used PCA analysis with varimax rotation for this extraction (see, e.g. Janssens et al. 2008 for details). After that step, correlation analysis was applied to reveal relationship between dependent variable and economic and social welfare component. Pearson´s coefficient and Spearman´s rho were calculated. The results of the analysis were illustrated in tables. With this step of methodological approach, the main objective of the paper is going to be fulfilled.

Considering the relevance of analyses results, Prague was excluded from the evaluation because of its outlaying values of particular indicators.

Correlation coefficients and PCA analysis component were computed using statistical programme SPSS.

4. Empirical results

The fourth section of the paper synthetises the main empirical results of developed analyses. We introduce main results in order to methodological approach described in previous part of the paper.

Table 2: Net migration ranking – the best and worst values; year 2011

Region	The best scores	**Region**	The worst scores
Praha – východ	3,684	Karviná	-1,574
Praha – západ	3,106	Brno – město	-1,459
Brno – venkov	2,217	Ostrava – město	-1,365
Beroun	1,051	Ústí nad Labem	-550
Kladno	928	Třebíč	-353
Nymburk	809	Český Krumlov	-288
Mladá Boleslav	769	Děčín	-282
České Budějovice	711	Česká Lípa	-276
Frýdek – Místek	686	Přerov	-250
Benešov	634	Bruntál	-246

Source: own elaboration based on CSO data

Firstly, the initial evaluation of regions with the best and the worst scores of net migration – dependent variable in other words - was made. Table 2 represents the results. The best scores reach regions in surrounding of largest agglomerations of the Czech Republic – Prague and Brno. The opposite is true for regions of large cities, Brno and Ostrava and some other regions in economically lagging areas of the Czech Republic.

Table 3 indicates results of applied descriptive analysis of particular variables. Regarding the character of dependent and independent variables, weighted averages, standard deviations, variation coefficients were calculated. Information about the highest and the lowest values of particular variables are introduced as well to better picture the situation. Relatively significant differences in net migration, criminality rates, employment rates or quality of housing between the Czech regions can be observed.

Table 3: Descriptive statistics of variables; year 2011

Variable	Net migration	**Variable**	Criminality rate
Indicator	**Value**	**Indicator**	**Value**
Weighted average	147	Weighted average	24.57
Standard deviation	734	Standard deviation	8.35
Variation coefficient	0.19	Variation coefficient	2.94
Highest value	3,684	Highest value	56.44
Lowest value	-1,574	Lowest value	13.92
Variable	Employment rate	**Variable**	Quality of housing
Indicator	**Value**	**Indicator**	**Value**
Weighted average	0.43	Weighted average	17.29
Standard deviation	0.03	Standard deviation	3.23
Variation coefficient	14.33	Variation coefficient	5.35
Highest value	0.50	Highest value	24.13
Lowest value	0.36	Lowest value	11.33

Source: own elaboration based on CSO data

With respect to methodological approach, table 4 illustrates the results of correlation analysis. The relationship between dependent variable, represented by net migration, and three independent variables, represented by employment rate, criminality rate and quality of housing, was explored. Both applied types of correlation indicate positive and statistically significant relationship between net migration and employment rate on 1% level of statistical significance. Criminality rate seems not to have clear positive or inverse relationship with dependent variable. Quality of housing indicates negative relationship to dependent variable. However, both of these relationships have no statistical significance according to either Pearson´s correlation either Spearman´s rho.

The results of the final step of methodological approach are presented in table 5. In this step, the relationship between extracted component of economic and social welfare of the Czech regions on one hand and net migration on the other was evaluated. In this regard, the results of correlations do not provide straightforward answer. Considering values of both correlation coefficients, which oscillate about zero point, and unidentified statistical significance, it is not

possible to conclude that there is or is not positive or inverse relationship between both variables.

Table 4: Correlation analysis – dependent and independent variables; year 2011

Pearson´s correlation			
	Employment rate	Criminality rate	Quality of housing
Net migration	0.59	-0.05	-0.19
Statistical significance level	0.01	Not identified	Not identified
Spearman´s rho			
	Employment rate	Criminality rate	Quality of housing
Net migration	0.59	0.06	-0.16
Statistical significance level	0.01	Not identified	Not identified

Source: own elaboration based on CSO data

Table 5: Correlation analysis – net migration and extracted component; year 2011

Economic and social welfare		
	Pearson´s correlation	Spearman´s rho
Net migration	0.009	-0.002
Statistical significance level	Not identified	Not identified

Source: own elaboration based on CSO data

5. Conclusion and discussion

Regarding the results of analyses introduced in previous part of this paper, the fifth part provides conclusions about defined hypotheses and further remarks to the topic of regional attractiveness.

The first hypothesis looked at the relationship between net migration and employment rate as a proxy indicator of economic and social conditions of the region. Thus, positive relationship was anticipated. The results of correlation analysis confirm this hypothesis at 1% level of statistical significance.

The second hypotheses anticipated inverse relationship between net migration on one hand and criminality rate on the other, when this variable represents poor social conditions of the region. The two calculated correlation coefficients provide ambivalent results. However,

the values of Pearson´s correlation and Spearman´s rho are both close to zero point; moreover do not indicate statistical significance. Thus, second hypothesis cannot be accepted or rejected.

The hypothesis related to the third independent variable – quality of housing, cannot be evaluated in straightforward way. Anticipated positive relationship between net migration and quality of housing was not proven, when both correlations indicates inverse relationship between the two variables. The statistical significance wasn´t indicated. In this regard, it is not possible to unambiguously reject the third hypothesis.

The main objective of the paper is to evaluate, whether or not regions with the best scores of economic and social welfare indicate also the best scores of net migration. In other words, whether regions with the best economic and social conditions are the most attractive for living and have the highest immigration. For that evaluation, the extracted component of economic and social welfare was calculated. Its relationship to the net migration was not clearly identified. The values of Pearson´s correlation and Spearman´s rho provide opposite results, but oscillate about the zero point. Moreover, statistical significance was not indicated. Regarding these results of correlation analysis, the initial question of the paper cannot be answered in straightforward way. To the better overview of the situation, table 6 gives additional information about ranking of the regions with the best, respectively the worst, values of extracted component of economic and social welfare. According to computed ranking, it is obvious that there is not clear connection between regions with the highest scores of net migration and the highest scores of economic and social welfare component. This can be affected by relatively higher criminality rates in most densely populated regions (also regions with the highest scores of net migration) and their uneven quality of housing units. On the other hand, the situation of regions with the poorest results is slightly different. Relatively lots of regions with the lowest scores of net migration are also regions with the worsts scores of economic and social welfare component.

Table 6: Economic and social welfare ranking – the best and worst values; year 2011

Region	The best scores	**Region**	The worst scores
Havlíčkův Brod	1.69	Ostrava – město	-2.29
Třebíč	1.56	Chomutov	-2.09
Žďár nad Sázavou	1.54	Ústí nad Labem	-2.03
Pelhřimov	1.53	Teplice	-1.90
Opava	1.45	Most	-1.80
Uherské Hradiště	1.42	Děčín	-1.79
Kroměříž	1.20	Česká Lípa	-1.76
Tábor	1.17	Litoměřice	-1.46
Ústí nad Orlicí	1.16	Cheb	-1.35
Blansko	1.14	Karlovy Vary	-1.17

Source: own elaboration based on CSO data

Considering all the above-mentioned findings, it is possible to conclude some remarks for further discussion and more intensive research. Firstly, it is possible to observe relatively intensive connection between regions with highest values of net migration and the suburbanization processes in the Czech Republic. Thus, regions surrounding the largest cities of the Czech Republic, Prague, Brno and Ostrava, have the highest immigration in evaluated moment (see table 2 – regions Praha – východ, Praha – západ, Brno – venkov and others). The strongest is this connection in case of broader surrounding of the capital city Prague. On the contrary, the core regions of the largest cities of the Czech Republic, except Prague – Brno – město and Ostrava – město, have the lowest values of net migration. This fact is in accord with the idea of suburbanization processes in the Czech Republic.

From the viewpoint of attractiveness of regions for living and regional ability to attract new inhabitants, the poorest position indicate region, which are traditionally considered to be economically weak and structurally affected. These regions, e.g. some regions in Northern Moravia, Southern and North-western Bohemia, or regions on the inner periphery between Bohemia and Moravia, have both, the lowest values of net migration and the worst values of particular independent variables and economic and social welfare component as well. Thus, the ideas about their development disadvantages are justified.

Which is also noteworthy, it exists relatively significant difference in values of all variables across particular regions (see table 3). In this regard, it can be concluded that the area of the Czech Republic has heterogeneous character with cross-regional differences influencing its harmonious and balanced development. This is the challenge for public authorities, which should consider the inter-regional differences, when formulating regional development strategies. What should be highlighted is, that because of these differences and specifics, there is no one-size-fit-all development solution.

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