

Identification of Regions of Transport Marginality in Slovakia

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Abstract

Though in some regions in the west and south-west Slovakia a launch of rapid economic development has been observed in recent years, most of the regions located in the rest of the country's territory still remain in an economic and social depression. One of the reasons is their transport position within the country, as well as within the major transport networks. Some of the weak regions suffer with low quality of their own transport infrastructure and bad accessibility towards major centres and transport routes. We will show regions of transport marginality according to a set of selected indicators.

Key words: transport infrastructure, accessibility, marginality, peripherality

Introduction

Territorial differences in dynamics of economic development as well as life-quality aspects in Slovakia have become a frequent issue of Slovak human geography. Transport infrastructure is highlighted as one of the key factors causing growth of regional disparities in territory of the Slovak Republic.

Concerning the issues of regional disparities' growth closely related to geographical position, discussions on spatial marginality or peripherality occur frequently. Hurbánek (2004) emphasizes the need to differ between the terms „peripherality“ and „marginality“ in a more detailed interpretation. However, it is also possible to see them as synonyms. This is how we intend to deal with the two above mentioned terms in the following paper.

Leimgruber (1994) defines four elementary approaches to identification of marginality (or peripherality): geometric, ecological, economic and social. Economic aspect of marginality can be derived from the production potential, accessibility, infrastructure (including transportation networks), attractivity and some other factors. Relationship between transport infrastructure and marginality is very close, although the term „transportation marginality“ is very rare in scientific studies. Referring to Leimgruber's study, the view on the economic marginality can be focused on accessibility of transport networks, thus transportation marginality can be derived from the position towards the key elements and lines of transportation networks. We do not intend to introduce a definition of „transport marginality“, our intention is to pay attention to the fact, that an unfavourable accessibility of major transport infrastructure can significantly add to economic marginality. Using the values of accessibility towards a set of selected transportation elements, we will identify the regions within Slovakia with unfavourable position towards international and inter-regional transportation networks.

It is almost impossible to identify direct effects of transportation infrastructure on economic and social development, however, it seems that there exists a correlation between investments into major transportation infrastructure (or position of supra-regional transportation networks, respectively) and dynamics of economic indicators, such as per capita GDP or unemployment. However, this correlation can also result from the historical agglomeration process (NFPFFG 2000).

In Slovak scientific studies we find several authors who perceive the issue of marginality in horizontal aspect. Pašiak, Gajdoš and Falt'an (2001) identified a group of marginal regions in the territory of Slovakia, according to selected social, economic and spatial indicators. We can name also several Slovak geographers who either deal with the marginal or peripheral regions from the aspect of economic problems and social particularities of these regions (Spišiak 1999) or pay attention to cross-border cooperation in peripheral regions of Slovakia (Halás 2005). Hurbánek (2004) focuses on some theoretical aspects of marginality/peripherality in relationship with definitions of rural space.

Identification of regions of transport marginality - methodology

The aim of the analysis is identification of marginal regions of Slovakia based on their position towards major transportation networks. For this purpose, we used quite simple indicators of accessibility towards a set of selected elements of transport infrastructure. All existing types of transport infrastructure have been considered, with exception of pipe-line transportation which represents very specific means of transport with no (or very low) direct effect on social and economic development of regions.

The following transportation networks of Slovakia were used in the analysis (the networks outside Slovakia were not considered):

- Arterial railways (double-track electrified lines)
- Highways and express-ways
- Public river-ports
- Public airports
- Combined-transport terminals

Location of principal linear and nodal elements of transportation networks is a result of several factors (natural conditions, historical urban development, etc.). It is impossible to locate the principal international/inter-regional transportation networks in every region. Better accessibility of transport infrastructure will have a positive effect on regional development, however, the spatial impact of principal transportation infrastructure elements usually reaches far behind the regions of their location.

Our territorial analysis was based on administrative territorial division of Slovakia into 79 districts valid from 1996 to 2003, although we are aware of the fact that this territorial division does not respect natural transport regions and daily urban systems, which has been criticised by various experts including geographers. However, the districts serve as statistical regions which also enables an easy convertibility into GIS.

Two modifications were made in the above mentioned territorial division of Slovakia, respecting needs of the submitted analysis: a large Bratislava region was created from the area of Bratislava city (consisting of urban districts Bratislava I – V) and the rest of Bratislava County (districts of Malacky, Pezinok and Senec) and a large region of Košice was created analogously (Košice-okolie and urban districts of Košice I – IV). Finally, we analysed 68 regional units, of which 66 are equal to relevant statistical districts. Due to this step, we have moved away a bit from the territorial division into districts, that is why more neutral term „region“ is going to be used in the following text instead of „district“.

To identify the position of the regions towards transport infrastructure, we used indicator of the shortest metric distance (in km, along roads or railways) of each region from the nearest element (line, node) of each transport infrastructure network. For measurement of the distances, former administrative centres of districts were used. These centres represent residential and economic cores of the regions (former districts). In disputeable cases, we used other criteria, such as population size or intra-regional transport position.

Accessibility of principal railways was measured on railway tracks, in case of airports road distance was used. In case of river ports and combined transport terminals, we applied arithmetic mean of road and railway distances (where possible; for regions without railways only road distances were utilized). In disputable cases (e. g. when the shortest distances along roads and railways showed two different airports) we applied the lowest arithmetic mean of both road and railway distances to identify the nearest infrastructure element.

The network of highways and express-ways in Slovakia requires a specific approach because it is still discontinuous at the present stage, represented by several disconnected sections. A large continuous highway system has been completed so far only in western Slovakia, including several sections of the D1, D2 and D4 highways and R1 express-way (272 km in total in 2003), spreading from border lines on Czechia, Austria and Hungary in western and

southwestern directions and reaching to Ladce in the north and Nitra in the east. This large system represents an important element in international and inter-regional transport, thus plays a crucial role in economic development of adjacent regions. In central and eastern Slovakia, only several separated sections of highways and express-ways are in operation. Accessibility of highways and express-ways (both types can be considered as equal) was measured by two indicators. The first one indicates distance to the nearest highway/express-way section (at least 20 km long). The second indicator shows accessibility of the large continuous highway system in western Slovakia (described above). As the final indicator, representing general accessibility of highways/express-ways, we used arithmetic mean of both values.

Generally, existence of a certain transport infrastructure in a region means, that the region was given the value 0 km. A value (in kilometres) equivalent to the shortest distance from a certain transport infrastructure element was assigned to region where the respective type of infrastructure is missing. The values for the group of 68 regions were transformed into a scale reaching from 0.00 to 100.00 for each type of transport infrastructure. In the scale, the value 100.00 was assigned to region with the best accessibility value, and vice versa, the value 0.00 to region with the most unfavourable accessibility value. The other regions were given values from the interval between 0.00 – 100.00. The following equation was used to standardize the values:

$$h_{xi} = [(x_{i \max} - x_i) / (x_{i \max} - x_{i \min})] \cdot 100$$

where x_i is the value of accessibility for region i before standardization, $x_{i \max}$ a $x_{i \min}$ are the highest/lowest values of the accessibility parameter and h_{xi} is standardized value of the parameter for region i ; i reaches from 1 to 68 (= number of regions).

Thus each region was characterized by a set of 5 parameters, with each one representing accessibility of a certain type of transport infrastructure.

Results of the research

Each of 68 regions of Slovakia was characterized by a synthetic value, created as an arithmetic mean of parameters 1 – 5 for each region. The synthetic values lie within the interval of 15.40 (for Medzilaborce region) to 100.00 (Bratislava region). According to the

level of the synthetic value, the regions were divided into 5 categories. The territorial units with synthetic values equal to 40.00 and less can be considered as regions of strong transport marginality, the regions with values within the interval 40.01 – 60.00 as regions with indications of transport marginality (see Fig. 1).

The regions of strong transport marginality form a vast territory in southern part of central Slovakia (regions of Veľký Krtíš, Lučenec, Poltár, Rimavská Sobota, Revúca) and in north-eastern Slovakia (Bardejov, Svidník, Stropkov, Medzilaborce, Humenné, Snina and Sobrance). These regions have a peripheral position towards important transport corridors and suffer with low quality of their own intra-regional transport networks, with no highways and underdeveloped (or absent) railways inadequately connected to the major railway lines. Regions of Poltár, Stropkov and Medzilaborce stay separate from the 1st class roads network. Regions of transport marginality lie in a periphery of the country, which is even strengthened by the fact that neighbouring regions of Hungary, Poland and the Ukraine have also a peripheral position in these countries. From this aspect, the most difficult seems to be the position of north-eastern Slovakia. Moreover, all these regions lie far from the pan-European multi-modal corridors which handicaps them in any attempt to apply for state or EU finances for major infrastructure development and shifts a complete modernization of their transport networks into a very far future.

In the category with values between 40.01 – 60.00 we can find several regions of central Slovakia (Tvrdošín, Brezno, Detva) but eastern Slovakia predominantly (Kežmarok, Stará Ľubovňa, Levoča, Sabinov, Spišská Nová Ves, Rožňava, Vranov nad Topľou, Michalovce a Trebišov). These regions are remote from the important transport corridors, but they have quite favourable accessibility towards the major transport lines.

Both above mentioned categories of regions are concentrated in southern and northern parts of central Slovakia and in northern, north-eastern and eastern part of eastern Slovakia.

Transportation networks in the southern part of central Slovakia in territorial belt from Levice to Rožňava used to be effected by a historical fragmentation in the 19th and 20th centuries. This resulted into a relatively slow economic development of these regions. Neither the socialist period brought any shift towards improvement of transportation linkage of this territory with western Slovakia and Bratislava, although this territory offers magnificent

position and favourable morphological conditions for establishment of a corridor connecting Bratislava and Košice, which was highlighted by Slovak geographers (F. Podhorský, 1974, O. Bašovský, E. Povincová, E. Hvoždárová, L. Hagara 1987, M. Lukniš 1985) and also by official governmental documents guiding regional economic and urban development of the country in the socialist era (Projekt urbanizácie SSR, 1983 update). After 1989, the discussion on so-called „south corridor“ connecting Bratislava and Košice was re-opened again. With general economic and social underdevelopment and vulnerability of southern regions of central Slovakia, there appears a need of an efficient transport Bratislava – Košice axis led through this territory which could also play an important role in east – west communication networks in Europe (J. Paulov, 1996).

Correspondingly, the northeastern territory of Slovakia suffers with the peripheral position. This area was neither in the existence of Austro-Hungarian Empire, nor during the socialist period properly equipped with railways, which brought about (together with other factors) a retardation of economic and urban development. Its position in the neighbourhood of peripheral regions of Poland and the Ukraine is the reason why this territory has not been very attractive for principal international corridors.

In the north of central Slovakia one can find slightly isolated Orava region with unpropitious transport position, mostly due to morphological reasons (mountain barrier in the south part of Orava). The Orava region has always been a peripheral area, strongly underindustrialized yet in the 1950s, although lying not far from the prestigious historical Košice-Bohumín railway. We can sum up common features of regions of transport marginality in Slovakia as follows:

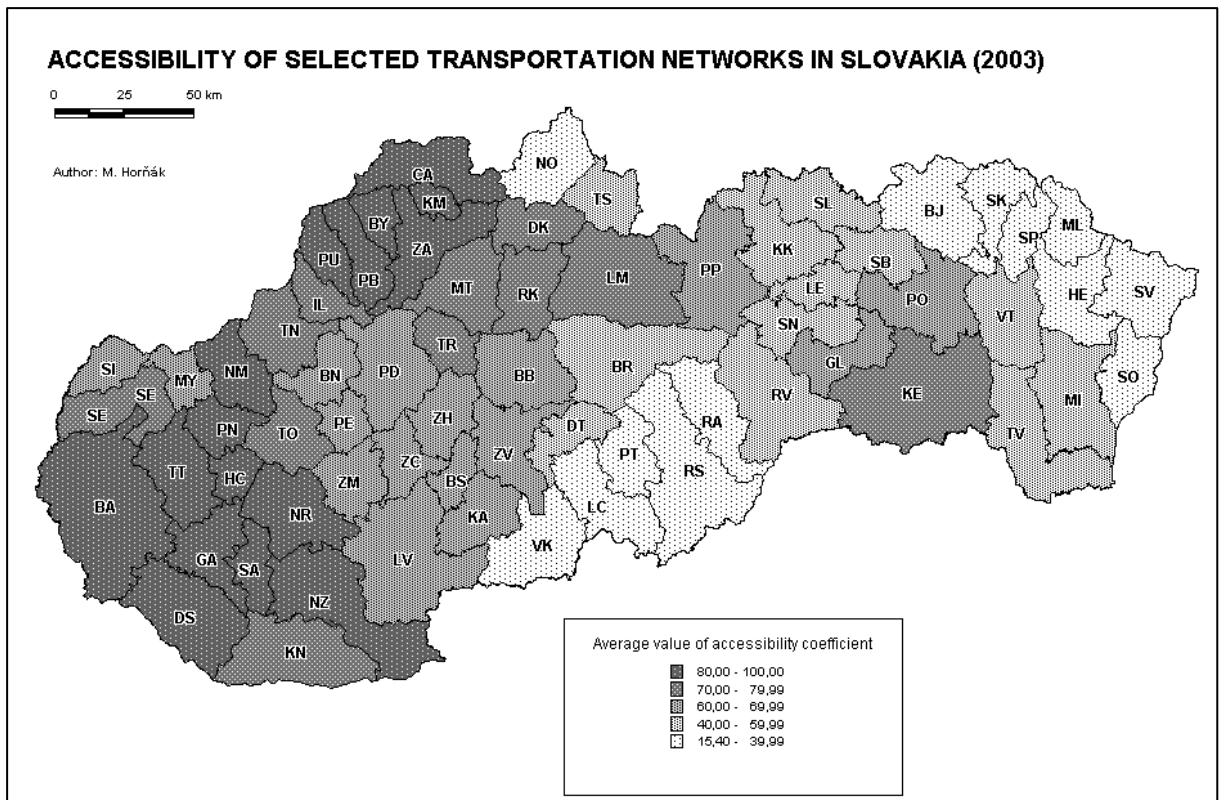
- peripheral position within the country,
- adverse accessibility of arterial railways or total absence of railway network,
- adverse accessibility of highways/express-ways, underdeveloped 1st-class road network,
- adverse accessibility of river-ports, combined-transport terminals,
- position apart from pan-European multimodal corridors,
- shortage of investments into major transportation infrastructure development,
- neighbourhood of underdeveloped regions of Poland, Hungary and the Ukraine with low quality of transport infrastructure.

Conclusion

The submitted analysis has shown a long-lasting transport peripherality of certain regions of Slovakia. This peripherality has predominantly historical roots, however, it was reinforced in the period of socialist industrialization and urbanization. Today, construction of highway and express-way networks is presented as one of the solutions that can improve position of the peripheral regions. Nevertheless, it is very difficult to guide domestic or foreign companies and force them to invest into transport infrastructure in regions with low capital returnability. Contemporary dynamics of economic development in regions of southern or northeastern Slovakia, as well as low traffic loads in these territories do not guarantee a quick returnability of investments into major transport infrastructure. This is the reason why development and modernization of transportation networks in these regions is predominantly in the hands of the state government.

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Figure 1



References:

- Bašovský, O., Povincová, E., Hvoždárová, E., Hagara, L. (1987), Juhoslovenské okresy v širšom geografickom kontexte a potenciál ich ďalšieho rozvoja, *Acta Facultatis Rerum Naturalium Universitatis Comenianae, Geographica*, 27, Bratislava: 15 - 52.
- Halás, M. (2005), *Cezhraničné väzby, cezhraničná spolupráca (na príklade slovensko-českého pohraničia s dôrazom na jeho slovenskú časť)*, Univerzita Komenského Bratislava. [ISBN 80-223-2054-4]
- Hurbánek, P. (2004), Zmeny úlohy priestorového aspektu v interpretáciách pojmov periférnosť (marginalita) a vidiek, *Geografie a proměny poznání prostorové reality*, Ostravská univerzita, Ostrava: 102-110. [ISBN 80-7042-788-4]
- Leimgruber, W. (1994), *Marginality and marginal regions: problems of definition*, in Chang-Yi, David Chang - Sue-Ching, Jou - Yin-Yuh, Lu (eds.), *Marginality and development issues in marginal regions*, Proceedings, 1-7 August 1993. National Taiwan University and International Geographic Union, Taiwan: 1-18.
- Lukniš, M. (1985), Regionálne členenie SSR z hľadiska jej racionálneho rozvoja, *Geografický časopis*, 37, 2 - 3, SAV Bratislava: 137 - 163.
- National Focal Points of Finland, France and Germany (2000): *Study Programme on European Spatial Planning*, Working Group 1.1, Geographical Position, Final Report, Part 1, 120 pp.
- Pašiak, J., Gajdoš, P., Falt'an, Ľ. (2001), Regional Patterns in Slovak Development, *Central Europe in Transition: Towards to EU Membership*, Regional studies association. Warszawa: 330-363.
- Paulov, J. (1996), The Transformation Process in Slovakia: Some Thoughts on Spatio-Temporal Regularities, Regional Pattern and Possible Regional Shift, *Acta Facultatis Rerum Naturalium Universitatis Comenianae, Geographica*, 37, Bratislava: 112-121.
- Podhorský, F. (1974): *Doprava*, in Plesník, P. et al. (eds.), *Slovensko. Ľud – part I.*, Obzor, Bratislava, 183 - 210.
- Projekt urbanizácie SSR*, 1st update, URBION, Bratislava, 1983.
- Spišiak, P. (1999), Poľnohospodárstvo v marginálnych oblastiach (na príklade Belych Karpát), *Acta Facultatis Studiorum Humanitatis et Naturae Universitatis Prešovensis, Prírodné vedy, Folia geographica*, 3: 199-203.