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SELECTIVE MIGRATION OF POPULATION SUBGROUPS BY EDUCATIONAL ATTAINMENT IN THE URBAN REGION OF BRATISLAVA

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Selective migration of population subgroups by educational attainment in the urban region of Bratislava

This paper aims to assess the interregional and intraregional migration processes of population subgroups by educational attainment in the urban region of Bratislava and to identify the patterns of migration using stages of urban development. The study employs anonymized data on individual migrations in Slovakia for the period 1996 – 2015. The research results confirm disparate migration development trajectories for individual subgroups with the most significant differences between migrants with tertiary and primary educational attainment, however, the roles of individual population subgroups differ considerably at the interregional and intraregional levels. This leads to various development trajectories across the stages of urban development. The research results contribute to filling in the gap in comprehensive research of urban development, particularly in Central and Eastern European countries.

Key words: selective migration, concentration, decentralization, educational attainment, urban region, Bratislava

INTRODUCTION

Migration of population has become one of the most frequently analysed aspects of urban development in Central and Eastern European post-socialist countries (CEECs) during the last two decades (Bezák 1999 and 2006, Kok and Kovács 1999, Ouředníček 2003, Lisowski 2005, Kontuly and Tammaru 2006, Berzinš and Krišjane 2008, Hudec and Tóth 2013, Kurek et al. 2014, and others). The transformation of society from a totalitarian to democratic one, as well as the economy from a centrally planned to market one, enhanced substantial changes in migration patterns at both the interregional and intraregional levels (cf. Bezák 2006, Kontuly and Tammaru 2006).

Disparate preferences for the migration of various population subgroups are a generally accepted feature of urban development across the geographic community, however, little empirical research on this issue has been conducted, mainly due to a lack of reliable data. Age, social status and education of a migrant were identified as the main differentiating factors in motivations and preferences for migration (cf. Kok and Kovács 1999, Molloy et al. 2011). This is reflected in the diversity in spatial patterns of migration within particular population subgroups.

Education of migrants is believed to be an appropriate proxy for the social status of individuals as well (Sýkora 2009 and Marcińczak et al. 2013), and its relevance in the research of selective migration of individual population subgroups was proved by several studies in CEECs (Kontuly and Tammaru 2006, Tammaru and Leetmaa 2007, Brade et al. 2009 and Marcińczak et al. 2013). The role of education as a differentiating factor in internal migration was emphasized also in Slo-

vakia by Bleha (2005) and Šprocha (2011). Moreover, for comparisons across regions and countries with various levels of economic and social development, employing data on the educational structure of migrants is much more suitable than data on their social structure.

The aim of this paper is to assess the migration processes of population subgroups classified by educational attainment in the urban region of Bratislava and to identify the patterns of migration using stages of urban development. In this manner, it aspires to fill the gap in research of selective migration of population subgroups in relation to urban development in Slovakia, as well as contributes to comprehensive international research on migration trends in post-socialist urban regions.

The educational attainment of a migrant is not an autonomous attribute. It is closely related to other characteristics, especially age (cf. Kontuly and Tammaru 2006, Ouředníček 2007, Tammaru and Leetmaa 2007 and Šprocha 2011). There are also many possible approaches to the assessment of relations between education, migration, and urban development, which are not possible to cover in one research paper. Thus, this study does not aspire to provide complete knowledge on the abovementioned relations, but its ambition is to shed light on the roles of population subgroups by education in migration in urban region, thereby acting as an important contribution to the research of urban development in Central and Eastern European urban regions. The study employs anonymized data on individual intranational migrations in Slovakia for the period 1996 – 2015 provided by Statistical Office of the Slovak Republic.

The region of Bratislava was chosen because it has recorded one of the most intensive dynamics of migration development among urban regions of CEECs (Novotný 2016). Nevertheless, it has often been omitted in research concerning urban development in CEECs (Hamilton et al. 2005, Gentile et al. 2012 and Stanilov and Sýkora 2014).

The following sections provide a review of the current state of knowledge, introduce data, a spatial frame and methods employed in this paper. This is followed by an analytical section where attention is paid to the identification of interregional and intraregional processes of migration and subsequently to the stages of urban development that would be recorded if only populations with a certain educational attainment migrated. This is also discussed with the results of comparable studies from CEECs before conclusions are drawn.

THE CURRENT STATE OF KNOWLEDGE

The urban region of Bratislava is among those where a decisive role of migration on total population growth had been recorded in the early 1990s. The region concentrates a majority of interregional migration flows in Slovakia, whether originating from adjacent or distant regions (Bezák 2011a). Due to intensive decentralization of the population from the city to its hinterland, migration determines the spatial redistribution of the population within the region and plays a decisive role in the population growth of a vast majority of individual municipalities in the region (Novotný 2016). These facts highlight the need for further research on migration to obtain more comprehensive knowledge on urban development in CEECs. They also confirm that the urban region of Bratislava is a suitable case area for such research.

The studies by Kok (1999) and Kok and Kovács (1999), which focused on Hungary and Poland, are among the first to emphasize the different aspirations of migrants with a low and high social status, as well as the subsequent important role of education in shaping the migration patterns and suburbanization process in CEECs. Later, various aspects of relations between education and migration in urban regions were assessed. Although it was usually not the main topic of these studies (e.g., Ouředníček 2007, Berzinš and Krišjane 2008, Brade et al. 2009, Sýkora 2009, Marcińczak et al. 2013, Kurek et al. 2014 and Novotný 2014), they indicate selective spatial preferences of migrants with different educational attainment.

The most comprehensive research on the relationship between migration and education among the urban regions of CEECs was conducted in Tallinn, Estonia. Kontuly and Tammaru (2006) assessed the role of population subgroups within the processes of centralization and decentralization in Estonia, and subsequently, Tammaru and Leetmaa (2007) analysed decentralization in the Tallinn metropolitan area in the light of education. Both studies were conducted on the basis of data from the population census 2001 and were related to the period 1990 – 2000. The most important findings from these studies can be summarized as follows: 1) at the interregional level, migrants with tertiary education concentrate in the Tallinn metropolis, 2) other educational subgroups tend to move rather in the opposite direction, however, their impact on the pattern of interregional migration is much lower, 3) the probability of moving from the city to its hinterland increases with the level of educational attainment, 4) people with primary education move to the least attractive destinations and people with university education to the most attractive destinations within the suburban zone. Tammaru and Leetmaa (2007) also suggested further research on that topic since they expect the rising number of university graduates may affect the revealed migration processes. This expectation is relevant to the Bratislava region too, since the proportion of university graduates in age cohorts has been continuously rising during the post-socialist transformation in Slovakia and other CEECs as well (Nestorová-Dická 2013).

Fisher (2003) and Ouředníček (2007) analysed the migration processes in the surroundings of Adelaide and Prague, respectively. They revealed several processes with various spatial patterns of migration and different features of migrants. The diversity of these processes makes the process of population development unique in each urban region. Hirt (2007) proves that the nature of decentralization processes in post-socialist urban regions in the 1990s was different from that observed in Western Europe in many respects. One of the most important differences was in the stimuli of observed processes. In the West, it was driven primarily by middle and upper-class households and was related to economic growth, while decentralization of the population in post-socialist countries took place during economic decline and was often motivated by a "survival strategy" of low-income households. Such development was indicated also in the urban region of Bratislava during the 1990s, but later processes of urban development converged significantly with those known from Western Europe (Novotný 2016).

The results of research on Tallinn by Kontuly and Tammaru (2006) and Tammaru and Leetmaa (2007) correspond with the findings by Hirt (2007). Migrants with lower educational attainment, who are supposed to represent the lower-income categories of the population, tend to move outside of the major metropolitan area into the country, or to less attractive localities within the area. These circumstances raise the questions about what migration patterns are formed by indi-

vidual population subgroups by educational attainment in the Bratislava region, if there are any significant changes observed in these patterns over the two decades of observation (1996 – 2015) and how the roles of these subgroups have developed over the time.

DATA

The difficult obtainment of sufficient and reliable data on the structure of migrants complicates research on the migration of population subgroups in urban regions. Some authors employ data from population censuses (e.g., Kontuly and Tammaru 2006, Bailey and Livingston 2007, Tammaru and Leetmaa 2007 and Marcińczak et al. 2013), but more researchers conduct their own public surveys in given urban regions or in chosen localities within them (e.g., Kok 1999, Kok and Kovacs 1999, Berzinš and Krišjane 2008, Brade et al. 2009 and Kurek et al. 2014), and some combine them (Sýkora 2009). Both kinds of data sources provide valuable information but also contain certain shortcomings in respect to the focus of this study.

Census data provide comprehensive information on the network of regions and municipalities within a given country, as well as migrations within the network. However, the data often provide information only for the entire intercensal period, during which a migrant could have changed their educational attainment or place of residence, even more than once. Data also may be subject to the misunderstanding of questions in census forms or deliberate deceit by individuals. The latter issue may occur even in public surveys. The weakness of the majority of public surveys is the limited spatial extent of the survey and since individual surveys are not harmonized, the comparability of results is often weak.

In our analysis, anonymized data on individual intranational migrations at the level of municipalities, provided for scientific purposes by the Statistical Office of the Slovak Republic, are employed. The data provide information on the municipality of origin and destination of migration, age and educational attainment of a migrant. Similar data were applied in the research of processes in suburban development in the urban region of Prague by Ouředníček (2007) and internal migrations in Slovakia (Šprocha 2011).

These data are the most comprehensive and reliable database on individual migrations in Slovakia, but there are two main possible shortcomings that can affect the results and they should be regarded in the interpretations of results. The characteristics of migrants are collected by local authorities in individual municipalities and there is no guarantee on the full reliability of their evidence. A similar problem was recorded in the Czech Republic by Ouředníček (2007). A much more important issue is the way how and when the migration is registered. In Slovakia, migration is recorded only when migrants change their permanent address for which the migrant usually has to be the owner of a flat/house or must have the owner's permission. Many migrations are therefore unregistered, especially when students or career starters rent a dwelling. Furthermore, migrations within individual municipalities are not recorded. These methods of collecting statistical data are similar to those used in other CEECs, but differ considerably with those from Western countries. As remarked by Ouředníček (2007, p. 115), the change of permanent address is associated with unpleasant bureaucracy and in the case of entrepreneurs, also with exhausting problems with the re-registration of agenda. This may be one of the reasons why those who move decide to keep their original permanent ad-

dress even when they own the dwelling, thus avoiding statistical registration of their migration.

The incompleteness of the migration records in the surrounding environs of Bratislava was analysed by Šveda and Podolák (2014). They investigated the inconsistency between statistically registered migrations and the increase of the number and capacity of new dwellings. Their research indicated that the largest proportion of unregistered migrations is related to municipalities located in the nearest surroundings of the region's urban core, which is the area with the largest share of migrations originating from Bratislava. The authors also revealed that the number of registered migrants to the farther parts of the region exceeds the estimated capacity of newly constructed dwellings, suggesting that it may indicate that migrants to these areas move rather to older or reconstructed houses than to newly constructed dwellings.

The period of observation of 1996 – 2015 allows coverage of the development of migration under various circumstances, including deep economic recession during the early phase of post-socialist transformation, accession to the EU, rapid economic growth during the early 2000s, as well as the global economic crisis that hit Slovakia in 2008 and the after-crisis period.

The analysis in this paper omits international migration although its impact on urban development of the Bratislava region is not negligible. The character of registration of international migration in Slovakia is very similar to that in Czechia, which is discussed by Ouředníček (2007, pp. 115 – 116). The records in both countries are poor, especially regarding emigration, since there is no regulation that would force an emigrant to report their emigration status to the proper authorities. On the other hand, international immigration is recorded more properly than intranational, since foreigners are registered even when they are staying temporarily (e.g., foreign students are registered on the basis of a temporary residence permit, however, the majority of students from Slovakia is not registered since they do not change their temporal addresses when moving for studies). This makes records on international migration incompatible with those on internal migration. Nevertheless, based on statistical data on individual international migrations provided by the Statistical Office of the Slovak Republic, the average proportion of international immigrants to the Bratislava region for the period 1996 – 2013 is only about 6% (7 – 8% in the core; 3 – 4% in the ring). Moreover, the number of international immigrants is stable, however, due to an increase in the number of intranational immigrants to the region, the proportion of international immigrants has recently decreased (entire region – 3%, core – 4% and ring – 2% in 2013). This documents the impact of whether international migration is not negligible in the Bratislava region, but rather not strong enough to affect the analysed processes fundamentally.

SPATIAL FRAME AND METHODS

The research is spatially set in the Bratislava functional urban region (FUR) as delimited by Bezák (2014) on the basis of the data on commuting from the population census 2001. These FURs are internally coherent and externally relatively closed, when daily commuting is considered. Thus it is likely, the change of the place of residence within the FUR is possible without changing the place of employment. This makes it possible to estimate that the majority of interregional migrations is driven by the migrants' job aspirations, while intraregional migrations

are rather motivated by seeking better environmental conditions for living, more privacy or larger household, which results from a change in family or social status (Bezák 2000). The Bratislava FUR is located eccentrically within Slovakia, neighbouring Hungary, Austria and the Czechia (Fig. 1), but enjoys a good location within Central Europe. It spatially extends beyond the territory of Bratislavský administrative region (Fig. 1).

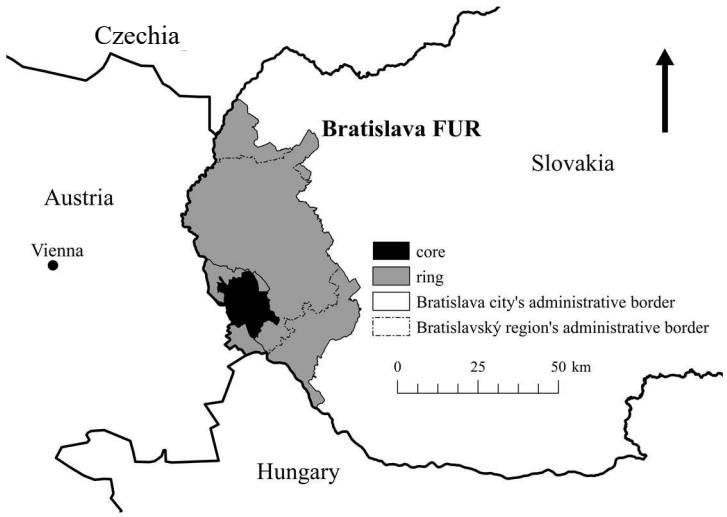

Fig. 1. Location of the Bratislava FUR

Every FUR delimited by Bezák (2014) consists of the core and the ring. The core is one or more central towns/cities with a concentration of employment and services, and the ring is represented by an adjacent area tied together with the core and other municipalities in the ring by commuting.

The lowest level of spatial units applied in the research are municipalities, which are the smallest units that the Statistical Office of the Slovak Republic provides data on migration. In this paper, the term municipality refers to the smallest self-governing units, whether rural (villages) or urban (towns) and even the boroughs of Bratislava, which allows for delimitation of the region´s urban core, regardless of the administrative border of Bratislava. The aggregation of data for these units allows for the assessment of development in the region's basic components (the core and the ring), as well as the region as a whole, although these are not standard statistical units.

To distinguish between development in the compact urban core and spatially separated settlements in the hinterland, in this study, the core incorporates 10 spatially integrated boroughs of Bratislava. The ring consists of 118 municipalities including seven towns (Malacky, Stupava, Svätý Jur, Pezinok, Modra, Senec and Šamorín) and seven outer boroughs of Bratislava (Devín, Devínska Nová Ves, Záhorská Bystrica, Jarovce, Rusovce, Čunovo and Vajnory). As in the last census (2011), the Bratislava FUR covered about 2,600 km^2, populated by more than 665,000 inhabitants. Over 381,000 of them resided in the core and almost 284,000 in the ring.

The main indicator used in this paper is the net migration rate defined as the difference between the number of immigrants and the number of emigrants (net migration) of a given spatial unit and year, divided by the number of inhabitants considering mid-year population, expressed in per mille (per 1,000 inhabitants). In order to suppress the impact of short-term fluctuations on the overall trends, the values of the net migration rate are calculated as three-year moving averages for graphic representation in Fig. 7. The net migration rate expresses the impact of migration on the population growth of a given spatial unit. As the values are dependent on the population size of the observed unit, some distortions may occur when units of a different population size (core and ring of the region) are compared. For that reason, net migration itself is included in the analysis as a complementary indicator.

Both indicators are adjusted to estimate migration patterns for individual population sub-groups by educational attainment. The population is divided into four categories as follows:

1) Tertiary education (university/college graduates with at least a bachelor's degree);
2) Secondary education (with passed matriculation examination, equivalent to A-level exams in the United Kingdom);
3) Primary education (those who finished elementary education and those who finished further education without matriculation exam or have not yet finished it);
4) Youth up to 24 years (this category is based on age primarily, because 24 is the standard age of finishing a master's degree or equivalent tertiary education; there is high probability that an individual at this age is in the process of learning; there is also high probability that an individual migrates together with their parents, since moves to schools/universities, as explained above, are usually not registered as migrations in Slovakia).

Migrants up to 24 years are included in the fourth category regardless of whether they have already reached certain educational attainment or not. Therefore, categories with tertiary, secondary and primary education include only migrants who have already reached at least 25 years on the day of registration of migration.

The net migration rate for each category of population by education is calculated as the net migration of the category for a certain spatial unit divided by the total population of a given spatial unit considering the mid-year population, expressed in per mille (per 1,000 inhabitants). Such an approach does not directly indicate the propensity to migrate for the population of each category, but refers to the role of each population subgroup in the urban development in the region.

To assess the basic patterns of migration of population subgroups in the region, the stages of urban development (urbanization, suburbanization, disurbanization, and reurbanization) are used. These stages originate from the city life cycle idea that appeared in the US in the early 1970s and generated several models of urban development (cf. Cheshire 1995, Champion 2001). The idea itself, including associated urban development models, gained significant popularity, but also became the subject of criticism (e.g., Roberts 1991). Generally, the criticism disputes the "life cycle" idea itself and its application in policies, but admits to the relevance of individual stages as an appropriate taxonomic device for the assessment of population development in urban regions (cf. Novotný 2016).

Increasing intensity of research on urban development and a rising number of scientific papers have brought ambiguity into the terminology used in the research. To avoid misunderstandings, in this paper, the term concentration is used to identify the process of grouping people into a region, and deconcentration for the opposite. Within the region, centralization refers to the process of grouping people into the region's core and decentralization refers to the process of its dispersion from the core to the ring (cf. Berry et al. 1977, Lisowski 2005). For the identification of interregional processes, it is decisive if a region as a whole gains population by migration at the expense of other regions, or loses it. Intraregional processes are defined by the difference in the intensity of growth or decline in the core, including the ring of a region. It means that all migrations originating or ending up in the region´s ring and core are taken into account regardless of whether they cross the region´s border or take place within the region.

Subsequently, a combination of these clearly distinguishable migration processes allows for the definition of the stages of urban development in order to avoid ambiguity in different classifications under absolute or relative values of migration indicators. Definition of the stages of urbanization, suburbanization, disurbanization and reurbanization was originally applied in our previous study (Novotný 2016) and is presented in Tab. 1.

Tab. 1. Stages of urban development defined by the processes of population redistribution

stage of urban development		interregional process		intraregional process
urbanization	=	concentration	+	centralization
suburbanization	=	concentration	+	decentralization
disurbanization	=	deconcentration	+	decentralization
reurbanization	=	deconcentration	+	centralization

Source: Novotný (2016), modified.

RESEARCH RESULTS AND DISCUSSION

Decades of rapid growth of Bratislava by a simultaneous concentration and centralization of the population during the socialist era were followed by the breakdown of this migration pattern in the early 1990s. The first signs of new patterns have been observable since the mid-1990s (cf. Bezák 2011b), but only by the end of the 1990s was it clear that the concentration of the population in the region remained a dominant process at the interregional level, although decentralization prevailed at the intraregional level. Both processes gained significant intensity during the 2000s (Novotný 2016). Our analysis begins in 1996 when centralization changed into decentralization and so the region moved from the processes of urbanization to suburbanization. This indicates the beginning of the early stage of urban development under the new migration pattern.

Processes of interregional migration

The population with tertiary education is a driving force of urban development of the Bratislava FUR at the interregional level (Fig. 2). As emphasized by Ouředníček (2007), the stratification of a migrating population by highest educational attainment is strongly determined by the age structure of migrants. This definitely applies to Slovakia as well since younger people generally attain higher education. Therefore, the higher proportion of migrants with tertiary education is partially conditioned by a higher propensity to migrate among younger categories of the population.

The role of individual population subgroups changes over time. The region recorded positive migration balance every year except for 1998, when a slight deconcentration of the population took place. The dynamics of migration development within population subgroups with secondary education and youth up to 24 years is not very intensive. Both categories neared equilibrium in the 1990s, and since the early 2000s, concentration with slightly increasing intensity has been recorded within these categories (Fig. 2).

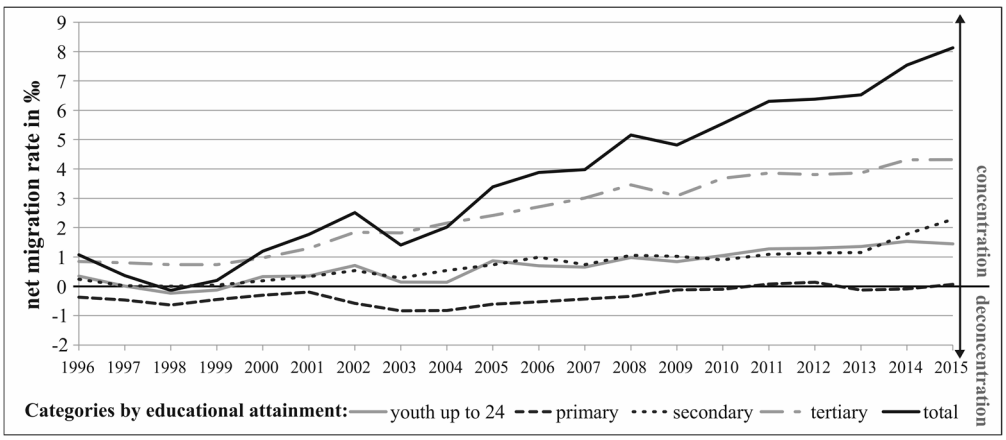

Fig. 2. Development of migration by categories of migrants by educational attainment in the Bratislava FUR representing processes of interregional migration over the period 1996 – 2015

Similar to the findings by Kok and Kovács (1999), Kontuly and Tammaru (2006), Tammaru and Leetmaa (2007), and Berzinš and Krišjane (2008), the most significant differences were observed between the populations with primary and tertiary education.

The population with primary education accounted for the process of deconcentration almost during the entire period of observation with the highest intensity between 2002 and 2004. This is a period when migration accelerated in Slovakia and in the region as well, which might be attributed to some substantial reforms made in the economy and laws in previous years. Despite a recent decrease in intensity of deconcentration and even a slight concentration by the end of the observation period, the population with primary education is the only one that recorded a negative value of net migration over the entire period of observation (1996 – 2015) at the

level of the Bratislava FUR as a whole (Fig. 6). In line with Hirt (2007), it may be considered a survival strategy for those who lost jobs in the cities or their income from low-paid jobs or pensions was not enough to cover necessary housing costs in the city or its hinterland.

Migrants with tertiary education presented a distinct concentration in the region, even in the early years of observation when all other categories neared the interface between concentration and deconcentration. This seems to agree with the findings from Riga, Latvia (Berzinš and Krišjane 2008), where the most diverse structure of economic sectors in the country and corresponding demand for labour in professions requiring the highest qualifications result in the attractiveness of the city and the region for young and educated people, despite high living costs and the problematic transformation of the economy in the country as a whole.

The population with tertiary education presented an uninterrupted concentration of the population in the Bratislava FUR over the entire observation period, which confirms that the most economically developed region in Slovakia is an attractive destination of migration for well-educated and highly-skilled people, despite having by far the highest housing prices in Slovakia (cf. Šuška 2012). Bratislava is also the most important university centre in Slovakia. Students from all regions of Slovakia move to the city for their studies, but they often change their permanent address some years later, usually after they graduate and find a job in the city and just after becoming owners of a dwelling, whether in the city or its surrounding environs. The intensity of the concentration of migrants with tertiary education continuously rose and they contributed clearly the most to the overall concentration of the population to the region (Fig. 2). With net migration over 33,000 people (Fig. 6), they also contributed considerably to population growth of the region as a whole.

Processes of intraregional migration

Divergent development trajectories are distinguishable also at the intraregional level. The core of the Bratislava FUR gained population with tertiary education during the whole period of observation and the gains continuously rose (Fig. 3), which manifests the attractiveness of the core for highly educated migrants. However, it was the only category that showed a positive value of net migration in the region´s core over the entire period of observation (Fig. 6). Other population subgroups with very similar development trajectories recorded negative values in the core (Fig. 3).

Even higher migration gains of tertiary-educated people than in the core were recorded in the region's ring. However, the major difference between the core and the ring lies in development recorded by categories of secondary-educated people and youth. These are similar to the development of the subgroup with primary education in the core (Fig. 3), but with tertiary education in the ring (Fig. 4). Although the migrants with tertiary education contributed the most to the overall population growth of the ring over the entire period of observation, migration gains of youth and secondary-educated people were only slightly lower (Fig. 6). The subgroup with primary education recorded migration gains in the ring as well, but much smaller when compared to other categories (Fig. 4).

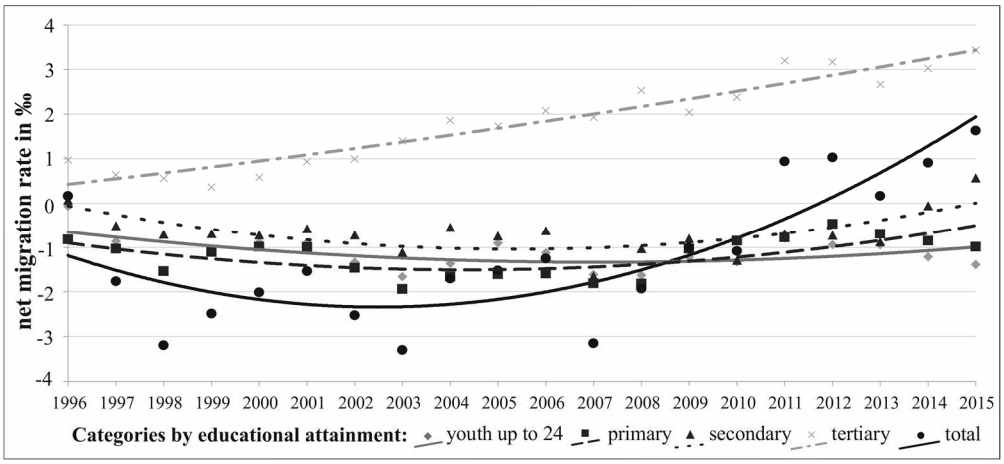

Fig. 3. Development of migration in the core of the Bratislava FUR by categories of migrants by educational attainment over the period 1996 – 2015

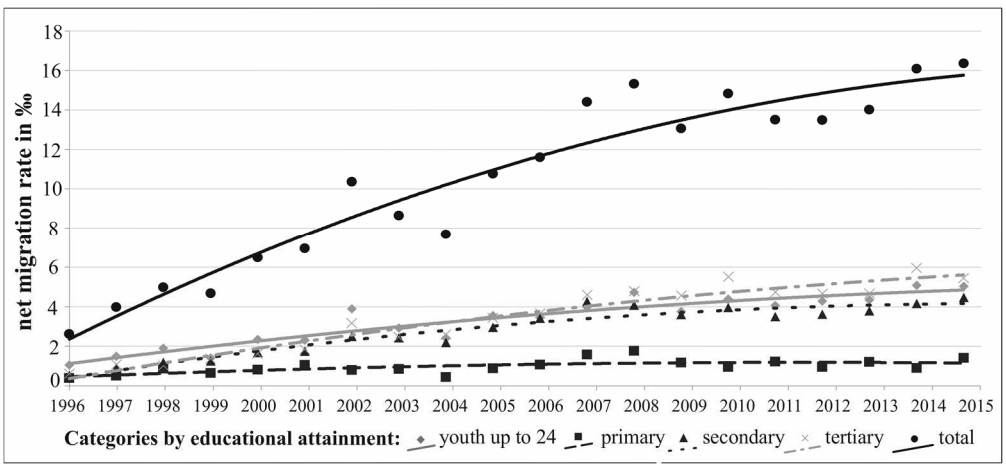

Fig. 4. Development of migration in the ring of the Bratislava FUR by categories of migrants by educational attainment over the period 1996 – 2015

Besides the population with tertiary education, the ring of the FUR is an attractive destination also for migrants with lower educational attainment, but the attractiveness for the least educated people is considerably lower.

Only the migration balance of the population with tertiary education was positive during the entire observed period in the region as a whole, its core and the ring (Fig. 6). The values of migration on both spatial scales indicate the highest propensity to migrate among people with the highest educational attainment, confirmed by the findings of Kok and Kovács (1999), Tammaru and Leetmaa (2007), Ouředníček (2007) and Molloy et al. (2011).

Surprisingly, very diverse migration trends of categories with primary and tertiary education in the core and the ring of the Bratislava FUR, lead to similar development when considering processes of intraregional migration (Fig. 5).

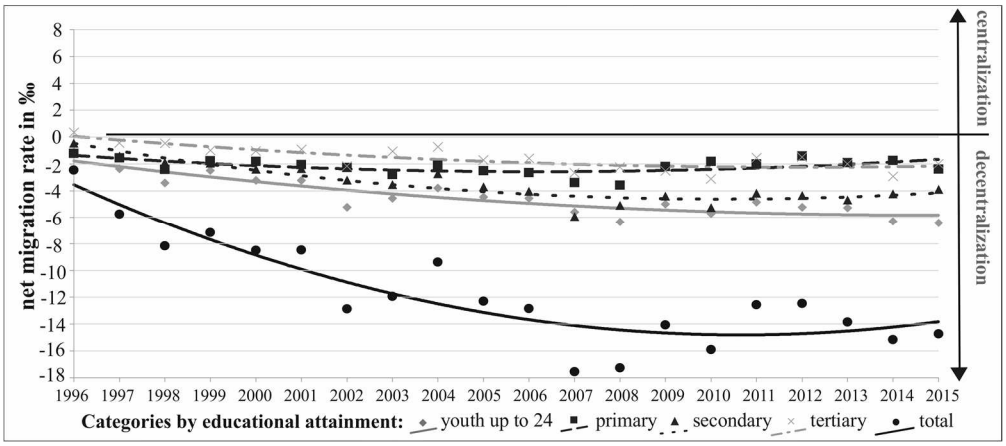

Fig. 5. Intraregional migration processes by categories of migrants by educational attainment in the Bratislava FUR over the period 1996 – 2015

Generally, all categories decentralized over the entire period of observation. The intensity of decentralization grew until the late 2000s, then began to stagnate and even decrease. The least intensive decentralization was shown by tertiary-educated people. When considering net migration in place of the net migration rate, decentralization even alternated with centralization in some years within this population subgroup, although the value of net migration for the entire period (1996 – 2015) in the ring was considerably higher than in the core (Fig. 6).

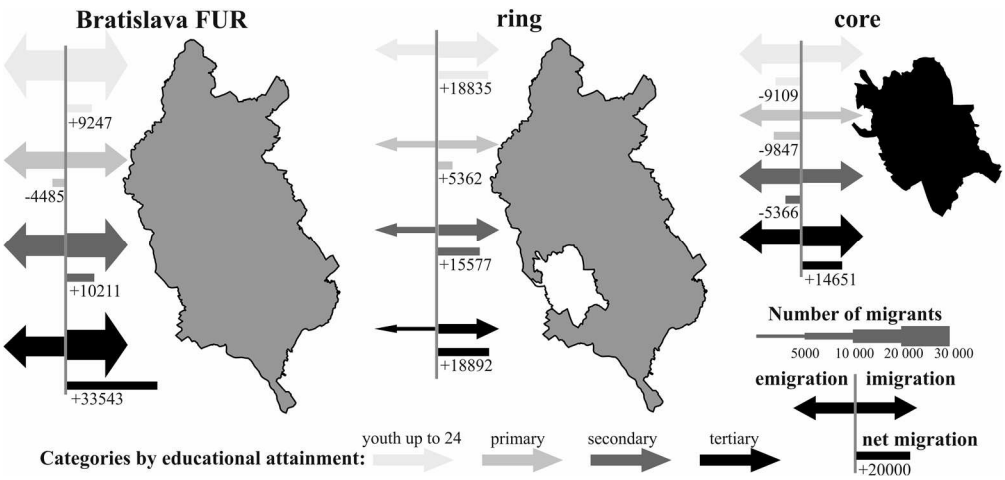

Fig. 6. Size of migration flows to and from the Bratislava FUR, its ring and core over the period 1996 – 2015

Only a slightly more intensive decentralization, and even less so by the end of observation, is attributed to population with primary education (Fig. 5). Due to disparate tendencies of migration to the core and the ring of the region, the most intensive processes of decentralization are attributed to youth and secondary-educated migrants.

Education and stages of urban development

The trajectory of the Bratislava FUR position across the stages of urban development between 1996 and 2015 (Fig. 7) proves dynamic changes in the intensity and character of migration patterns. As a result of almost continuous concentration and decentralization, the region remained in the stage of suburbanization during the entire period of observation. In the early years, the intensity of concentration and decentralization grew significantly and stabilized in the late 2000s, when its trajectory turned into the direction towards urbanization. This is due to stagnating or even weakening intensity of decentralization in all analysed population subgroups (Fig. 5), resulting from the stagnation of migration gains in the ring and a shift from migration losses to migration gains in the core. This may be the result of the global economic crisis which first led to a decreased demand for new housing and a significant slowdown in housing construction. The slowdown affected more individual construction of family-houses in the ring than the construction of large complexes in the core (for more information see Novotný 2016).

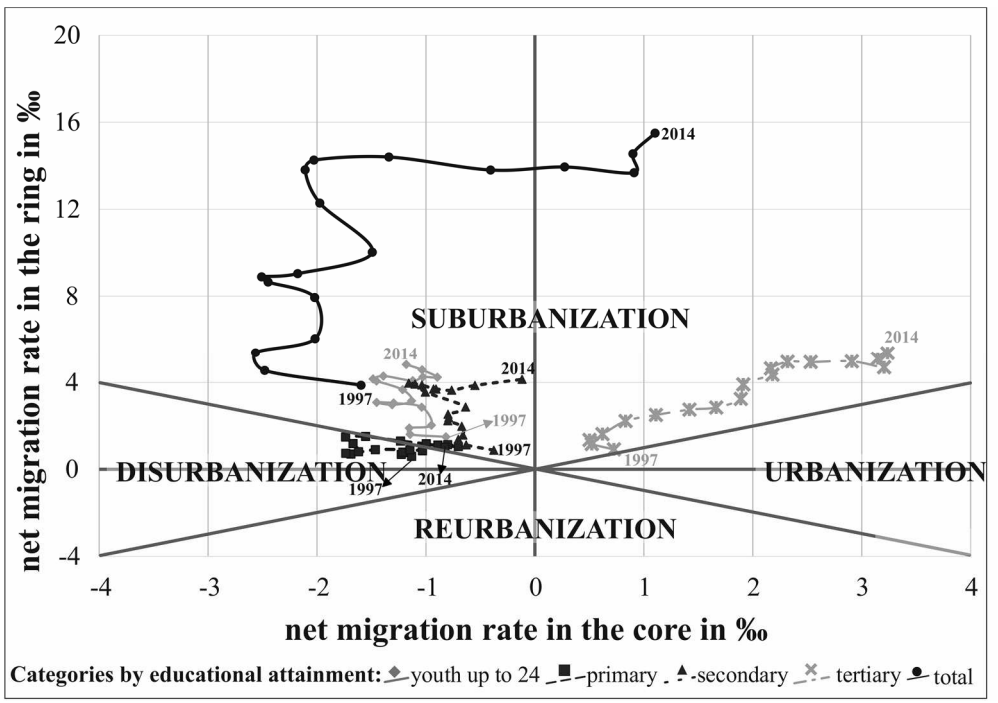

Fig. 7. Trajectories of migration development of population subgroups by educational attainment across the stages of urban development in the Bratislava FUR over the period 1996 – 2015 (three-year moving averages)

Among the analysed population subgroups, the most similar trajectories were recorded by youth up to 24 years and those with secondary education. Both categories were in the stage of suburbanization when considering net migration rates, which indicates full compensation of slight migration losses in the core by modest, but continuously increasing migration gains in the ring. However, if considering net migration, migration gains in the ring were not enough to compensate migration losses of the core in the early years of observation. Therefore, both categories were balanced at the interface of suburbanization and disurbanization. After this early period, both categories recorded rising intensity of decentralization accompanied by an even more intensively rising concentration, which resulted in the categorization of both subgroups in the stage of suburbanization, regardless of the indicator applied.

In line with expectations arising from the findings by Kok and Kovács (1999), Tammaru and Leetmaa (2007), Berzinš and Krišjane (2008), both the region's core and the ring are the most attractive for university graduates. The trajectory of development within the population subgroup with tertiary education is the most discordant with the other subgroups. In 1996, it recorded urbanization, which means that centralization of the population took place along with concentration. Although centralization changed into decentralization in the late 1990s, its intensity was weak, and although this subgroup moved to the stage of suburbanization, it neared the interface with urbanization by the end of the observation period. Concentration of the population was a driving force shaping the trajectory of migration pattern of migrants with tertiary education. Its increasing intensity resulted in growing migration gains in both the core and the ring of the region.

Unlike university graduates, those with primary education contributed the most to the migration loss of the core and only very slightly to migration gains in the ring. Along with slight deconcentration from the region, it resulted in categorization in the stage of disurbanization. By the end of the period of observation, deconcentration of the population changed into concentration among migrants with primary education as well. Nevertheless, it was very modest and led to the region´s oscillation around the interface between disurbanization and suburbanization. Such development reflects the survival strategy of low-income population discussed by Hirt (2007) and correspond with the development recorded in Tallinn (Kontuly and Tammaru 2006 and Tammaru and Leetmaa 2007).

The economic transformation led to an increased demand for educated people, while those with lower education had to deal with unemployment or low wages. Along with rapid growth of housing prices, it motivated many less-educated people in the urban areas to sell their flats for a favourable price and move back to the houses of their ancestors, whether within commuting-distance from the central city or beyond it (cf. Novotný 2016). This tendency could also be enhanced by retirees and pensioners (among whom there is a higher proportion of those with lower educational attainment) for whom living costs could become unaffordable in the city. Moreover, these migrants are no longer bound to the urban core by daily commuting, so they may prefer more affordable living beyond its commuting zone. Such conceived migration patterns also correspond with the findings by Šveda and Podolák (2014) indicating that migrants to the outskirts of the region (and naturally beyond its border as well) tend to move to older housing stock, which is apparently linked to the migration of lower social classes largely presented by migrants with only primary educational attainment.

CONCLUSIONS

This study contributes to filling the gap in the research of migration patterns of various population subgroups with respect to urban development in Slovakia. The results confirm significant differences in migration processes taking place among population categories defined by educational attainment in the Bratislava FUR. They also point to the need for deeper research of migration by various population subgroups in order to obtain comprehensive knowledge on urban development.

In line with expectations, the most divergent development was recorded between migrants with the highest (tertiary) and the lowest (primary) educational attainment. Nonetheless, the role of the remaining analysed categories (population with secondary education and youth up to 24 years) in shaping urban development in the region is not negligible.

Despite changing political, legal and especially economic circumstances, migrants with tertiary education concentrated in the region during the entire period of observation, even during the late 1990s, when the region experienced equal balance or even deconcentration of other subgroups. The intensity of concentration of tertiary-educated migrants in the region continuously rose and these individuals contributed the most to the overall concentration of population in the region and total population growth in the Bratislava FUR.

Within the region, when considering tertiary-educated migrants, both the core and the ring recorded increasing migration gains. The gains in the ring slightly exceeded those in the core, so decentralization took place in the region, however, it was very modest. Due to strong concentration and slight decentralization, the Bratislava FUR was in the stage of suburbanization, however, neared the interface with the stage of urbanization in the case of migrants with tertiary education.

Migrants with primary education deconcentrated beyond the region. Intensity of deconcentration was modest and it even reached the interface with concentration after 2010. Nevertheless, it indicates that the population with low educational attainment was the most unfavourably affected by substantial transformations in the economy, resulting in rapid economic development of the region. Within the region, this category recorded the lowest migration gains in the ring which were not enough to compensate for migration losses in the core. This resulted in decentralization of the population with similar intensity to tertiary-educated migrants, but due to deconcentration, migrants with primary education classified the Bratislava FUR into the stage of disurbanization with a tendency to move into the stage of suburbanization by the end of observed period. This is in line with development observed in the metropolitan areas of Tallinn, Riga, Budapest and other CEECs urban regions. However, it should be perceived also in the light of the apparent impact of specific migration patterns of the older population, which is not particularly addressed in this paper. Trajectories of migration development of subgroups with primary and tertiary education indicate that migration contributes significantly to the improvement of human capital in the region.

Migrants with secondary education and those up to 24 years contributed only slightly to the overall concentration of population in the region. However, due to losses in the core and considerable growing gains in the ring, these categories contributed the most significantly to the decentralization of the population within the region.

Further research will be necessary to understand the role of education in shaping the migration patterns within the urban region of Bratislava comprehensively. Propensity to migrate, intensity of migration, particular migration flows, relation with age and other features of migrants, impact of economic development and the housing market could shed more light into the issue. Nevertheless, this study provides important evidence on selective behaviours of subgroups of migrants classified by educational attainment. It also emphasizes a determining role of university graduates in shaping the migration trajectories of the total population at the level of the region as a whole, but an indisputable impact of other subgroups on the redistribution of population within the region. Thus, the study also contributes to international knowledge on urban development in the post-socialist countries of Central and Eastern Europe.

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SELEKTÍVNA MIGRÁCIA OBYVATEĽSTVA PODĽA VZDELANIA V MESTSKOM REGIÓNE BRATISLAVY

Štúdia hodnotí procesy medziregionálnej a vnútroregionálnej migrácie vo funkčnom mestskom regióne (FMR) Bratislava s dôrazom na špecifiká vzorcov migrácie kategórií obyvateľstva podľa najvyššieho dosiahnutého vzdelania. Následne hodnotí zaradenie jednotlivých kategórií do štádií urbánneho vývoja. Príspevok má týmto ambíciu prispieť k vyplneniu medzery vo výskume selektívnej migrácie rôznych kategórií obyvateľstva vo vzťahu k urbánnemu vývoju na Slovensku a zároveň rozšíriť poznatky z medzinárodného výskumu urbánneho vývoja v postsocialistických krajinách strednej a východnej Európy.

Analýza je postavená na anonymizovaných dátach o jednotlivých migráciách medzi obcami SR každoročne v období rokov 1996 – 2015 poskytnutých na vedecké účely Štatistickým úradom SR. Použité dáta ku každej registrovanej migrácii uvádzajú obec (v prípade Bratislavy a Košíc aj mestskú časť) odsťahovania a prisťahovania, vek a najvyššie dosiahnuté vzdelanie migranta. Vďaka týmto údajom bolo možné zachytiť nielen stav za určité obdobie, čo umožňujú údaje z cenzov, ale aj vývoj pozorovaných trendov v jednoročných intervaloch.

Pre analýzu boli vyčlenené štyri kategórie obyvateľstva, a to obyvateľstvo s najvyšším dosiahnutým vzdelaním terciárnym (absolventi minimálne prvého, teda bakalárskeho stupňa vysokoškolského vzdelania), sekundárnym (absolventi stredných škôl s maturitou) a primárnym (obyvatelia s najvyšším dosiahnutým vzdelaním základným a učňovským bez maturity). Osobitne, bez ohľadu na dosiahnuté vzdelanie, bola hodnotená kategória mladých ľudí do 24 rokov (vrátane), teda do veku, v ktorom možno u rozhodujúcej časti populácie predpokladať už ukončené vzdelávanie v rámci štandardného vzdelávacieho systému.

Analýza preukázala zásadné diferencie vo vývoji migračných trendov jednotlivých kategórií, čím zároveň potvrdila opodstatnenosť výskumu vzorcov ich migračného správania. V súlade s očakávaniami, najvýraznejšie rozdiely v migračných trendoch sa prejavili medzi migrantmi s primárnym a terciárnym vzdelaním. Na medziregionálnej úrovni vykazovalo obyvateľstvo s primárnym vzdelaním miernu dekoncentráciu z FMR Bratislava, zatiaľ čo migranti s terciárnym vzdelaním sa do regiónu koncentrovali s rastúcou intenzitou. Zároveň možno konštatovať, že vysokoškolsky vzdelaní migranti sa v najväčšej miere podieľali na vývoji a formovaní charakteru medziregionálnych procesov migrácie obyvateľstva ako celku.

V rámci regiónu sú zreteľné rozdiely medzi vývojom v jadre a obvode. Kategória obyvateľstva s terciárnym vzdelaním zaznamenávala počas celého sledovaného obdobia veľké a rastúce migračné prírastky v oboch celkoch. Migračné prírastky v obvode len veľmi mierne prevýšili prírastky v jadre. Naopak, obyvateľstvo s primárnym vzdelaním zaznamenávalo v jadre migračné úbytky, ktoré takmer počas celého sledovaného obdobia nedokázali kompenzovať ani veľmi mierne prírastky v obvode. Obyvateľstvo s primárnym i terciárnym vzdelaním tak v rámci vnútroregionálnych procesov, napriek rôznym príčinám, vykázalo podobnú, veľmi miernu decentralizáciu. Obyvateľstvo kategórií do 24 rokov a so sekundárnym vzdelaním sa na decentralizácii podieľalo oveľa intenzívnejšie. Kým v jadre obe tieto kategórie vykazovali, podobne ako obyvateľstvo s primárnym vzdelaním, migračné úbytky, v obvode zaznamenávali výrazné a počas sledovaného obdobia rastúce migračné prírastky, podobne ako obyvateľstvo s terciárnym vzdelaním.

Súčasne prebiehajúca koncentrácia a decentralizácia zaradili obyvateľstvo do 24 rokov a obyvateľstvo so sekundárnym vzdelaním do štádia suburbanizácie. Do štádia suburbanizácie sa zaradilo aj obyvateľstvo s terciárnym vzdelaním, avšak vďaka veľmi miernej decentralizácii sa táto kategória počas celého sledovaného obdobia pohybovala v blízkosti rozhrania so štádiom urbanizácie. Obyvateľstvo s primárnym vzdelaním síce tiež vykazovalo miernu decentralizáciu obyvateľstva, avšak na medziregionálnej úrovni vykazovalo de-

koncentráciu, vďaka čomu bolo počas väčšiny sledovaného obdobia zaradené do štádia dezurbanizácie.

Na komplexné pochopenie úlohy vzdelanosti obyvateľstva vo formovaní vzorcov migrácie bude potrebný ďalší výskum. Pozornosť je treba venovať pravdepodobnosti a intenzite migrácie, konkrétnym migračným tokom, vzťahu vzdelania k veku či ďalším vlastnostiam migrantov, vzťahu s vývojom ekonomiky či trhom s nehnuteľnosťami. Tento príspevok však prináša dôležité poznatky o selektívnych prejavoch migrácie obyvateľstva podľa stupňa vzdelania. Preukazuje rozhodujúcu úlohu vysokoškolsky vzdelaných migrantov vo formovaní vývoja celkových migračných trendov na úrovni regiónu ako celku, avšak upozorňuje aj na výrazný vplyv ostatných kategórií v redistribúcii obyvateľstva v rámci FMR Bratislava.