Peripheral regions in Lithuania: the results of uneven development

Gintarė Pociūtė-Sereikienė

Published online: 06 Feb 2019.

Submit your article to this journal ☐

View Crossmark data ☐

Routledge
Taylor & Francis Group

Regional
Studies
Association

SHORT ARTICLE

OPEN ACCESS   Check for updates

Peripheral regions in Lithuania: the results of uneven development

Gintarė Pociūtė-Sereikienė 🄳

ABSTRACT
Since the collapse of the Soviet Union, Lithuania has been struggling with rapidly increasing centre–periphery polarization. There has been a growth in major cities and a significant decline in peripheral rural territories. The ongoing peripheralization is deepening the gap between centre and periphery. This paper introduces a peripheral region determination model, whilst highlighting that this complex geographical issue combines location, demographic, social, economic, cultural, political and natural factors. By analyzing the case of Lithuania using 1992–2012 data at the LAU-1 region level, the study reveals a polarized picture of the country and highlights the factors influencing peripherality in different regions.

INTRODUCTION

In recent years many European countries have been experiencing rapid growth of their capital cities and significant decline in peripheral rural territories and former regional centres, which is often referred to as centre–periphery polarization (Khün, 2015; Lang, 2015). This is especially relevant in Central and Eastern Europe (CEE) (Haase, Rink, Großmann, Bernt, & Mykhnenko, 2014), including Lithuania. During the Soviet period, Lithuania developed under a central planning doctrine, which intended to create a unified settlement system (Vanagas, Krisjane, Noorkoiv, & Staniunas, 2002). When Lithuania moved towards a market economy, the settlement system began to transform and decline, increasing polarization (Ubarevičienė & van Ham, 2017).

This paper argues that increasing polarization should be seen as a complex phenomenon influenced by socioeconomic, demographic, location and other factors. It introduces a model to determine the spatial structure of a country, with a particular emphasis on peripheral territories.

The paper is structured as follows. The next section concentrates on the theoretical background, highlighting the meaning of periphery; the third section explains the data and methods

---

CONTACT
(Corresponding author) ✉ Gintarei.pociutei@gmail.com
Institute of Human Geography and Demography, Lithuanian Social Research Centre, Vilnius, Lithuania.

used in the analysis, while the fourth section focuses on the results of the case study which focuses on the peripheral regions in Lithuania. Following this research, one can identify the national peripheral territories that require attention from policy-makers.

THEORETICAL APPROACHES: PERIPHERY, PERIPHERALIZATION, PERIPHERALITY

The dominant approach to understanding uneven development is based on the concept of *centralization–peripheralization* (Daugirdas & Burneika, 2008; Khün, 2015; Lang, 2015). Growth of centres determines peripheralization of other territories not only through centres attracting people but also because they absorb economic potential, infrastructure and governmental functions (Blowers & Leroy, 1994; Eriksson, 2008).

Increasing territorial polarization is leading to the peripheralization of non-metropolitan territories. The appearance of peripheries is claimed to be a consequence of peripheralization (Lang, 2015). Peripheralization can be described as an increase in socio-spatial inequalities, the 'production' of peripheries (Khün, 2015, p. 369), whereas peripherality is the characteristic of a territory, indicating the distance (expressed in statistical values) from the centre (Daugirdas & Burneika, 2008).

The notion of periphery is not rigidly defined in the academic literature and often varies depending on the indicators used. Scholars distinguish peripheries of various types: locational (based on accessibility) (Gutiérrez & Urbano, 1996; Vaishar, 2006), social/economic (Copus, 2001; Nagy, 2005), demographic (Janc, 2006), cultural (Marada, Chromý, Jančák, & Havlíček, 2006), political (Coakley, 2008) or natural (Baubinas & Stanaitis, 2001). Blowers and Leroy (1994, p. 203) offer a more integrated definition of periphery, stating that peripheries are 'geographically remote, economically marginal, politically powerless and socially inhomogeneous' spaces.

The majority of the studies discussed above focus on one specific aspect of peripherality, while this paper combines these aspects and contributes to the literature by explaining periphery-related phenomena using a complex geographical approach, as presented in the model (Figure 1), which gives a broader perspective.

RESEARCH METHODOLOGY

This study is based on a quantitative research methodology with mathematical–statistical analysis of indicators (using ArcGIS 9.0 software). The logical sequence is as follows: selection of indicators; grouping LAU-1 regions into five groups according to the indicators' deviation from the country's average; assigning weight coefficients to the indicators; presenting the spatial structure of the country based on the weighted indicators; and finally revealing the peripheral regions distinguished by the lowest values.

First, 20 indicators[1] were selected, each representing a particular aspect named in the methodological model (Figure 1). The matrix of indicators was composed in line with the academic literature (see the previous section). The selection of indicators was restricted by the availability of data at the local administrative unit (LAU-1) level.[2]

Second, LAU-1 regions were divided into five groups based on the deviation of statistical indicators from the country's average (Figure 2(a)) (LR Vyriausybės Nutarimas, 2003). Every group was evaluated by points (Figure 2(b)): every LAU-1 region was assigned a score determining into which group it fell. This grouping and evaluation of LAU-1 regions was performed separately for every indicator. The period analyzed was 1992–2012, divided into intervals of five years. The points were calculated for each period, as was the cumulative average for every
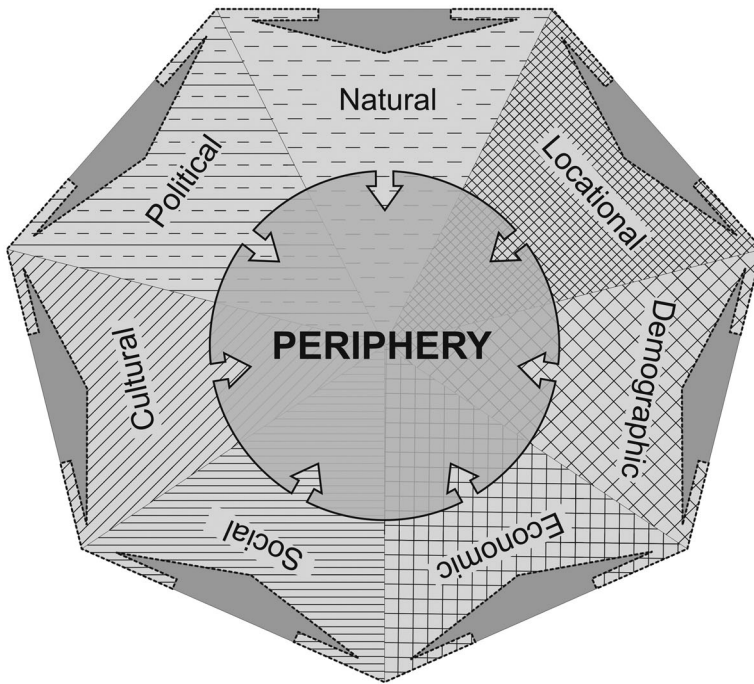
The aspects used to define the peripheral region
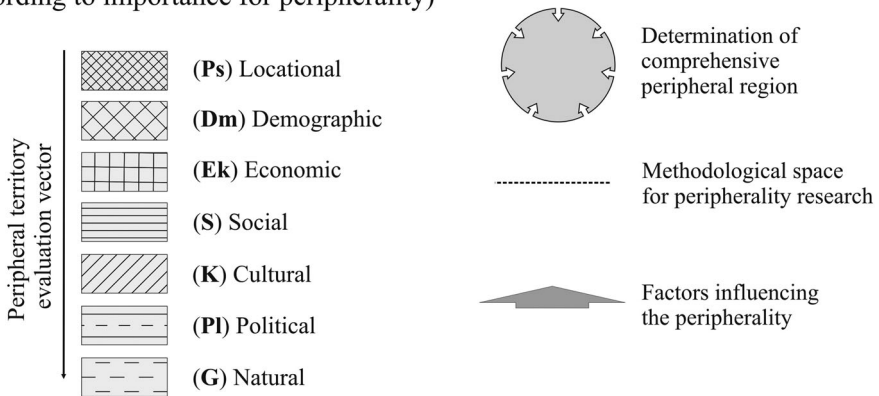(according to importance for peripherality)

(Ps) Locational	
(Dm) Demographic	
(Ek) Economic	
(S) Social	
(K) Cultural	
(Pl) Political	
(G) Natural	

Peripheral territory
evaluation vector

Determination of
comprehensive
peripheral region

Methodological space
for peripherality research

Factors influencing
the peripherality

Figure 1. Identification and evaluation model of peripheral region. Source: Author.

indicator (formula α; Figure 2(c)).

$$(\alpha)\mathrm{Cp} \ = \ \frac{\sum_n M}{n}$$

where Cp is the cumulative average point; M is the sum of all points; and n is number of analyzed
five-year periods

Third, weight coefficients (Misiūnas & Svetikas, 2003) were given to the indicators according
to their importance in order to calculate the general sum and portray the spatial structure of the
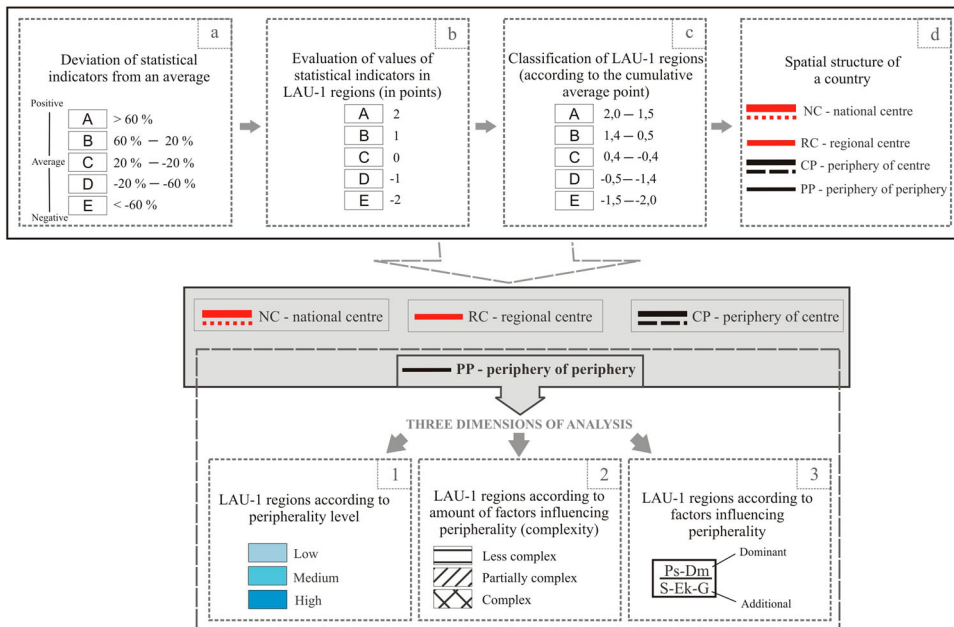
Figure 2. Algorithm of division into clusters of LAU-1 regions. Source: Author.

country based on the combined data (Figure 1). Although the choice of weight coefficients (K) is subjective, it was based on expert assessment and the importance allocated to particular indicators in showing polarization and formation of peripheral regions is based on the analyzed literature. Dislocation ($K = 0.24$), demographic (0.24), social (0.20) and economic (0.22) aspects and their groups of indicators were considered the most important for evaluating peripherality. Meanwhile the cultural–political[3] ($K = 0.06$) and natural (0.04) evaluative aspects only offer some additional information for the conception of periphery and the expression of peripherality, therefore lower weight coefficients were given to the indicators of these aspects (formula β).

$$(\beta) \quad \underset{r=\text{NC,RC,CP,PP}}{S_r} = (\text{Cp}_{\text{Ps}} \times 0.24) + (\text{Cp}_{\text{Dm}} \times 0.24) + (\text{Cp}_S \times 0.20) + (\text{Cp}_{\text{Ek}}$$

$$\times 0.22) + (\text{Cp}_{\text{K−Pl}} \times 0.06) + (\text{Cp}_G \times 0.04)$$

where S_r is spatial structure; r is categories NC, RC, CP and PP (see below) (Figure 2(d)); and $\text{Cp}_{(\text{Ps,Dm, ...})}$ is the cumulative average point that every defined aspect group (Figure 1) received.

Based on the total calculations of weighted indicators, LAU-1 regions were ranked into four categories (Figure 2(d)): national centres (NC), regional centres (RC), peripheries of centres (CP) and peripheries of peripheries (PP). These categories were selected based on the centre–periphery concept in order to show not only two main poles but also possible intermediate categories. In this way, centres (represented by high values of the indicators) and peripheries (identified by lower-than-average values) were identified within the country.

The last step consisted of a deeper analysis of those LAU-1 regions with the lowest scores – those included the PP category – emphasizing three dimensions (Figure 2). These dimensions allow one to look more deeply into the problems that particular regions and municipalities face.

The calculation allowed clustering of LAU-1 regions into three peripherality level groups: low, medium and high. The complexity of peripherality was defined by counting how many factors (called aspects in Figure 1) influence the peripherality of the region. The regions with five or

more factors were assigned to the 'complex' group; those with four factors were named 'partially complex'; and those with three or fewer factors were 'less complex'.

Finally, underlying dominant (belonging to E group in Figure 2(a) and additional (belonging to C and D groups in Figure 2(a)) factors influencing peripherality in every LAU-1 region included in the PP group were analyzed. These factors were called indexes and attributed letters (Figure 1), each referring to the particular aspect (e.g., Dm – demographic).

Lithuania is becoming strongly polarized[4] (Ubarevičienė & van Ham, 2017) and it was therefore chosen as a case to test the peripheral regions' identification model. The analysis uses the statistical indicators for the period 1992–2012 LAU-1 regions (municipalities) available in the Statistics Lithuania databases.

DETERMINATION OF PERIPHERAL REGIONS IN LITHUANIA

The analysis showed regions of Lithuania in all the four categories of spatial structure (Figure 3). The cities of Vilnius, Kaunas and Klaipėda, distinguished by the highest values of the analyzed indicators, were categorized as national centres. Three other urban municipalities – Šiauliai, Panevėžys and Alytus – showed somewhat high values for the indicators. These cities are important regional centres. The Kaunas and Klaipėda regions (surrounding these cities) were assigned to the periphery of centre group, influenced by the high demographic, economic and social potential of the big cities they surround. Interestingly, despite the fact that the Vilnius region surrounds the capital city municipality, it did not fit the periphery of centre category. This is because Vilnius city, with its outskirts, is rather large and contains its demographic and socioeconomic potential within its inner boundaries.

The remaining Lithuanian municipalities were categorized in the periphery of periphery group. Regions within the PP category are distinguished by the lowest values of indicators,
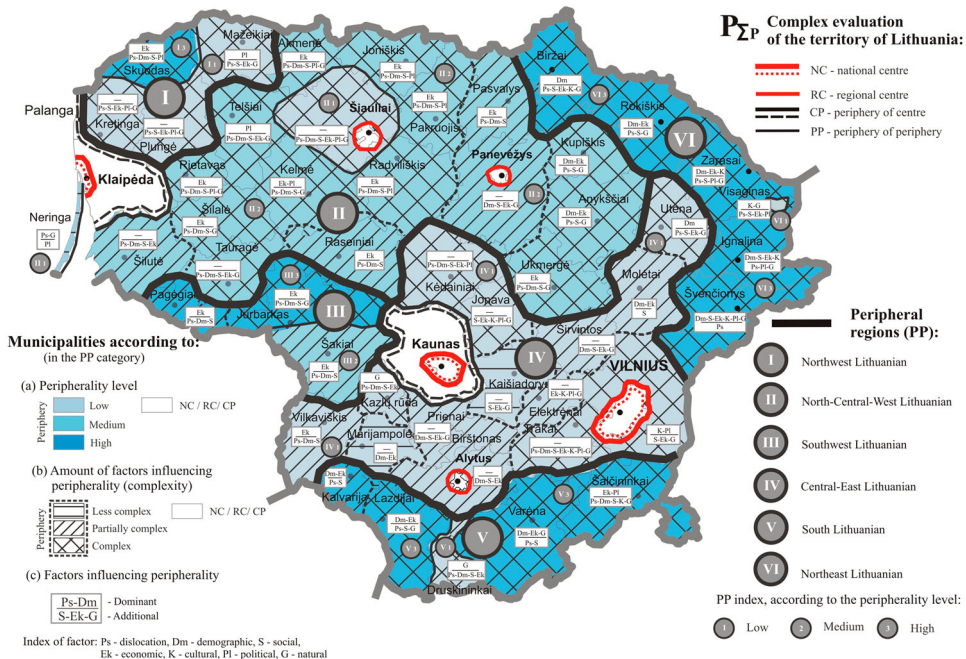

Figure 3. Spatial structure of Lithuania with special emphasis on peripheral regions. Source: Author.

experience the most intense peripheralization and lag behind in national development. Despite the fact that some of the municipalities are close to national centres, they still fall into the PP group according to the model's results. This demonstrates that location may be essential, but it is not the only factor influencing peripheralization. The PP group was further divided into six peripheral regions.

The statistical analysis showed that the highest peripherality level was seen in the Southern and Northeastern regions of Lithuania. These regions suffer from intensive depopulation, as well as rather low economic and social potential. At the same time these are the most naturally intact regions in Lithuania (covered with forests and lakes).

The Northern–Central–Western region shows medium peripherality. The calculations showed that weak economic potential is the dominant factor in the region. A large part of this region suffers from depopulation as well as a decline of economic and social capacity.

The Central–Eastern region occupies a significant part of the Lithuanian territory. It is distinguished by the lowest degree of peripherality and has the closest values to the country's average. This is probably because the cities of Vilnius and Kaunas fall in this region.

The Northwestern and Southwestern regions show contrastive peripherality. The peripherality of the Northwestern region is influenced by economic, political, demographic and social factors. The Southwestern region's peripherality is also influenced by a group of factors; however, economic factors are dominant.

CONCLUSIONS

This paper contributes to scientific research dealing with peripheralization and polarization. Though this topic is highly debated worldwide, in Lithuania peripheralization has only been discussed fragmentally. Following Blowers and Leroy's (1994) and Eriksson's (2008) understanding of periphery, this paper stresses that a particular region becoming a periphery or a centre is determined by a combination of aspects, and it presents a model for analyzing peripheralization, taking into account this combination, allowing the presentation of a more general picture of the country.

The peripheral region identification and evaluation model presented here may also be applicable to other countries, for example, when comparing the polarization and peripherality of different CEE countries with similar historical backgrounds. However, there may be some difficulties extrapolating this model to other countries, such as limited data accessibility and different territorial structures.

The analysis has revealed a general picture of Lithuania with clearly defined centres and peripheries. The results enable one to look more deeply into every peripheral region and see the aspects that are the most problematic in every single LAU-1 region in Lithuania. As the LAU-1 level here corresponds to the country's administrative structure, the results could be used to set regional policies to tackle the problems.

The regions that have the highest peripherality levels correspond to 'problematic regions' identified by the Lithuanian government several years ago in order to implement special regional policy measures (Lithuanian National Regional Policy, 2017). Currently, for the period 2014–20, Lithuanian regional policy is based on 'target territories' with the intention of tackling problems at a local level. Most of the debate should focus on the criteria according to which the government defines 'problem territories' (LR Vyriausybės Nutarimas, 2003). So far only social factors have been taken into account, such as counting the number of benefit recipients and the unemployment rate, as well as population size. Meanwhile, the periphery evaluation model discussed here, based on a more complex understanding of territoriality, could serve as a reasonable scientific background for the formation of regional policy, urging the government to reconsider the criteria for determining the most vulnerable regions in need of special attention.

The analysis (including the mapping of statistical data) has indicated that policy-makers should choose investment strategies for each region carefully. As the population is projected to decline in most regions of Lithuania, it is appropriate to invest in the regional or bigger local centres in the peripheries instead of investing equally in all rural territories. Ongoing population decline, especially among the school-age population, on the periphery suggests that the strategy of using European Union funds should also be revised, particularly the renovation of empty houses or schools, which are often closed shortly after renovation. At the same time, however, investments directed towards more lively and active rural communities should be encouraged.

The present analysis also suggests that there is still a need for deeper qualitative research in the peripheral regions, which should look, for instance, at the following questions: To what extent are the policy-makers aware of the ongoing polarization? How do they respond to this phenomenon? How can they accept, and adapt to, the consequences of peripheralization?

ACKNOWLEDGEMENTS

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author.

NOTES

[1] Selected indicators: location (distance to the capital and higher rank regional centres, road network density), demographic (population density, natural change, net migration, proportion between pensioners and children), social (unemployment rate, proportion between recipients of social assistance benefits and all the population, school network density, educational level), economic (level of enterprise, added value created by employed population, foreign direct investment, investment in tangible fixed assets, value of residential territories land), cultural–political (proportion of ethnic/religious minority, support in referendums, support of protest candidates during the presidential election), and natural (part of the territory covered with forests, lakes, swamps).

[2] EUROSTAT has set up a system of local administrative units (LAU) that helps collect statistics. 'Statistics Lithuania' collects statistics at three territorial levels of the country: 10 regions of NUTS-3 (districts, *apskritys*; where NUTS = Nomenclature of Territorial Units for Statistics), 60 of LAU-1 (previous NUTS-4; municipalities, *savivaldybės*), and around 500 of LAU-2 (wards, *seniūnijos*). LAU-1 regions were chosen for research as they illustrate the polarized picture of the country better than might be seen at the NUTS-3 level; meanwhile, statistics collected for LAU-2 are poor.

[3] It was noticed that cultural and political aspects have a close connection and therefore they were included in one group. However, while calculating, the coefficient was equally (by 0.03) divided for political and cultural indicators.

[4] For tendencies of polarization and peripheralization in Lithuania, see Pociūtė (2014). It supplements the current article, giving a broader view of the socio-spatial development in Lithuania.

ORCID

Gintarė Pociūtė-Sereikienė ⓘ http://orcid.org/0000-0003-0474-0607

References

Baubinas, R., & Stanaitis, S. (2001). Gyventojų skaičiaus kaita Lietuvos pasienyje 1959–1997 metais [Change of number of residents in Lithuanian borderland in 1959–1997]. *Geografijos metraštis*, *34*(1), 124–140.

Blowers, A., & Leroy, P. (1994). Power, politics and environmental inequality: A theoretical and empirical analysis of the process of 'peripheralisation'. *Environmental Politics*, *3*, 197–228. doi:10.1080/09644019408414139

Coakley, J. (2008). Centres peripheries, and party systems: Nested secession processes in Great Britain and Ireland. *Political Geography*, *27*, 740–760. doi:10.1016/j.polgeo.2008.09.002

Copus, A. K. (2001). From core–periphery to polycentric development: Concepts of spatial and aspatial peripherality. *European Planning Studies*, *9*, 539–552. doi:10.1080/713666491

Daugirdas, V., & Burneika, D. (2008). Peripherality and peripheral regions in Lithuania – borderland of EU. In R. Baubinas (Ed.), *Problem regions in Lithuania (sociogeographical aspect)* (pp. 6–12). Vilnius: Geografijos ir geologijos institutas.

Eriksson, M. (2008). (Re)Producing a 'peripheral' region – Northern Sweden in the news. *Geografiska Annaler: Series B, Human Geography*, *90*, 369–388. doi:10.1111/j.1468-0467.2008.00299.x

Gutiérrez, J., & Urbano, P. (1996). Accessibility in the European Union: The impact of the Trans European road network. *Journal of Transport Geography*, *4*, 15–25. doi:10.1016/0966-6923(95)00042-9

Haase, A., Rink, D., Großmann, K., Bernt, M., & Mykhnenko, V. (2014). Conceptualizing urban shrinkage. *Environment and Planning A*, *46*(7), 1519–1534. doi:10.1068/a46269

Janc, K. (2006). Human and social capital in Poland – spatial diversity and relations. *Europa XXI*, *14*, 39–55. Retrieved from http://rcin.org.pl/Content/2266/Wa51_13305_r2006-t14_EuropaXXI.pdf

Khün, M. (2015). Peripheralization: Theoretical concepts explaining socio-spatial inequalities. *European Planning Studies*, *23*, 367–378. doi:10.1080/09654313.2013.862518

Lang, T. (2015). Socio-economic and political responses to regional polarisation and socio-spatial peripheralisation in Central and Eastern Europe: A research agenda. *Hungarian Geographical Bulletin*, *64*, 171–185. doi:10.15201/hungeobull.64.3.2

Lithuanian National Regional Policy. (2017). Official webpage. Retrieved from http://www.nrp.vrm.lt/en/

LR Vyriausybės Nutarimas. (2003). '*Dėl probleminių teritorijų išskyrimo kriterijų*' [LR Government decision 'Due to the criterion to distinguish problem territories']. Act. Nr. 35-1483

Marada, M., Chromý, P., Jančák, V., & Havlíček, T. (2006). Space polarization and peripheral regions in Czechia. *Europa XXI*, *15*, 29–34.

Misiūnas, A., & Svetikas, Ž. (2003). Lietuvos regionų ekonomikos netolygumų vertinimai [Evaluation of economic disparities in Lithuanian regions]. *Ekonomika*, *64*, 84–94. Retrieved from http://etalpykla.lituanistikadb.lt/fedora/objects/LT-LDB-0001:J.04~2003~1367179614454/datastreams/DS.002.0.01.ARTIC/content

Nagy, G. (2005). Changes in the position of Hungarian regions in the country's economic field of gravity. In G. Barta, E. G. Fekete, I. Kurorelli Szörényiné, & J. Timár (Eds.), *Hungarian spaces and places: Patterns of transition* (pp. 124–143). Pecs: Centre for Regional Studies, HAS.

Pociūtė, G. (2014). Trends of imbalances of demographic and socioeconomic development in post-reform period in Lithuania. In P. Churski (Ed.), *Social and economic growth vs. the emergence of economic growth and stagnation areas* (pp. 129–150). Poznan: Bogucki Wydawnictwo Naukowe.

Ubarevičienė, R., & van Ham, M. (2017). Population decline in Lithuania: Who lives in declining regions and who leaves? *Regional Studies, Regional Science*, *4*(1), 57–79. doi:10.1080/21681376.2017.131312

Vaishar, A. (2006). Regional periphery: What does it mean? *Europa XXI*, *15*, 7–12.

Vanagas, J., Krisjane, Z., Noorkoiv, R., & Staniunas, E. (2002). Planning urban systems in Soviet times and in the era of transition: The case of Estonia, Latvia and Lithuania. *Geographia Polonica*, *75*, 75–100. Retrieved from http://rcin.org.pl/igipz/Content/4135/WA51_13346_r2002-t75-z2_Geogr-Polonica.pdf#page = 79