INTRODUCTION

Despite considerable interpretative constraints, internal migration, as a relatively narrowly defined segment of the assessment of spatial mobility, is a significant indicator reflecting dynamic societal and economic changes as well as their long-term trends. The period of 25 years between the years 1991–2015 in this regard represents both the fundamental transition from the centrally planned economy to the market one and the related adaptation of the society not only to general deregulation but also to the periods of prosperity and crisis.

Globally, internal migration overweighs foreign migration and is one of the most important processes causing changes in the settlement structure (Bell et al. 2015). The Czech Republic was in the literature often referred to as a country with low spatial mobility and attractive medium-sized cities, in which migratory movements are locked into the district level, and a person migrates on average once in a lifetime (Čermák 1996a; Rees and Kupiszewski 1998; Polášek 2005; Vobecká 2010). This trend appears to be gradually subject to certain fluctuations and changes (Ouředníček and Kopecká 2017), although internal migration on shorter distances is still crucial (approximately 71% of the internal migration between 2001 and 2012 was within the distance of 50 km), as stressed by Halás, Klapka and Tonev (2016).


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Abstract

Internal migration is a significant demographic and spatial indicator reflecting social and economic changes. Compared to the rest of the country, the eastern part of the Czech Republic (also the East) represents a slightly different area in terms of internal migration patterns. The aim of this paper is to analyse internal migration of the East during the 1991–2015 period, to identify direction and age migratory trends, and to evaluate the internal migration efficiency and its impact on the population of the East. To assess the impact of migration, a typology comparing natural increase with net migration and the index of migration efficiency was used. Because of very effective emigration with the western part of the Czech Republic in 1991–2015, the East steadily changed from population increase to population decline, losing 88.8 thousand inhabitants by internal migration. The observed migratory loss was predominantly composed of young population, especially in the structurally affected Moravian-Silesian Region. The current migration tendencies (after 2015) continue to show the demonstrated trend of the East to West youth brain drain, the consequences of which are likely to lead to further deterioration of the already problematic situation of the East, with the exception of the city of Brno and its hinterland.

Key words: Czech Republic, internal migration, migration efficiency, young adults, peripheral regions, de-population
The eastern part of the Czech Republic (also the East), which approximately corresponds to the territory of Moravia and Silesia, represents a slightly different area in terms of migration patterns than the rest of the Czech Republic, in which the migratory movements are generally smaller (Kupiszewski et al. 1999). The whole internally inhomogeneous area of the eastern part of the Czech Republic is also influenced by general trends of (re-)urbanization, suburbanization, or as presented by Vaishar and Pavlů (2018), naturbanization, and in addition to internal push and pull factors also by strong external, mainly socio-economic, pull factors of the capital city of Prague and its hinterland.

Migration has been and continues to be an issue of young people. In the beginning of the 1990s, the average migrant age in the Czech Republic was 26.5 years. Since 2001 to the end of the reference period (2015), the average migrant age in the same period has stabilised between 30 and 31 years, while the average age of the population has steadily increased from 38.8 to 41.9 years. Rees and Kupiszewski (1998) or Bell et al. (2015) in this regard state that in developed countries in the Western Europe internal migration is often a more important contributor to the regional population dynamics than the natural increase or decline. The unambiguous determination of the age cohort is considered crucial for the assessment of migration impact because of the significant difference in the migration intensity by age as suggested by Novák, Čermák and Ouředníček (2011).

RESEARCH OBJECTIVES

The aim of this paper is to analyse internal migration of the eastern part of the Czech Republic during the 1991–2015 period, to identify trends in the direction and age of migrants, and to evaluate the efficiency of internal migration and its impact on the population, in particular in relation to the Western part of the Czech Republic (also the West).

THEORETICAL BACKGROUND

The correlation between spatial aspects of internal migration and migrant age in the 1990s transition period was a frequent subject of examination in Czech (Lux et al. 2006; Ouředníček 2007) as well as in foreign literature (Bures 1997; Rees and Kupiszewski 1998; Kovacs 2004; Bezák 2006; Glorius 2010; Novotný and Pregi 2016). Clearly different aspects of internal migration do not act in a uniform direction. They can act both synergistically and against each other (Green 2018), making the forecasting of migration flows rather difficult.

From the perspective of migration theories, the exploration of spatial schemes can be based on neo-classical concepts, highlighting the economic aspects of migration. Migration in relation to the level of unemployment, wage levels, and the labor force, comparing the source and the destination, was already analysed by the Lowry’s Gravitational Model (1966). The parallel model, which emphasizes both the opportunities and the spatial aspects of migration, is a “push-pull” model, developed and fully presented by Lee (1966, 1969). According to this model, the “push” and “pull” factors i.e., factors that are repelling and attracting, interact with each other and must achieve a certain intensity for the migration to happen. The dominance of specific factors then, to some extent, determines the characteristics of the migrant population (Bijak 2006). According to Arrango (2000), such economically contingent migration can hypothetically lead to the elimination of economic (mainly wage) differences and as a result to the cessation of migration. However, the final state is improbable. Stark (2003) also considers the above approach to be very simplistic and, among others, ignoring the phenomenon of return migration or migratory counter-flows. Spatial aspects of migration are further emphasized by the theory (model) of migration transition by Zelinsky (1971), which associates the changes in spatial mobility of the population to the mechanisms of demographic transition. According to the stage of socio-economic development, the population first migrates to cities for work, while in later stages intra-urban and intercity migrations begin to prevail along with increased commuting requiring sophisticated transport and communication systems infrastructure. Champion and Vandermotten (1997) and Kupiszewski (2002) in the theory of migration transition emphasize the missing aspects
of suburbanisation and counter-urbanisation as key aspects for analysing internal migration in developed countries. Next, the migratory loss and gain from the competitiveness of the territory in the macroscale was conceptualised in the theory of “migration policy” by Davis and Hart (2010). Migration policy among others seeks to influence both the influx and the brain drain (Davis and Hart use the term “war for talents”) and to pragmatically achieve the situation of the exchange of brains as a mutually beneficial condition, especially as regards highly skilled migrants. Slavík and Grác (2009) likewise highlight the determination of the economically stronger part of the population to migrate to the hinterland of larger cities, seeking for better quality environment and higher social status.

It is practical to relate the development of migration patterns in the eastern part of the Czech Republic to previous periods, namely the preceding three decades (1961–1990). A deeper analysis of the specifics of migration of Moravian and Silesian Districts within the North Moravian and South Moravian Region¹ during the 1961–1964 period was carried out by Nováková-Hřibová (1971). As for the nationwide trends, the study reported that the North Moravian Region, together with the Central Bohemian Region, was the only region with a positive net migration. The South Moravian Region would also be a region of migratory gain, were it not for the significant outflow of the inhabitants in favour of the North Moravian Region. At the district level, the immigration character of the urbanized districts of Brno-město, Ostrava-město, and Karviná is noted, while the districts of Znojmo, Břeclav, Šumperk, and Bruntál were losing population by migration. At the level of municipalities, Nováková-Hřibová sets the imaginary borderline of Znojmo-Brno-Prostějov-Přerov-Opava, with more frequent smaller municipalities with a small absolute migration turnover and the prevailing migration west of the border, and larger municipalities with immigration character dominating east of the border. She also draws attention to the positive correlation between emigration and population employed in the agricultural sector, migration from smaller towns to larger ones (with the exception of Ostrava, Havířov, and Karviná due to the situation on the housing and labour market), increased mobility of workers and children up to 15 years of age and a significant overlap of immigration and commuting regions. The work of Nováková-Hřibová (1971) was, to some extent, followed by Trávníčková (1995) who studied Moravian and Silesian districts in the years 1971–1990. This analysis reported, in accordance with a nationwide trend, the growth of differences between significant immigration and significant emigration areas, shortening of migratory distances, and a close correlation between housing construction and immigration. The districts of Bruntál and Znojmo, newly the district of Brno-venkov and after a switch of the net migration in the 1980s also the districts of Kroměříž and Vsetín were rated as permanently losing population by migration. In contrast, the urbanized districts of Brno-město, Zlín, Frýdek-Místek, and Ostrava-město were permanently gaining population by migration. It may be concluded that the two above studies did not report any significant difference between the Moravian and Silesian districts, and the national trends (albeit not explicitly investigated) and were mainly focused on the relations within the area examined, with little emphasis on comparison or contrast with the remaining territory of the Czech Republic. The eastern part of the Czech Republic is for the years 1984 and 1994 also marginally commented by Kupiszewski et al. (1999) as a space with a generally smaller migratory turnover.

Research into the age aspect of internal migration in the Czech Republic is often associated with the study of other spatial and demographic characteristics, the latter including the influence on the age structure and the natural increase or decline of the population of the territories concerned. Kühnl (1982, 1986) observes that the selectivity of the country’s migration by age is one of its basic characteristics, when younger persons (20–35 years) move over longer distances, while older persons move more frequently in their home district with the west-east gradient. Drbohlav (1989) also emphasizes the migrants’ age and education as decisive aspects for the destination preference. He confirms that the incidence of migration depends on the age

¹ Former administrative units called “kraj”.
of the population in which younger people (20–30 years old) migrate most. The change of this trend, which occurred in the Czech Republic after the year 1989, is described by Čermák (1996a; 1996b) for the beginning of the 1990s, by Andrle (1997) and Bartoňová (1997) for the years 1992–1995, and by Pavlík et al. (2002) for the 1990–2002 period. These authors consistently point out that the overall decrease in migration mobility was most evident in the reduction in the intensity of migration of young people. The intensity of migration showed a significant decrease in a wide age group of 15–34 years (according to Pavlík et al. (2002) in the range of 15–29 years), namely in the age group of 20–24 years (according to Bartoňová (1997) by more than 40%) as a consequence of increased marital age (and subsequent moving) and the availability of housing. Kupiszewski et al. (1999) analyse the changes in migration flows between years 1984 and 1994 also in terms of age structure, confirming the reduction of migratory intensity and underlining the differentiation of migration behaviour by age. Similar conclusions were also drawn by Andrle and Srb (2000) and by Aleš (2001) who examined internal migration in the Czech Republic in the years 1980–1999. Aleš’s main contribution to the existing findings concerning the decrease in the mobility of young people was reporting a relative increase in the proportion of migrants in higher age groups. A summarising assessment of internal migration in the 1991–2004 period was also carried out by Polášek (2005), who, using also the census data of 1991 and 2001, declared that the intensity of the migration increases with higher education. The highest values were observed for university students up to 29 years in year 2001 (more than 50 migrants per 1,000 persons). Polášek observes that this trend correlates with finding a job at the place of study. For the years 2001–2004, Valenta (2009) assessed a specific age group (25–35 years) with a university education degree. He identified migration poles for this demographic group, which nationwide is Prague and its hinterland (Central Bohemian Region), and Brno agglomeration for the Zlín and Moravian-Silesian Region.

Correlation of net migration and demographic ageing of the population was evaluated by Burcin, Drbohlav and Kučera (2007) and followed by Čermák, Hampl and Müller (2009). Čermák, Hampl, and Müller, noted that, despite the significant decrease in the total net migration after the year 1989, the importance of specific net migration by age remains fundamental. They concluded that, compared to the rest of the population, the higher net migration is again mainly in the 20–35 age group, although the overall net migration is lower than before the year 1989 and migration at the end of the 1990s loses its polarization function, while acquiring a predominantly integrative function. Finally, Fiala and Langhamrová (2016) used the index of migration efficiency to assess the change in the age structure for the years 1993–2014 at the spatial level of regions. They report an increase in the number of younger inhabitants (20–49 years) in the Central Bohemian Region and Prague and, conversely, the decline in the same age group for the Karlovy Vary and Moravian-Silesian Region. They also claim that this decline can only be mitigated but not reversed by the positive foreign net migration.

The migration in the East and its relationship with the West in the dynamic period of 1991–2015 was not yet fully investigated, and the analyses by Nováková-Hřibová (1971) or Trávníčková (1995) have not comprehensively followed. The area of the East, or more often “Moravia,” has only been a marginal part of other migration-focused studies, although this region is considerably different in several migration indicators from the rest of the Czech Republic. It is therefore advisable to compare it with national and Central European trends and to apply certain aspects of migration theories.

DATA AND METHODS

Both absolute and relative indicators were used for the quantification and evaluation of migration. Absolute data are based on the data on the registered migration and as such may be affected by error due to possible failure to register the migration act in statistics. Nevertheless, in the case of the internal migration, the error is significantly lower than that for the foreign migration. The absolute data on migration are traditionally described by immigration (I), and emigration (E). The difference
in immigration and emigration is net migration. Relative indicators (rates) are used per 1 000 inhabitants. This specifically involves the net migration rate (NMR) and the natural increase/decline rate (NIR) for births and deaths.

The anonymized database on internal and foreign migration of the Czech Statistical Office for 1991–2015 (hereinafter also CZSO 2016a) was used as a source of data. The change of residence of Czech citizens, foreigners residing in the Czech Republic until 2000 and, from 2001 foreigners with permanent or long-term residency (over 90 days) from municipality to municipality within the Czech Republic is considered as an internal migration act for the reference period. The change of residence between the territory of the Czech Republic and Slovakia in the years 1991 and 1992 was not considered as internal migration even though it took place within one state. It should also be emphasised that the actual permanent residence of persons does not always correspond to the statistics of the registered movements as some changes in the residence are either not reported at all or are reported purely for the achievement of certain benefits (residential, grant, access to services, etc.). Despite these limitations, the quality of data on internal migration in the Czech Republic is very high (Aleš 2001; Holá 2005) and has a sufficient explanatory ability.

To classify the importance of internal migration, Shryock (1964) used the index of migration efficiency ($i_{me}$, see Equation 1), which expresses the share of net migration on migration turnover (the sum of immigration and emigration), and values from –100 to 100. The index of migration efficiency partly eliminates the possibility of mis-interpreting the net migration due to the absence of a turnover component and is perceived as an appropriate indicator for evaluating the impact of changing economic conditions on migratory movements, as indicated by Bailey and Livingston (2007). The disadvantage of this indicator is that it does not adequately respond to the absolute number of migrants and thus more often reaches higher values for smaller regions investigated.

$$i_{me} = \frac{I - E}{I + E} \times 100$$  \hspace{1cm} (1)

To assess the mutual relationship of natural increase/decline and net migration for eight types of regions (districts), Webb’s (1963) typology and diagram according to was used, capturing the ratio of NIR and NMR in the relevant period (see Table 1 and Figure 1).

### Table 1 Regions typology according to absolute values of natural increase rate (NIR) and net migration rate (NMR)


| Type | NIR | NMR | | Population change |
|------|-----|-----| | |
| A | + | – | > | Increase |
| B | + | + | > | Increase |
| C | + | + | < | Increase |
| D | – | + | < | Increase |
| E | – | + | > | Decline |
| F | – | – | > | Decline |
| G | – | – | < | Decline |
| H | + | – | < | Decline |

![Figure 1 Regions typology scheme according to natural increase rate (NIR) and net migration rate (NMR)](image-url)

Figure 2 Regions and major cities of the Czech Republic
Source: CZSO (2016a), own calculations.
From the spatial point of view, the area of the eastern part of the Czech Republic is defined as the territory of the Regions (NUTS 3) of Vysočina, South Moravia, Olomouc, Zlín, and Moravia-Silesia, in the regional borders and the territorial structure in the year 2015. These five regions also comprise three cohesion regions (NUTS 2) – Southeast, Central Moravia, and Moravia-Silesia.

It is an internally heterogeneous territory with urbanized and rural areas and complex internal migration relations. Machine industry and IT oriented regional capital of Brno with nearly 400,000 inhabitants, universities and supreme juridical authorities is a core city of otherwise rural region of Southeast. On the other side, highly urbanized and densely populated heavy industry dependant area around the city of Ostrava in the Moravia-Silesia region experiences a long transitional period of metallurgy and coal mining decline while suffering from polluted environment.

On 1st January 1991 the territory of the East, representing 36.3 % (28.6 thousand km²) of the state’s area (78.9 thousand km²), involved approximately 40.6 % (4.2 mil.) of the population of the Czech Republic (10.3 mil.). Since 2000, the area has been administratively divided into five Regions (in Czech kraj) further divided into 27 smaller districts (see Figure 2). Until 2000, the territory was divided in two regions, the South Moravian Region and the North Moravian Region and districts of Havlíčkův Brod and Pelhřimov (since 2000 part of the newly formed Vysočina Region) were part of the Regions of East Bohemia and South Bohemia. On 31st December 2015, the share of the population of the East on the population of the Czech Republic was only 39 % (4.1 mil.).

<table>
<thead>
<tr>
<th>Period/Area</th>
<th>Natural increase</th>
<th>Net migration total</th>
<th>Internal net migration</th>
<th>Foreign net migration</th>
<th>Total population change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991–1995</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>8,737</td>
<td>2,105</td>
<td>–5,235</td>
<td>7,340</td>
<td>10,842</td>
</tr>
<tr>
<td>West</td>
<td>–32,076</td>
<td>22,084</td>
<td>5,235</td>
<td>16,849</td>
<td>–9,992</td>
</tr>
<tr>
<td>CZ</td>
<td>–23,339</td>
<td>24,189</td>
<td>0</td>
<td>24,189</td>
<td>850</td>
</tr>
<tr>
<td>1996–2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>–32,746</td>
<td>–730</td>
<td>–7,492</td>
<td>6,762</td>
<td>–33,476</td>
</tr>
<tr>
<td>West</td>
<td>–69,057</td>
<td>29,102</td>
<td>7,492</td>
<td>21,610</td>
<td>–39,955</td>
</tr>
<tr>
<td>CZ</td>
<td>–101,803</td>
<td>28,372</td>
<td>0</td>
<td>28,372</td>
<td>–73,431</td>
</tr>
<tr>
<td>2001–2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>–24,774</td>
<td>–8,614</td>
<td>–21,117</td>
<td>12,503</td>
<td>–33,388</td>
</tr>
<tr>
<td>West</td>
<td>–40,566</td>
<td>80,820</td>
<td>21,117</td>
<td>59,703</td>
<td>40,254</td>
</tr>
<tr>
<td>CZ</td>
<td>–65,340</td>
<td>72,206</td>
<td>0</td>
<td>72,206</td>
<td>6,866</td>
</tr>
<tr>
<td>2006–2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>10,314</td>
<td>4,814</td>
<td>–29,949</td>
<td>34,763</td>
<td>15,128</td>
</tr>
<tr>
<td>West</td>
<td>36,930</td>
<td>195,780</td>
<td>29,949</td>
<td>165,831</td>
<td>232,710</td>
</tr>
<tr>
<td>CZ</td>
<td>47,244</td>
<td>200,594</td>
<td>0</td>
<td>200,594</td>
<td>247,838</td>
</tr>
<tr>
<td>2011–2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>–7,277</td>
<td>–15,212</td>
<td>–24,974</td>
<td>9,762</td>
<td>–22,489</td>
</tr>
<tr>
<td>West</td>
<td>10,866</td>
<td>78,735</td>
<td>24,974</td>
<td>53,761</td>
<td>89,601</td>
</tr>
<tr>
<td>CZ</td>
<td>3,589</td>
<td>63,523</td>
<td>0</td>
<td>63,523</td>
<td>67,112</td>
</tr>
<tr>
<td>1991–2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>–93,903</td>
<td>406,521</td>
<td>88,767</td>
<td>317,754</td>
<td>312,618</td>
</tr>
<tr>
<td>CZ</td>
<td>–139,649</td>
<td>388,884</td>
<td>0</td>
<td>388,884</td>
<td>249,235</td>
</tr>
</tbody>
</table>

Source: CZSO (2016a), CZSO Demographical yearbook (2016b), own calculations.
RESULTS AND DISCUSSION

During 1991–2015, the East was continuously losing population mainly through internal migration, which was further exacerbated by the population loss caused by natural decline and by the absence of sufficient compensation by the positive balance of foreign migration. In particular, after the year 2000, the loss by internal migration has significantly increased to the average of more than 5,000 inhabitants per year who moved from the East to the western part of the Czech Republic (also the West). During the given period, there was also a gradual reversal of the ratio of the natural increase and decline between the East and the West. In 1991–1995, the East experienced a natural increase, while the West went through a period natural decline. In contrast, in 2011–2015, the East was already undergoing a natural population decline, while the West experienced a natural increase. The loss of approximately 89,000 persons in the East by internal migration over 25 years equals to the population of a medium sized regional capital city, approximately that of Pardubice (see Table 2).

In terms of migration, the territory of the East is an internally polarized space. Throughout the 1991–2015 period, there were intense migratory relations not only between the individual Regions (kraj) of the East but also between the various districts within these Regions. Throughout the reference period, the Moravian-Silesian Region represented a migration source for all other regions of the East, when the overall migration balance with the East was –20.5 thousand people (with the West for the same period –36.5 thousand people), with an increasing tendency during the five-year intervals (1991–1995, 1996–2000, 2001–2005, 2006–2010, and 2011–2015). On the contrary, the South Moravian Region, especially the regional capital city of Brno (less its hinterland, which had the function of the suburban zone and gained the population by migration mainly with the city of Brno), was the destination for the other regions of the East. The South Moravian Region had a positive migration balance over 1991–2015 with all Eastern Regions, with a total migration gain of 16.1 thousand people (of which 8.9 thousand were from the Moravian-Silesian Region, in particular from the districts of Ostrava-město and Karviná). During the five-year periods, it also had a positive net migration in total with the Czech Republic (the only exception being 2006–2010). A positive balance with the East, therefore, more than compensated for its continuous loss with the West.

As illustrated above, the polarisation of the territory identified by Valenta (2009) for university students can be applied to general population (the educational structure has not been monitored by the CZSO since 2005), but with greater significance for the Vysočina, Olomouc and Moravian-Silesian Region. Similar polarisations have been identified elsewhere in the Central Europe. Discussing migration from the former East Germany to its western part, Glorius (2010) mentions a significant core-periphery relationship in the former East Germany area, emphasizing Berlin as the new capital operating against the trend of emigration to the western part of the country, and creating a “winning” region among the “losing”. A similar situation is described by Kovacs (2004) in the relationship of Hungarian regional centres and the significant pull function of the area on the Budapest-Vienna axis.

In the period considered, the share of the East-West internal migration volume on the total internal migration volume of eastern regions and districts was approximately 11.6%. Only the “Bohemian” districts of Havlíčkův Brod and Pelhřimov with more than 32% share, followed by Brno-město with 20% and Ostrava-město with 15% were significantly different. Halás, Klapka and Tonev (2016) speak about a considerable dominance of migratory flows at the micro-regional level, approximately at the level of the territory of municipalities with extended competences, i.e. migration for shorter distances which can compensate for daily commuting. In contrast, they consider cross-border migration marginal in general as the regional (kraj) borders relatively well correspond with the defined micro-regional migration boundaries, thus illustrating the anticipated self-containment of the migration regions. The district (LAU 1 level) is also seen as rather problematic for migration analysis because it obscurs the intra-district migratory flows and
Figure 3 Net migration flows above 2,500 migrants at the level of Regions for 1991–2015
Source: CZSO (2016a), own calculations.
underestimates an already low migration mobility (Kupiszewski et al. 1999). As is further pointed out by Polášek (2005) for 1991–2004, the Zlín and Olomouc Region have particularly high proportions of migration within the districts, while low proportions are observed for the Central Bohemian and South Moravian Region. Despite these difficulties, the level of regions and districts is sufficient for the needs of the analysis in the longer term and for the assessment of the migratory loss, naturally, with the risk of reduction of the influence of regional centres as stressed by Aleš (2001).

The overall negative balance of not only all Eastern regions but also all Eastern districts with the West justifies the East-West migration relations as significant at the level of regions, in particular when they were not compensated for by the migratory counter-flow and lead to a long-term loss of population. The net migration flows over 2,500 migrants for 1991–2015 demonstrate the dominance of the capital city of Prague and the Central Bohemian Region. In the total negative balance of the East with the West –88.8 thousand migrants the capital city of Prague participated with 53.5 thousand people, which was more than seven times the second largest interregional balance in the Czech Republic.

The relative size of migratory counter-flows from the West to the East differed significantly among the eastern Regions with the west-east gradient, where migrants from the West in the Vysočina Region constituted almost 44 % of the migration volume, while in the Moravian-Silesian Region it was less than 31.5 %. The relative impact of the migratory loss on the region’s population measured by NMR significantly distinguished the South Moravian Region from the most influenced Moravian-Silesian Region (see Table 3).

The correlation between the NMR and the NIR at the level of districts over 1991–2015 has undergone a significant change. This shift is described by the Webb’s classification. For greater objectiveness of the examination, the Brno-město and Brno-venkov as the districts with the most intense migration-suburbanisation relationship were merged, so that the significantly positive migration balance of the suburbanization district of Brno-venkov did not affect the overall picture. The resulting types of A–D districts are positive in terms of total population balance; types of E–H are negative (see Figure 4). To examine migration and natural balance in the area of the northern periphery of the South Bohemian Region, Popjaková, Danielová and Valešková (2018) used a modified Webb’s classification containing

<table>
<thead>
<tr>
<th>Region (kraj)</th>
<th>In-migration</th>
<th>Out-migration</th>
<th>Net migration</th>
<th>Migration turnover</th>
<th>NMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vysočina</td>
<td>43,453</td>
<td>55,437</td>
<td>–11,984</td>
<td>98,890</td>
<td>–0.935</td>
</tr>
<tr>
<td>Jihomoravský kraj</td>
<td>52,614</td>
<td>69,563</td>
<td>–16,949</td>
<td>122,177</td>
<td>–0.591</td>
</tr>
<tr>
<td>Olomoucký kraj</td>
<td>27,377</td>
<td>40,737</td>
<td>–13,360</td>
<td>68,114</td>
<td>–0.831</td>
</tr>
<tr>
<td>Zlínský kraj</td>
<td>16,542</td>
<td>26,548</td>
<td>–10,006</td>
<td>43,090</td>
<td>–0.675</td>
</tr>
<tr>
<td>Moravskoslezský kraj</td>
<td>30,956</td>
<td>67,424</td>
<td>–36,468</td>
<td>98,380</td>
<td>–1.16</td>
</tr>
<tr>
<td>The East</td>
<td>170,942</td>
<td>259,709</td>
<td>–88,767</td>
<td>430,651</td>
<td>–0.855</td>
</tr>
</tbody>
</table>

Source: CZSO (2016a), own calculations.
only five types of territory according to the importance of migration in relation to the natural increase rate – significantly positive, positive, preserving, negative and significantly negative. When applied to Eastern districts, this approach would not produce significantly different results, and therefore the original classification was used.

When it comes to population dynamics of the Eastern districts in 1991–1995, the general situation was relatively positive. Using the Webb’s classification, 15 out of 26 districts were found in positive types A–D, of which four districts (Jihlava, Břeclav, Olomouc, Nový Jičín) were in bilaterally positive types B and C. The overall positive balance of Eastern districts was mainly due to a significant natural increase as there were only two districts of type C and D (Olomouc and Kroměříž) where the migration balance was higher than the natural balance and the population change was positive. The East, as a hypothetical region, could then be marked within the same classification as type A (negative net migration, natural increase, positive population change). Seeking for a potential cause in their analysis of the migration-unemployment relationship, Kupiszewski et al. (1999) identify for the year 1994 a clear link between unemployment at the district level and net migration: The higher the unemployment, the lower the net migration.

In 2011–2015, the situation was considerably different. Only eight districts were classified as positive types A–D. These involved the entire South Moravian Region with the exception of Hodonín district with a high unemployment rate, and the core or near regional core districts of Frýdek-Místek, Jihlava, Olomouc). Twelve districts fell within type G where the migration loss outweighed the natural decline. The East as a whole during this period represents type G. Four districts (Karviná, Jeseník, Bruntál, and Ostrava-město) were classified as having a significantly negative population dynamic. All of them are also among districts with the highest unemployment rates in the Czech Republic (see Figure 5).

If we assessed the 1991–2015 period containing both the situation of a generally higher natural increase in 1991–1995 and that of a significantly negative net migration in 2011–2015 as a whole, then the prevailing type of district would be type G (represented 10 times). The only district found in the positive types of B and C would be Olomouc (type C). In the population gain types A–D, there are eight districts (four South Moravian districts and the core or near regional core districts of Frýdek-Místek, Jihlava, Olomouc, and Nový Jičín) – see Figure 6.

Ouředniček and Přidalová (2014) mention for the 2000–2013 period rather stagnant or losing municipalities and districts in Moravia, and the migratory gains of a large number of municipalities (and districts) in Bohemia, emphasising even greater negative difference for smaller municipalities outside the metropolitan areas of the largest Moravian cities (Brno, Ostrava, and Olomouc). The metropolitan areas themselves were also growing at a slower pace, mainly due to population losses in the core city. Čermák, Hampl and Müller (2009) call this an internal redistribution of the population within metropolitan regions (see Figure 7).

When examining the age aspect of migration in the East in 1991–2015, a trend of increasing migrants’ average age corresponding to the national tendency can be observed. The largest share on migration generally had the 20–39 years old. The share of persons aged 20–24 years on net migration gradually decreased while the share of persons aged 25–39 years increased with growing importance of the older category. When comparing the national age structure of migrants for years 1991–1995 and 2011–2015 with the structure of East-West migrants, the group aged 25–34 years is more prevalent in the East-West migrants in 2011–2015. This feature is also evident for average rate for 1991–2015 (see Figure 8). At the end of the reference period, it is therefore possible to find a shift compared to the conclusions presented by Pavlík et al. (2002) in terms of the representation of the 25–34 category on the overall migration, when in the East there is no such significant reduction in the share of this age cohort compared to the Czech Republic.
Figure 4 Eastern districts typology based on the natural increase rate (NIR) and net migration rate (NMR) in 1991–1995
Source: CZSO (2016a), own calculations.
Figure 5: Eastern districts typology based on the natural increase rate (NIR) and net migration rate (NMR) in 2011–2015

Source: CSO (2016a), own calculations.
Geographical aspects of East-West migration in the Czech Republic between 1991–2015

Figure 6: Eastern districts typology based on the natural increase rate (NIR) and net migration rate (NMR) in 1991–2015

Source: CZSO (2016a), own calculations.
Figure 7 Eastern districts typology by natural increase rate (NIR) and net migration rate (NMR) in 1991–2015, 1991–1995 and 2011–2015.
**Figure 8** The share of migrants of particular age groups on the total number of migrants from East to West (EW) and in the Czech Republic as a whole (CZ) in 1991–2015, 1991–1995 and 2011–2015.

Source: CZSO (2016a), own calculations.

**Table 4** The age structure of net migration (NM) and the index of migration efficiency (Ime) of East with West in 1991–2015

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>0–4</td>
<td>−237</td>
<td>−2.62</td>
<td>−2,873</td>
<td>−24.78</td>
<td>−6,237</td>
<td>−15.62</td>
</tr>
<tr>
<td>5–9</td>
<td>349</td>
<td>8.11</td>
<td>−751</td>
<td>−14.89</td>
<td>−1,939</td>
<td>−8.60</td>
</tr>
<tr>
<td>10–14</td>
<td>91</td>
<td>02.VI</td>
<td>−563</td>
<td>−17.64</td>
<td>−1,935</td>
<td>−11.63</td>
</tr>
<tr>
<td>15–19</td>
<td>−283</td>
<td>−4.07</td>
<td>−712</td>
<td>−22.07</td>
<td>−2,822</td>
<td>−12.32</td>
</tr>
<tr>
<td>20–24</td>
<td>−2,983</td>
<td>−18.05</td>
<td>−2,115</td>
<td>−26.45</td>
<td>−13,963</td>
<td>−22.14</td>
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<tr>
<td>25–29</td>
<td>−1,708</td>
<td>−13.74</td>
<td>−6,026</td>
<td>−35.16</td>
<td>−26,375</td>
<td>−32.14</td>
</tr>
<tr>
<td>30–34</td>
<td>−218</td>
<td>−3.45</td>
<td>−5,396</td>
<td>−34.18</td>
<td>−17,077</td>
<td>−30.11</td>
</tr>
<tr>
<td>35–39</td>
<td>−113</td>
<td>−2.53</td>
<td>−2,729</td>
<td>−27.52</td>
<td>−7,861</td>
<td>−23.60</td>
</tr>
<tr>
<td>40–44</td>
<td>−233</td>
<td>−7.28</td>
<td>−1,328</td>
<td>−23.79</td>
<td>−4,538</td>
<td>−20.27</td>
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<tr>
<td>45–49</td>
<td>−204</td>
<td>−8.11</td>
<td>−875</td>
<td>−21.85</td>
<td>−3,348</td>
<td>−19.43</td>
</tr>
<tr>
<td>50–54</td>
<td>−116</td>
<td>−6.94</td>
<td>−537</td>
<td>−18.46</td>
<td>−1,697</td>
<td>−13.62</td>
</tr>
<tr>
<td>55–59</td>
<td>68</td>
<td>45.IV</td>
<td>−347</td>
<td>−14.17</td>
<td>−505</td>
<td>−5.13</td>
</tr>
<tr>
<td>60–64</td>
<td>145</td>
<td>IX.94</td>
<td>−102</td>
<td>−4.39</td>
<td>229</td>
<td>11.76</td>
</tr>
<tr>
<td>65–69</td>
<td>156</td>
<td>12.VI</td>
<td>−112</td>
<td>−6.82</td>
<td>89</td>
<td>1.47</td>
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<tr>
<td>70–74</td>
<td>97</td>
<td>09.1</td>
<td>−120</td>
<td>−11.21</td>
<td>−61</td>
<td>−1.22</td>
</tr>
<tr>
<td>75+</td>
<td>−46</td>
<td>−1.73</td>
<td>−388</td>
<td>−15.91</td>
<td>−727</td>
<td>−5.94</td>
</tr>
<tr>
<td>Total</td>
<td>−5,235</td>
<td>−6.57</td>
<td>−24,974</td>
<td>−25.93</td>
<td>−88,767</td>
<td>−20.61</td>
</tr>
</tbody>
</table>

Source: CZSO (2016a), own calculations.
The East-West migration balance underwent similar development in the 1991–2015 period in terms of shifting the main migratory loss into a cohort of higher age, but other specifics were identified in the individual five-year periods too. In 1991–1995, some age cohorts, mostly those of non-productive age, had a positive migration balance (5–14 and 55–74 years). This lasted for the post-productive component until 2000. In the same period, the age group of 20–29 years old accounted for almost 90 % of the migration loss. At the end of the reference period, it was less than 33 % as the cohort of 30–39 years old and 0–4 years old showed a continuous increase over the whole period of 1991–2015. The trend, where the capital city of Prague (the most important destination of migrants from the East) receives mainly young people, probably students and younger persons migrating for economic reasons, and loses older people and children, is also pointed out by Ouředníček and Přidalová (2014).

The significance of the migration trend of young adults under 39 years together with the 0–4 group from the East to the West can also be demonstrated by the East-West index of migration efficiency. This parameter grew steadily up until 2010. After 2010, although a slight decrease was observed, the overall index maintained significantly higher values until the end of the reference period compared to 1991–1995 (see Table 4).

In 2011–2015 the Index reaches approximately ten times the value of the 1991–1995 period for the age cohort of 0–4 and 30–39. In addition, the cohort 20–44 is below –20 for the entire 1991–2015 period (see Figure 9). In this regard, Čermák, Hampl and Müller (2009) note that the total net migration is no longer important, but the specific age net migration remains significant. The above findings enable us to confront Přidalová and Klsák (2018), who point out that while the Bohemian (approximately the West) municipalities were attractive for migrants in the period both before and after the economic crisis in 2008, the Moravian (approximately the East) municipalities typically have values of net migration close to zero in both periods. It is necessary to be aware at least of the north-south gradient within the Moravian and Silesian districts (i.e. the internal dominance of the South Moravian Region, especially of the city of Brno and its hinterland).

In terms of the impact of internal migration on population movement measured by the NMR, the most affected area of the East was the Moravian-Silesian Region, which in the 1991–2015 period lost 20.5 thousand inhabitants by migration with other

![Figure 9 Age specific East-West migration efficiency in 1991-2015](image)
regions of the East and with the West another 36.5 thousand inhabitants. In addition, the Moravian-Silesian Region cannot be taken as an internally homogeneous territory as the districts of Karviná and Ostrava-město function as source districts, while the target districts involve Frýdek-Místek, Nový Jičín and Opava. The most important migration flow in the Moravian-Silesian Region from the perspective of the population loss through internal migration is, identically with the trend of the East, flow to the capital city of Prague along with the Central Bohemian Region (loss of 26.9 thousand migrants, i.e. almost 74% of the total loss with the West). Ivan and Tvrdý (2007) came to similar conclusions in the Moravian-Silesian Region for the 1992–2006 period, with short-distance migrations decline and preference for greater distance (migration to Brno and Prague), which especially concerned unmarried university students with minimal or no work experience (26–35 years).

The age specific index of migration efficiency (especially for the 20–39 years cohort) is significantly higher in the migration relationship between the Moravian-Silesian Region and Prague plus the Central Bohemian Region than in the East-West relationship. It reaches values below –70 for the 25–29 cohort with a culmination in 2001–2005 and then stabilises at slightly higher values. The index of migration for the 20–39 cohort for the entire 1991–2015 period is lower than –50 (with a minimum reaching –66.3). Therefore, it can be argued that for this age group migration is very effective as the migration loss of the Moravian-Silesian Region with Prague and the Central Bohemian Region in this cohort is not compensated for with a significant migration counter-flow. In 2011–2015, the migration efficiency index for the 20–34 age group was even lower than –60 (see Figure 10). In the case of Ostrava as the centre of the Moravian-Silesian Region, Ouředníček and Přidalová (2014) emphasize weak suburbanisation and urbanisation (similarly to Brno). They also identify the partially suburban district of Frýdek-Místek (in the case of Brno, the Brno-venkov, Vyškov, and Blansko districts) as a district with the largest suburbanisation migratory profit. According to the results presented, it may be argued that the Eastern metropolitan areas (especially Ostrava) experience a significant impact of the migration balance with the capital city of Prague and the Central Bohemian Region at the expense of the potential suburbanization flows.

**Figure 10** Age specific migration efficiency of the Moravian-Silesian Region with Prague and the Central Bohemian Region in 1991–2015
Source: CZSO (2016a), own calculations.
CONCLUSIONS

In the 1991–2015 period, the internally inhomogeneous area of the East underwent a dynamic migration development, and the emigration of young people to the West, especially to Prague and its hinterland, influenced the population of both the source and the target territories. After the intensification of relations in 2000 and onwards, the Eastern migration loss of population with the West raised to an average of 5,000 inhabitants per year, which was further exacerbated by the loss of population due to natural decline. Over 25 years the non-core districts transferred from population increase to population decline, in particular as a result of internal migration. Thus, the population loss was not adequately compensated for by positive balance of foreign migration.

The south-north polarized area of the East also showed mutual intense migratory relations as the Moravian-Silesian Region represented an important migration source for all other regions of the East throughout the given period. The South Moravian Region, in particular the city of Brno, in contrast, acted as the destination for migrants from all the other Eastern regions.

When comparing the national age structure of migrants in 1991–1995 and 2011–2015 with the structure of the East to West migrants, we can notice a substantial difference caused by the more significantly represented 25–34 year group in the East-West migrants in the latter period. This difference is also evident for the average age of migrants for the 1991–2015 period. The significance of the trend of young adult population loss up to the age of 39 years from the East to the West, including the 0–4 group is demonstrated by the index of migration efficiency. The Index continued to grow steadily until 2010 and then remained at a significantly higher rate than in the 1991–1995 period until the end of 2015. The age specific index of migration efficiency (especially for the 20–39 cohort) for the migration relationship of the Moravian-Silesian Region with the capital city of Prague and the Central Bohemian Region is considerably higher than that of the East-West relationship. It achieves values below –70 for the 25–29 cohort with culmination in the 2001–2005 period and subsequent stabilisation at a slightly lower level.

The loss of the young population in the East to the West, especially in the Moravian-Silesian Region showing a significantly negative balance and a high migration efficiency both with the West as well as the other regions of the East, clearly represents a very negative trend. As demonstrated by Polášek (2005) and Valenta (2009) for periods before the year 2004, a high number of East to West migrants are young academically educated persons, and based on the findings discussed in this paper, it can be assumed that this trend continued in the 2005–2015 decade as well. The driving engine behind migration from East to West, in line with the neo-classical theory, can be attributed to the expected improvement in the quality of migrants’ life, namely in terms of better employment, higher salaries, attractive education opportunities, and, in the case of the Moravian-Silesian Region, healthier environment. Naturally, there are also notable adverse factors, especially housing availability in the most frequent destination, Prague. The current migration tendencies after the year 2015 continue to show the demonstrated trend of the East to West youth brain drain, the consequences of which are likely to lead to further deterioration of the already problematic situation of the East (with exception of the city of Brno and its hinterland) and as such deserve further research attention.

References


CZSO 2016b: Demographical yearbook.


Résumé


Pro směrovou a věkovou analýzu dopadu migrace byla využita typologie porovávající přirozenou měrou a migraci obyvatel pro a zkoumání síly migračního vztahu ukazatel efektivity migrace, a to na úrovně krajů a okresů. Jako zdroj dat byla využita databáze vnitřní migrace Českého statistického úřadu za období 1991–2015.

Východ ve vztahu k Západu ztrácí po celé období obyvatelstvo migrací, když bylo zintenzivněno začátkem období 2000 příchází migraci průměrně o 5 000 obyvatel ročně, což bylo dále umocněno ztrátou obyvatelstva přirozenou měrou. Okresy nenapojené přímo na metropolitní jádro se během 25 let přesunuly z populací pozitivních do populační ztrátových, a to zejména vnitřní migraci, což nebylo dostatečně kompenzováno migrací zahraniční. Celková ztráta Východu vnitřní migraci necelých 89 tis. osob během 25 let je velikostně srovnatelná se středním krajským městem přibližně o velikostí Pardubic.

V rámci polarizovaného prostoru Východu fungovaly rovněž vzájemné intenzivní migrační vazby, kdy Moravskoslezský kraj představoval po celé sledované období migrační zdroj pro všechny ostatní kraje Východu. Jihomoravský kraj, zejména statutární město Brno (méně u jeho zázemí, které plnilo funkci suburbanální zóny a získávalo obyvatelstvo migrací zejména z Brna), byl naopak pro ostatní kraje Východu krajem cílovým.


z Východu na Západ, jehož důsledky pravděpodobně povedou k dalšímu prohlubování obtížné situace území a zaslouží si další zkoumání.

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