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SUBURBANIZATION PROCESSES OF LARGE CITIES IN THE CZECH REPUBLIC IN TERMS OF MIGRATION

PROCESY SUBURBANIZACJI DUŻYCH MIAST W CZECHACH W KONTEKŚCIE MIGRACJI

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Summary: The article describes changes occurred in settlements around the largest cities in the Czech Republic. At the beginning of the 1990s, emigration started to prevail over immigration in the majority of Czech towns. High migration gain is recorded in the districts of Prague East and West, Brno Countryside, and in the north and south districts of Pilsen. The growing process of suburbanization in the hinterland of Prague caused the capital city to become the region with the highest relative loss of population due to migration. People moved outside Prague, but on the other hand, migration gains in populations with higher education weakened due to the growing suburbanization process. This is particularly a matter of the wealthy population which started to vacate the prefabricated blocks of flats in towns and is moving to newly built family houses in surrounding villages. This process is stronger in

times of economic growth. The migration leads to the strong growth of small settlements and, together with non-residential suburbanization, significantly disrupts the spatial structures of these settlements and reduces the quality of the environment. Process of suburbanization is regulated by the local plans of every municipality and cooperation between public administration, investors, developers and local communities. The local government must take care of the harmonious future development of these cities and solve the new problems associated with the inflow of the new population arriving into these communities.

Keywords: suburbanization, migration, Czech Republic

Streszczenie: Artykuł opisuje zmiany przedmieść największych miast w Czechach. Na początku lat 90. w czeskich miastach emigracja zaczęła dominować nad imigracją. Duży wzrost migracji odnotowano w dzielnicach Praga Wschód i Praga Zachód, powiecie Brno oraz w północnych i południowych dzielnicach Pilzna. Rosnący proces suburbanizacji na przedmieściach Pragi spowodował, że stolica stała się regionem o największej względnej utracie ludności spowodowanej migracją. Ludzie wyprowadzali się poza Pragę, natomiast z powodu narastającego procesu suburbanizacji wzrost migracji ludności z wyższym wykształceniem został osłabiony. Dotyczy to szczególnie zamożnej populacji, która zaczęła opuszczać bloki z wielkiej płyty w miastach i przenosi się do nowo wybudowanych domów rodzinnych w okolicznych wioskach. Ten proces jest silniejszy w czasach wzrostu gospodarczego. Migracja prowadzi do rozbudowy małych osiedli i wraz z suburbanizacją komercyjną zaburza struktury przestrzenne tych osiedli, obniżając jakość środowiska. Procesy suburbanizacji są regulowane przez miejscowe plany gmin i współpracę między administracją publiczną, inwestorami, deweloperami i społecznością lokalną. Samorząd musi dbać o harmonijny przyszły rozwój tych miast i rozwiązywać nowe problemy związane z napływem ludności.

Słowa kluczowe: suburbanizacja, migracja, Czechy.

1. Introduction

Urban theory sees urbanization as a complex socio-economic process, characterized by the migration of the population to cities, the growth of cities, and the change in the functional use of the territory. As new spatial settlement structures emerge, the spatial distribution of the population in the urban region and its surroundings changes.

In the Czech Republic, opportunities and conditions for the development of suburbanization were created when central planning was replaced by the liberalized market. In our country, suburbanization was much associated with the construction of shopping and logistics centres on the outskirts of cities, which were often financed by foreign investors. An important element for the increased suburbanization was the development of private passenger car transport and transport infrastructure. As part of the suburbanization process, an increasing part of the territory and society also comes into contact with the urban way of life and urban functions. The localization of new residential and commercial functions in a suburban zone therefore not only acts as an impulse to reorganize the environment of the developed localities, but also brings positive and negative impacts to the lives of the entire urban region (Ouředníček and Temelová, 2008), including its wider surroundings.

The new population brings new ways of behaviour and spending leisure time that affect the indigenous population. Ouředníček, Temelová (2008) describe the spread of the urban way of life and urban elements as manifestations of indirect urbanization taking on many forms.

As a result of suburbanization, settlements in the hinterland of cities can be strengthened, e.g. by locating new job opportunities and improving local infrastructure, both technical and transport. Suburbanization can lead to the strengthening of settlements in the hinterland of cities, where in addition to individual construction there is also the suburbanisation of services and the transfer of jobs to the surrounding clusters. From a demographic point of view, this can lead to an increase in the proportion of the younger population in the surrounding areas of cities. In this concept, urbanization is seen as a process of being a new concentration of the population. The new population brings new ways of behaviour that affect the indigenous population. The influx of new residents is reflected in behavioural interpretation in the transfer of new lifestyles to the rural environment that may not always correspond to the customs and the value orientation of the population in rural communities. It can be stated that as part of the suburbanization process, an increasing part of the territory and society comes into contact with the urban way of life and urban functions which has both positive and negative impacts.

Economic differences and the consequences of suburbanization can put more strain on municipal public budgets for the construction of new roads and technical networks; new building often connects to the existing networks that need to be modernized since they were not constructed to withstand such a load. Sometimes, new residents also do not become official permanent residents of the municipality, which increases municipal expenditure, without getting additional income for these residents.

Suburbanization also affects higher transport costs to the cities for work and services. The development of suburban localities is, according to Sýkora (2002), associated with low building density and the high spatial segregation of various functions.

The period after the establishment of the independence of the Czech Republic can be characterized as a very successful period in terms of socio-economic development. Selective development has been gradually accelerated, when the regions in the background of the core metropolitan areas of the Czech Republic (Prague, Brno and Pilsen) do not only develop economically, but their success within the population development also increases. The decisive factor for the population growth or decline is the increasing migration attractiveness or unattractiveness of the territory.

Population migration is a very complex process that is subject to a wide range of influences. The nature of migration is influenced by socio-economic conditions everywhere in the world, even in the Czech Republic. As Hampl, Gardavský and Kühnl (1987) suggest, migration of the population is a fundamental mechanism of the concentration process. Migration is a structural regional process and its

observation is therefore closely linked to regional development and regional policy (Kupiszewski, Durham, and Rees, 1998). The assessment of the spatial structure of migration processes can be legitimately referred to as the core of the geographic research on migration (Hampl, 2005). The study of migration gradually gained an interdisciplinary character (Čermák, 1999). Attention is particularly paid to more general problems of the spatial behaviour of the population and to the causes or motives of this behaviour (Šašek 2011, 2013, 2016).

Population development and its monitoring are important for the further development opportunities of the regions. Currently, migration is crucial for population growth. Quantitative growth alone does not always mean a plus for the further development of regions, such as the structure of migration in the 1970s and 1980s in the basin districts of the then North Bohemia Region, where the proportion of unskilled and lower educated people and the emigration of university graduates (and those with the graduation exam), worsened the educational structure. To some extent, this is still a phenomenon that significantly influences the social microclimate in this region (Šašek, 2011). The paper tries to assess and analyse the development of the population development of the Czech Republic and prove the impact of migration on the overall population growth. Due to the structure of migrants on the natural change of metropolitan areas of Prague, Brno and Pilsen, these are areas that have had a favourable migration development since the mid-1990s.

Migration attractiveness is strongly associated with transport links with the centre and geographical interconnection. Due to the main railway corridor and the availability of the D8 motorway, for example, the surrounding areas of Roudnice are attractive and have the highest positive balance of all micro-regions of the Ústí Region for both periods.

2. Development of the migration of Prague, Brno, Pilsen and their hinterland

2.1. Period of 1992-2003

The necessary data on population migration was provided by the Population Department of the Czech Statistical Office (CSO). These were mainly anonymised data concerning each person who moved across the municipal borders within the Czech Republic.

The basis for the analysis of the migration directions (migration flows) in this study was the anonymised data on migrants between 1992 and 2003.

Both inter-regional migration and migration concerning large cities (Prague, Brno and Pilsen) were evaluated.

In the analysis of migration great emphasis was placed on the structure of migrants, monitored by gender, age and, above all, by the highest level of completed education.

According to age, five-year age groups (up to the age of 39), two ten-year groups (40-49 years and 50-59 years) and finally migrants aged 60 and over are monitored. Regarding the educational structure of migrants aged 20 and over (possibly aged 15 and over), these were divided into four groups: migrants with elementary education (according to the international classification of education ISCED 97 level 1 and 2), with secondary education without the graduation exam (level 3 − but only a larger part), with secondary education with the graduation exam (level 3 − minor part, and level 4) and migrants with tertiary education (levels 5 and 6).

Analysis of population migration in the largest cities

In the early 1990s, emigration began to prevail over immigration in the internal migration in most Czech cities. This does not mean, however, that the urban population began to move to the countryside, but it was moving mainly to the municipalities in the nearest hinterland of cities. In particular, the more affluent population started to leave prefabricated urban flats and moved to newly built family houses in the surrounding villages. This suburbanization process was already evident in the second half of the 1990s, especially in the hinterland of large cities such as Prague, Brno and Pilsen. Suburbanization has not yet been so significant in the structurally affected areas, which is the case of Moravian-Silesian Ostrava. The cities of Prague, Brno and Pilsen differ significantly in the intensity of the migration of their inhabitants to the surrounding municipalities. In the analysed period from 1992-2003, Prague showed a negative migration balance in 1998 (until 2001). In the population of the smaller city of Brno, a decrease in migration was recorded in 1996 and even earlier in Pilsen, in 1994. In both cities, the negative migration balance persisted until the end of the analysed period, i.e. until the end of 2003 (in fact in Pilsen until 2004 and in Brno until 2006).

The capital city of Prague

The analysis of migration directions defined by the balance shows that between 1992 and 2003 the capital city of Prague acquired a population from all regions of the Czech Republic, with the exception of the Central Bohemia Region. Moravia as a whole is a source area for the migration of inhabitants to Prague.

The migration turnover in Prague with the Central Bohemia Region (which includes 12 districts) was almost 100 thousand people for the population aged 20 and over, between 1992 and 2003. Prague had the most intensive migration relations with the villages located in the surroundings of two neighbouring districts, Prague-East and Prague-West. The migration turnover of Prague with these districts amounted to more than half of the turnover of the Prague population within the entire Central Bohemia Region and reached almost fifty-four thousand people. "Prague rural districts" contributed to almost ninety percent (86.9%) of the positive migration balance in the Central Bohemia Region. During the period under review,

the migration balance of people aged 20 and over increased in both districts. While in the period from 1992-1994, Prague lost 1.400 inhabitants in favour of the districts of Prague-East and Prague-West by migration. This was almost 8.8 thousand from 2001 to 2003. The greatest intensity of migration from Prague to its surroundings was associated with the years at the turn of the second and third millenniums.

Table 1. Migration balance and migration turnover of people aged 20 and over (domestic migration) of the capital city of Prague in reference to Prague-East and Prague-West districts in the period 1992-2003

Period	Prague-East		Prague-West		Total	
	migration balance	migration change	migration balance	migration change	migration balance	migration change
1992-1994	–514	5 282	–886	5 620	–1 400	10 902
1995-1997	–1 404	5 210	–1 942	5 622	–3 346	10 832
1998-2000	–3 302	5 500	–4 941	8 019	–8 243	13 519
2001-2003	–3 732	9 060	–5 033	9 643	–8 765	18 703
1992-2003	–8 952	25 052	–12 802	28 904	–21 754	53 956

Source: Database on Population Migration, Czech Statistical Office for 2004 year, own calculations.

The analysis of migration directions according to age and the education of moving people also provided interesting findings for Prague. The analysis of regional migration directions according to five-year (and ten-year) age groups showed that through migration, Prague gained population from all other regions of the Czech Republic, in the case of people aged 20-24. Although the positive migration balance of Prague for the age group of people aged 25-29 was higher and exceeded the level of 10 thousand, there was already one region (Central Bohemia Region) that gained population from Prague. The same can be said for the age group of 30-34 years, although the positive migration balance of Prague for this group was very small and did not reach even one thousand people. The youngest five-year age group, which showed a negative migration balance in Prague in the analysed period of 1992-2003, was the group of people aged 35-39.

Due to migration, Prague gained a university-educated population every year. In the case of university-educated migrants, the capital city of Prague showed a positive migration balance with all other regions, with the exception of the Central Bohemia Region. This is therefore the same statement that was made when evaluating regional migration balances with Prague concerning all migrants aged 20 and over. However, while in this case, Prague showed a negative migration balance with the other regions of almost 6.3 thousand for the 12 years under review, in the case of migrants with university education, Prague showed a migration profit of 6.4 thousand in the period under review.

Table 2. Migration balance and migration turnover of university-educated inhabitants from Prague in reference to Prague-East and Prague-West districts in the period 1992-2003

Period	Prague-East		Prague-West		Total	
	migration balance	migration change	migration balance	migration change	migration balance	migration change
1992-1994	–109	573	–163	639	–272	1 212
1995-1997	–217	643	–328	728	–545	1 371
1998-2000	–515	883	–1 010	1 391	–1 525	2 274
2001-2003	–798	1 254	–1 092	1 600	–1 890	2 854
1992-2003	–1 639	3 353	–2 593	4 358	–4 232	7 711

Source: Database on Population Migration, Czech Statistical Office for 2004 year, own calculations.

The comparison of Prague's migration balances with individual regions of the Czech Republic, for all migrants aged 20 and over, as well as for the university educated population, indicates that the set of regions can be divided into several groups. The Central Bohemian Region, which received from Prague a total of 25 thousand inhabitants aged 20 and over, of which 4.7 thousand had university education, between 1992 and 2003, differed from all other regions. On the other hand, Prague received 18.8 thousand inhabitants aged 20 and over, of which 11.1 thousand had a university education, from the remaining twelve regions of the Czech Republic.

As already mentioned, the districts of Prague-East and Prague-West accounted for 86.9% of the active migration balance of the Central Bohemia Region with Prague for people aged 20 and over. This share was still slightly higher in the period from 1992-2003 for university educated migrants and was slightly more than 90%. The greater part of the positive migration balance of university graduates was in the district of Prague-West.

Roughly two-fifths of Prague's active migration balance were in regional capitals. Through migration, Prague was gaining people primarily at the expense of Brno and Ostrava.

The comparison of the migration balance of the capital city of Prague with the entire territories of individual regions on the one hand, and then only with regional capitals on the other, according to the five-year and ten-year age groups of migrants, indicates that Prague was getting its population from regional cities at a much higher relative rate than was the case of the entire regional territories. Up to the age of fifty, there was no age group for any of the regional cities that could have been said to have had an active migration balance with Prague.

Similar trends follow from the analysis of Prague's migration balance according to age with regional cities concerning only the university educated population, as was the case with the total balance. This means an increase in the positive migration

balance in the age group of 25-29 years, which is the maximum within five-year groups, and then its regular decline until the age of 55-59. At the age of 60 and over, Prague already reports a negative migration balance with regional capitals even for 'university graduates'. However, the decrease in the size of the active migration balance of Prague with the growing age of migrants is much more significant for university graduates, as 56.2% of university-educated persons account for the active migration balance of the age group of 25-29 years, 55.5% for the age group of 30-34 years, 41.9% for the age group of 35-39 years, etc. The share of university graduates in the positive migration balance of Prague decreases significantly with increasing age. This proportion converges to 30% for people over the age of 50.

The Moravian metropolis of Brno

In the period 1992-2003, 32.6 thousand people aged 20 and over moved to Brno. Almost half of them were from the territory of the South Moravia Region, of which Brno is the regional capital. Following the last administrative reform brought by the 1997 Act, the territory of the South Moravia Region was reduced from 14 to 7 districts. Three districts became part of the Vysočina Region, the other three districts became part of the Zlín Region and the Prostějov district was incorporated into the newly established Olomouc Region. This fact was also reflected in the size of migration flows from new regions to Brno. The flows from the Vysočina Region and the Moravia-Silesia, Zlín, and Olomouc Regions can also be considered significant flows to Brno. More than two thousand people aged 20 and over moved to Brno from each of the regions mentioned above between 1992 and 2003.

The main target area of emigrants from Brno was the territory of Brno-Countryside district, which surrounds the Moravian capital. The second largest emigration stream was the migration of people from Brno to Vysočina and in absolute terms almost the same number of emigrants from Brno was recorded in the twelve monitored years in the capital city of Prague.

Brno reported a negative migration balance of 5.3 thousand people aged 20 and over in the monitored period. Its migration loss compared to the rest of the South Moravia Region was even higher and amounted to almost 6.3 thousand people. In addition to this region, Brno also had a significant negative migration balance with Prague and the Central Bohemia Region. On the other hand, the city of Brno reported a migration profit mainly with the Moravia-Silesia Region, as well as with the Zlín Region and the Olomouc Region.

However, the migration loss of Brno in the amount of 6,257 people towards the South Moravian Region was realized mainly in the district of Brno-Countryside. The beginnings of the suburbanization process in the Brno region started in the first half of the 1990s, but very slowly. While the district of Brno Countryside showed a profit of 152 inhabitants against Brno in the period of 1992-1994. In the next three years the active migration balance was almost ten times higher. The migration balance of the district also grew in the following periods and in 2001-2003 it exceeded

Table 3. Domestic migration of people aged 20 and over to/from Brno between 1992-2003

Period	Brno-Countryside	
	migration balance	migration change
1992-1994	–152	6 396
1995-1997	–1 509	6 353
1998-2000	–1 939	6 515
2001-2003	–3 668	8 048
1992-2003	–7 268	27 312

Source: Database on Population Migration, Czech Statistical Office for 2004 year, own calculations.

3.5 thousand people. The decisive role of the territory of the Brno-Countryside district for the migration of Brno inhabitants is also evidenced by the more than 38 percent share of the district territory in the migration turnover of Brno.

Table 4. Domestic migration of people aged 20 and over with a university education to/from Brno between 1992-2003

Period	Brno-Countryside	
	migration balance	migration change
1992-1994	–37	557
1995-1997	–122	646
1998-2000	–379	797
2001-2003	–638	1 160
1992-2003	–1 176	3 160

Source: Database on Population Migration, Czech Statistical Office for 2004 year, own calculations.

In the case of university graduates, the share of the Brno-Countryside district in the migration turnover of Brno in 1992-2003 was lower and at approximately one-fifth (20.5%). However, migration efficiency (the balance to turnover ratio multiplied by 100) was higher for university educated people in the Brno-Countryside district and reached only 37.2, whereas it was only 26.6 for the total number of migrants aged 20 and over.

In the analysed period of 1992-2003, the city of Brno showed a passive migration balance for both people with an elementary education and people with a secondary education with and without the graduation exam. The only group of people where Brno saw a population increase by migration during the twelve years was for people with a university education.

The city of Brno was migration-attractive for university educated people formerly living mainly in Moravia. A negative migration balance was found only in the case of the South Moravia Region, i.e. the region which also included the Brno-City district (or the city of Brno). This balance was only 702 people in 1992-2003. As is already known, the Brno-Countryside district itself gained 1,176 university-educated people by migration from Brno. A negative migration balance was also reported by the Moravian metropolis compared to the capital city of Prague amounting to 725 university graduates and the Central Bohemia Region (190 university graduates).

The analysis of the population migration to Brno and from Brno is complemented by data on the structure of migrants according to the seven age groups selected and it suggests that through migration Brno gained the lower-age population (age groups 20 to 24 and 25 to 29 years) and lost the population of the higher age. Concerning the Brno-Prague migration, Brno lost population in favour of Prague in all the monitored age groups (the same can be said in the case of the Central Bohemia Region).

Western Bohemian Pilsen

At the beginning of the analysed period 1992-2003, Pilsen was still migration--profitable. Since 1994 the city of Pilsen gradually began to lose its population through migration. Between 1992 and 1994, Pilsen, with its hinterland consisting of the districts of Pilsen-South and Pilsen-North, reported a slightly negative migration balance. In the following years, this negative balance deepened significantly.

Pilsen had a negative migration balance only compared to a set of municipalities in the Pilsen Region, then compared to Prague and its broad hinterland represented by the Central Bohemia Region. However, the migration attractiveness of Pilsen is indicated by the fact that Pilsen had a positive balance with other regions of the Czech Republic.

Table 5. Immigrants and emigrants aged 20 and over (domestic migration) to/from Pilsen between 1992-2003 (average annual rate per 1 000 inhabitants of the region (the Pilsen region without Pilsen)

Period	Pilsen-South		Pilsen-North		Total	
	migration balance	migration change	migration balance	migration change	migration balance	migration change
1995-1997	–417	2 043	–483	2 481	–900	4 524
1998-2000	–665	2 341	–883	2 777	–1 548	5 118
2001-2003	–966	2 588	–1 140	3 246	–2 106	5 834
1992-2003	–2 048	6 972	–2 506	8 504	–4 554	15 476

Source: Database on Population Migration, Czech Statistical Office for 2004 year, own calculations.

A more detailed study of migration between the districts of the Pilsen Region revealed that Pilsen had a negative migration balance with only two districts

forming its hinterland, and it was gaining inhabitants by migration from others. Suburbanization processes have been strongly reflected in the closest hinterland of the city of Pilsen.

Table 6. Domestic migration of people aged 20 and over with a university education to/from Pilsen between 1992-2003

Period	Pilsen-South		Pilsen-North		Total	
	migration balance	migration change	migration balance	migration change	migration balance	migration change
1995-1997	–28	128	–53	149	–81	277
1998-2000	–53	209	–105	279	–158	488
2001-2003	–110	296	–155	317	–265	613
1992-2003	–191	633	–313	745	–504	1 378

Source: Database on Population Migration, Czech Statistical Office for 2004 year, own calculations.

As already mentioned, Pilsen reported a negative migration balance with the Central Bohemia Region. However, in the youngest and oldest age groups, Pilsen gained compared to the Central Bohemia Region.

As far as people with a university education are concerned, Pilsen, unlike Prague and Brno, lost such educated people through migration. In the period of 1995-2003, the negative migration balance was 244 people. The following regions participated in this loss: the Pilsen Region, Prague, and the Central Bohemia Region.

However, the aforementioned loss of 244 university graduates in Pilsen does not mean that the migration had a negative impact on the level of the educational structure of the population in the Pilsen Region. On the contrary, the Pilsen-South and Pilsen-North districts recorded a positive migration balance in the analysed period from 1995-2003, which was higher than 500 for university graduates. The municipalities located in the city's closest hinterland were particularly profitable in terms of 'university graduates'.

If one compares the analysed cities of Prague, Brno and Pilsen, there will be some common signs in the development of migration in the 1990s and at the beginning of this decade, but some signs differ. These differences are caused not only by the different population size (Pilsen had only 164.7 thousand inhabitants at the end of 2003) and their position in the settlement system of the Czech Republic, but also by their geographical location and economic development dynamics.

2.2. Period of 2004-2017

In 2005 the migration agenda was transferred to the Ministry of the Interior of the Czech Republic, which does not provide the CSO with such detailed data so that it is

not possible to monitor the structure of migrants in the way it was through individual information about each migrant.

Based on data on the population's natural change and migration for the individual districts located in the immediate vicinity of Prague, Brno and Pilsen, as well as structured data for the cities themselves, combined with the analyses of census results from 1991, 2001, 2011 (education structure), the authors could analyse the development in the second monitored period.

As mentioned earlier, migration is now crucial for the population development of regions in developed countries. In the monitored period, the capital city of Prague had a positive migration balance in all years with the exception of 2013, when the crisis peaked and when the migration balance for the Czech Republic was even negative, the only year since its establishment in 1993. Prague, through its migration attractiveness, significantly contributed to the overall foreign migration. The foreign migration balance increased significantly after the Czech Republic joined the European Union. In two years (2007 and 2008), the migration balance of the Czech Republic was more than 155 thousand people. Between 2014 and 2017, the average annual foreign migration balance was approximately 22.000. For the whole period of 2004 to 2017, the positive migration balance of Prague was almost 130,000. The city of Pilsen had a positive migration balance of more than 10.000 during the period. On the contrary, the city of Brno had a negative balance of almost five thousand inhabitants.

The natural increase has been positive in Prague and Brno since 2006, and in Pilsen since 2007. In Prague the natural increase is still growing, in Brno the value is stagnating, whereas in Pilsen it has been around zero in recent years.

Table 7. Migration balance of the Czech Republic, selected regions and districts in 2011-2018

Region	2011	2012	2013	2014	2015	2016	2017	2018
Česká Republika	16 889	10 293	–1 297	21 661	15 977	20 064	28 273	38 629
Hlavní město Praha	5 751	3 351	–5 297	13 372	6 031	10 271	10 880	11 076
Praha Východ	3 684	3 335	3 356	3 402	3 195	3 238	3 482	4 030
Praha Západ	3 106	2 845	2 228	2 483	2 540	2 014	2 088	2 476
Plzeňský Kraj	772	1 212	1 333	1 739	1 938	2 207	2 363	4 050
Plzeň Sever	540	523	409	316	397	532	533	695
Plzeň Jih	197	223	75	137	116	239	319	313
Plzeň Město	71	415	890	1 078	1 002	964	629	1 787
Jihomoravský Kraj	1 750	1 706	655	1 372	1 507	2 334	3 161	3 408
Brno Venkov	2 217	1 910	1 658	1 814	1 744	1 810	1 646	1 891
Brno Město	–1 459	–1 078	–1 256	–718	–764	320	1 054	641

Source: Database on Population Migration, Czech Statistical Office for 2019 year, own calculations.

Strong migration links between these cities and their rural districts still persist and these districts have a very favourable population development not only due to the positive migration balance in recent years, but also thanks to the Czech Republic's significant increase in natural change. The Czech Republic had a maximum increase in natural change in 2008, namely 1.4 per mil, Prague-East district 6.3 per mil in 2010, Prague-West district 7.8 per mil in 2008, Brno-Countryside district 3.4 per mil in 2008, Pilsen-North 2.3 per mil in 2011, and Pilsen-South 1.5 per mil in 2010. However, migration is still critical to the population growth. In all districts, in the hinterland of the biggest cities, the highest values of the migration balance were in 2007-2008, which is illustrated by the significant profit of these cities and their hinterland on the share of the total foreign migration balance. The migration increase in the district of Prague-East was 58.4 per mil in this period, 50.2 per mil in Prague-West, 13.7 per mil in Pilsen-North, 19.0 per mil in Pilsen-South, and 23.2 per mil in Brno-Countryside. Even these data show us the different intensity of suburbanization and 'metropolization' in the hinterland of these three cities. The intensity of migration movements has been the highest in the hinterland of Prague since the mid-1990s. These processes are lower in the hinterland of Brno and Pilsen.

Table 8. Share of persons aged 15+ with the highest secondary education completed with GCSE level exams and tertiary education in the Czech Republic, selected regions and districts in 1991, 2001, 2011

Region	Secondary with GCSE			University education		
	1991	2001	2011	1991	2001	2011
Česká Republika	23.9	28.4	31.2	7.2	8.9	12.5
Hlavní město Praha	30.5	35.7	35.3	16	18.8	23.6
Praha Východ	23.0	29.4	34.4	6.7	9.5	16.5
Praha Západ	21.7	28.2	34.0	6.9	11.1	20.8
Plzeňský Kraj	22.6	28.1	30.9	5.7	7.8	10.4
Plzeň Město	29.9	33.8	35.1	10.3	12.0	15.6
Plzeň Jih	19.3	24.8	27.5	3.8	5.3	7.5
Plzeň Sever	18.2	23.7	28.2	3.6	5.0	8.4
Jihomoravský Kraj	22.1	28.0	30.9	7.1	10.3	14.7
Brno Město	29.3	29.0	34.3	15.1	17.9	23.6
Brno Venkov	20.2	23.5	30.5	5.0	7.2	12.6

Source: Population and Housing Census, CZSO 1991, 2001, 2011, own calculations.

The share of people over the age of 15 who reached a higher education level (i.e. graduation exam and university graduation) rose in the Czech Republic between 1991 and 2011. The shares of individual groups, but also the rate of growth of this share, significantly differ regionally. Prague, Brno and Pilsen have the highest share for the cities. The rate of growth of the share of people with a higher formal education

grew the fastest in the hinterland of Prague, when the Prague-East district increased its share of university graduates from 6.7% to 16.5% between 1991 and 2011 and the Prague-West district from 6.9% to 20.8 %, Brno-Countryside from 5% to 12.6%, Pilsen-North from 6.6% to 8.4%, and Pilsen-South from 3.8% to 7.5%.

These figures show that, even between 2004 and 2011, the share of people with a higher education in the migration balance was higher than that of the current population. The authors assume that the results of the 2021 census will confirm this development for the period of 2011-2021.

Krejčová (2015) states that commercial suburbanization is supported by lower land prices and a strategic location near motorways and expressways. However, the stabilization of the local labour market can be considered a positive benefit of commercial suburbanization.

It is evident that not only social suburbanization, but also economic suburbanization is taking place, where companies transfer to the surroundings of large cities to some extent. From an economic point of view, the localization of investments contributes further to the development of suburbanized regions. Foreign direct investment is one of the key indicators according to which the success of economic transformation at a regional level can be measured (Hlaváček, Bal-Domańska 2016).

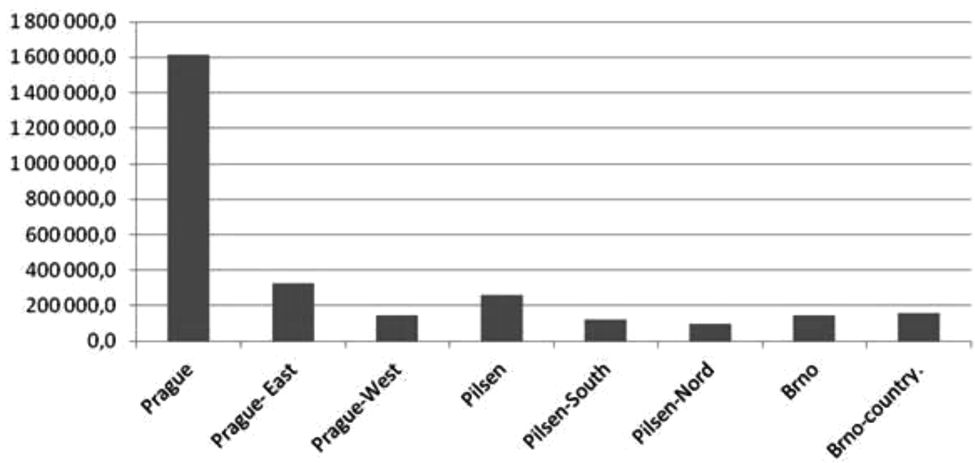

Figure 1. Stock of FDI *per capita* in urban and suburban districts 2015 (in Euro)

Source: Czech National Bank.

At district level, Prague has dominated for a long time. In Prague, the volume of foreign investments is several times higher than in other districts. Agglomerations continue to have a strong position in the long term, while the status of investments is lower in the suburbanization districts. However, suburbanized territories are more attractive than other regions, and have a higher concentration of investment among

districts within the region. Polarity is manifested among districts with a higher degree of urbanization and rather among rural districts that are less attractive in Bohemia and Moravia in terms of investment.

Table 9. Housing construction in 2017 in the monitored regions

	Average area (living area) in m^2	Average area (utility area) in m^2	% difference	Number of new flats total	New flats in family houses	New flats in blocks of flats
Prague	63.2	88.0	39.1	5.846	622	4.623
Prague-East	80.9	113.7	40.6	1.288	1.053	152
Prague-West	95.7	122.5	28.0	724	505	174
Pilsen	68.1	94.3	38.4	665	273	350
Pilsen-South	76.8	114.2	48.6	176	141	10
Pilsen-North	82.4	113.2	37.4	287	198	66
Brno	51.0	70.9	38.9	1.884	193	1.285
Brno-Countryside	81.7	121.0	48.1	968	812	83

Source: Czech Statistical Office.

Obviously, the differentiated settlement structure is also reflected in housing construction. The majority of new flats was constructed in the Central Bohemia Region and in the districts of Prague-East and Prague-West, in municipalities up to two thousand inhabitants the increase in housing construction was the highest in the Czech Republic in the last twenty years. Large agglomerations also have lower area of flats on average than their suburbanized hinterland. The average living area of new construction is up to two-thirds larger in suburbanized areas than in centres. The largest plots for new construction are also located in the smallest municipalities and the smallest building plots in the largest cities where the area of building plots and flats has gradually decreased over time.

3. Conclusion

In recent years, migration movements have been the biggest contributor to population development. This is supported by the analysis in terms of natural change and migration. The aforementioned migration development has significantly influenced the structure of the population of individual regions. Migrant structures are significantly younger and more educated than the average population of the Czech Republic and individual regions. Developments in the last 20 years have significantly changed the structure of the population, both in the migration-attractive metropolitan areas of Prague, Brno and Pilsen, districts, regions, and depopulation units.

Regions that are the most attractive to migrants have become significantly younger and regions not very migration-attractive and migration-unattractive have become older in the population structure. This is also evidenced by the total values for regions and districts, e.g. a decrease in the average age of the Prague-West and Prague-East districts between 2001 and 2011 by about one year whereas the average age of the Czech population increased by 0.9 years. The districts of Prague-East and Prague-West have the highest proportion of children for the districts of the Czech Republic (almost 4% higher than the average in the Czech Republic).

Migration has also significantly influenced the educational structure of the population in the hinterland of Prague. Between 1991 and 2011, the proportion of university graduates in Prague rose from 16% to 23.6%, in the Prague-West district from 6.9% to 20.8%, and in the Prague-East district from 6.7% to 16.5%, in Brno from 15.1% to 20.6%, in the Brno-Countryside district from 5.6% to 12.6%, in Pilsen from 10.3% to 15.6%, in the Pilsen-North district from 3.6% to 8.4%, and Pilsen-South from 3.8% to 7.5%. Regions that can be called transformation-successful have both favourable population development and socio-economic development.

It can be said that the suburbanization process is significantly applied to housing construction in terms of housing construction location and its intensity. The new construction has changed the character of the hinterland of large cities when the city boundaries now consists in satellite towns of family houses, logistics and shopping centres or production facilities. Suburbanization also changes the social environment in suburbanized zones. In municipalities in suburbanized districts there is some unevenness in the development of individual parts of municipalities, including the selectivity of demographic and social groups of the population. On the one hand, people with secondary and tertiary education, with higher incomes, often move to the urban hinterland. On the other hand, there is a polarization of social structures that can lead to conflicts between indigenous and new residents.

From this point of view, local government has a significant role to play and it should be the balancing element in the co-existence of both communities. Co-existence should lead to the greater integration of both groups, e.g. by the participation of new residents in the municipal council (Ouředníček and Temelová, 2008) and by cooperation in local community life and activities of various interest groups.

Another important aspect in regulating the negative impacts of suburbanization is represented by area development plans of individual municipalities and the cooperation between public administration, investors and developers. The aim of this cooperation should be the spatially integrated increase in the attractiveness of municipalities that will limit the prerequisites for the growth of social polarization.

Housing construction in the suburbanized space around cities is reflected in the larger area of new flats and houses and in the construction of satellite parts in municipalities. In many cases, this extensive growth is not accompanied by the relevant development of services, availability of leisure activities and upkeep of

public spaces. The provision of housing construction localities with services and high-quality public space should therefore be supported by a municipality, including a suitable way of regulating new construction in the zoning plan in order to better integrate it into the harmonious development of the municipality.

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