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Address:
14 A. Nevskogo St.,
Kaliningrad, Russia, 236016

Managing editor:

Tatyana Kuznetsova
tikuznetsova@kantiana.ru

Tel.: +7 4012 59-55-43
Fax: +7 4012 46-63-13

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INNOVATION PERFORMANCE OF RUSSIA'S NORTHWESTERN REGIONS: A COMPARATIVE EVALUATION

E. A. Tretyakova
A. A. Noskov

Perm State University
15, Bukireva St., Perm, 614990, Russia

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Innovative activities underpin the economic development and competitiveness of Russian regions. This article seeks to compare the innovation performance of Russia's north-western regions, which are among the most progressive in the country, and their available resource. A review of the literature suggests that most Russian publications combine systems of composite indices with econometric and statistical approaches to evaluate regional innovation performance. The same methods are employed in this study. Comparative analysis indicates significant differences between the regions in both available resource and innovation advancements. Juxtaposing composite resource availability indices and innovation performance aided in devising a typology of regions and analysing changes in the position in a composite evaluation matrix. The findings demonstrate that Saint Petersburg and the Leningrad region comfortably outperform the other northwestern regions in innovation. Regression and correlation analysis reveals that innovation performance depends crucially on earlier achievements and currently available resources. The Novgorod region, however, is making headway without a marked change in the level of resources. Thus, it is important to transfer innovations designed in resource-rich regions to their less well-off counterparts to achieve positive synergy throughout northwest Russia.

Keywords:
innovations, innovative development, innovative activity, composite indicator, integral index, interregional comparisons, regional economy

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Introduction

In recent years, an extensive body of literature has been devoted to the study of innovation development (ID) and innovation activity (IA). Innovation has been regarded as an essential condition for the accelerated progressive development of countries and regions. It is important to note that large-scale innovations in the regions of the Russian Federation is one of the key factors for ensuring the homogeneity of the country's economic space, increasing competitiveness and strengthening the international position of Russia. To stimulate innovation activity, the country's authorities use a number of measures — free access to scientific and technical information, the development of international and interregional scientific and technical cooperation, the creation of equal opportunities for participants in innovation at different levels, financing innovative development and implementing entrepreneurship support programmes, etc. The impact and effectiveness of these measures remain debatable. Innovation effectiveness is traditionally evaluated by comparing the planned and actual results achieved and innovation efficiency is measured by comparing the results with the resources spent. In their assessment of innovation effectiveness, authors study the problem of investment concentration, labour resources and the results achieved by certain regions of the country and a decrease in innovation activity in other regions [1, 2]. When assessing the efficiency of innovation, scholars often note the absence of an connection between the provision of resources and the results of innovation activity in Russian regions [3].

This study hypothesizes that the results of innovation activity in the selected regions of Russia (compared to other regions) largely depend on the provision of resources and the earlier obtained results. This idea emphasises the importance of targeted management of innovative regional development. This study aims to assess the efficiency and effectiveness of innovation activity in the regions of the North-West Federal District, which is one of the key districts of Russia in terms of its innovative potential, research base and proximity to the largest global markets.

Review of methods for assessing innovative development and innovation performance

Russian researchers interpret innovative development as a continuous use of the results of scientific and technological activities for the sustainability of economic agents and the creation of innovative goods and services as well as their production and application [4]. Within the process approach, innovative develop-

ment is considered as cost increasing since it includes the modernisation of the existing and the construction of new production facilities, production-oriented scientific and technical activities and the development of infrastructure [5].

The overview of scientific literature over the past ten years has made it possible to identify the most common methods for assessing innovation activity and innovation development. In their works, many Russian and foreign authors use a system of complex integral indices [6—13; 11, p. 327—328; 12, p. 70—71; 13—15]). The method of integral assessment is also used in the regularly published *Ranking of Innovative Development of the Subjects of the Russian Federation* [16]. In addition, integrated assessment is used in the calculation of the *European Innovation Scoreboard* (EIS) European ranking[1]. There are also very specific methods of integral assessment, for example, the estimation of the innovative activity of regions based on creativity (indices of innovativeness) [17; 18].

It is worth noting that sets of indicators for calculating indices and rankings of innovative development differ significantly from one researcher to another researcher, depending on what goals they pursue. Econometric and statistical analyses, as well as data envelopment analysis (DEA) are often employed to evaluate IA and ID [19; 23—31].

When using methods of integrated assessment, the statistical and econometric analyses of ID and IA of the regions of Russia, authors usually turn to the same statistical database. Consequently, many authors opt for similar sets of key indicators and the results obtained are often quite comparable.

To evaluate the ID and IA of Russian regions scientists employ such indicators as the costs of technological innovations, internal costs of research and development, the number of employees engaged in research and development, the amount of innovative goods, works and services, the number of developed and used advanced production technologies, as well as the number of patents and licenses issued. In addition, researchers often include indicators related to the use of information and communication technologies (Internet use, data transfers, etc.).

This study proposes a method of integrated assessment of the IA of the region of the North-Western Federal District (NWFD). The method includes statistical and econometric analyses used for the comparative evaluation of the IA of the regions, for determining the factors which proved to be relevant for achieving IA results as well as for identifying the extent to which the regions used their available resource potential.

[1] The European Innovation Scoreboard.

Methods of research

Based on official statistics[2], a set of indicators was selected to analyse the IA of the regions in terms of the resources involved and the results achieved. To minimize the distorting effect of inflation, all value indicators were expressed in fixed prices (the prices of 2019). To ensure the comparability of the data in the regions, which differ considerably in their territory, either relative indicators (%) or standardized indicators reflecting the distribution of an innovation per 1,000 or 10,000 people have been used. The composition of the selected set of indicators was determined based on the results of the review of the main indicators used for the assessment of the innovative development of the constituent entities of the Russian Federation [32]. Innovation activity (IA) in the regions is carried out within the framework of a regional innovation system, exploiting various types of resources, which are turned into different types of innovation-based products resulting from innovation activities[3].

In this study, the provision of resources for IA was assessed by measuring the costs of intellectual, labour, financial and information resources employed. The following indicators were used: the number of research and development organisations per 100,000 population; the number of staff engaged in research and development per 1,000 population; the number of postgraduate students per 10,000 population; the number of doctoral students per 100,000 population; the costs of technological innovations per 1,000 people; internal research and development costs per 1,000 population; advanced production technologies per 1,000 people; the percentage of organisations using information and communication technologies.

The following indicators were employed for assessing the results of IA (products created during its implementation): the amount of innovative goods, works and services per 1,000 people; the number of patents issued per 10,000 people; advanced production technologies developed per 100,000 people; the number of agreements for the export and import of technologies and technical services per 1,000 inhabitants; the number of high-productivity jobs per 1,000 population; the number of postgraduate students who graduated from university after defending their thesis per 10,000 people; the number of doctoral students graduating from doctoral studies after the defending their per doctoral thesis per 100, 000 people of the population.

[2] *Regions of Russia. Socio-economic indicators. 2019*, 2019, stat. reset / Rosstat. Moscow.

[3] Inputs are commodities or services used to produce goods and services. An economy uses its existing technology to combine inputs to produce outputs. Outputs are the various useful goods or services that result from the production process (Samuelson P. A., Nordhaus W. D. Economics. — New York: McGraw-Hill Companies, 2010. — P. 9).

All indicators were subject to normalization by applying the indicator value in a given region to the average indicator value in the NWFD as a whole:

$$N.val. = \frac{Indicator\ value\ of\ a\ region}{Average\ indicator\ value\ for\ the\ NWFD} \quad (1)$$

The normalized value characterizes the level achieved by the region compared with the average level achieved in the NWFD as a whole. In this approach, the average value of the NWFD serves as a benchmark or comparison base. In the case when the N.val. is higher than 1, the level achieved in the region is higher than the NWFD average. Otherwise, it is lower than the NWFD average.

Then, according to the arithmetic average formula, the integral index of the provision of resources was calculated for input indicators and the integral index of innovation results for output indicators:

$$Input\ I. = \frac{(I1 + I2 + I3 + \ldots In)}{N}, \quad (2)$$

$$Ouput\ I. = \frac{(I1 + I2 + I3 + \ldots In)}{N}, \quad (3)$$

where Input I. is the integral index of ID resource provision; Output I. is the integral index of ID results; I_1, I_2, I_3…, In is input or output indicators; and N is the number of key figures.

Integral indices characterize the general level achieved in the region, compared to the average in the federal district. If the value of the integral index exceeds on, then the level achieved in the region (by resource provision or ID results) is generally higher than the average for the Federal District. Otherwise, it is lower than the Federal District average.

When calculating these indices, the indicators used were considered to be of equal importance. This allowed avoiding the subjectivity observed when using expert assessments for establishing the significance for each indicator.

Combining the integral input and output estimates made it possible to apply the matrix method and identify certain types of regions in accordance with the quadrants of the matrix (fig. 1).

Output I. *Higher than in FD* 1,0	**Quadrant II** Imbalance in ID processes — high performance with low resource provision	**Quadrant III** Balance of resource provision and high-level impact of ID
Lower than in FD	**Quadrant I** Balance of resource provision and impact of ID at low level	**Quadrant IV** Imbalance in ID processes — low performance with high resource provision
	Lower than in FD 1,0	*Higher than in FD* Input I.

Fig. 1. Integrated Assessment Matrix of the IA of the Region

The comparison of integral performance estimations and resource provision allows calculating the index of conditional efficiency of IA of the regions (EI), which characterizes how many conventional output units (IA results) are per one conditional input unit (resources spent on IA):

$$EI = \frac{Output\ I.}{Input\ I.}, \quad (4)$$

where, EI is the index of conditional efficiency of the region's IA.

If the value of the conditional efficiency index exceeds 1, then the IA can be considered effective, since one unit of the resources provided (inputs) accounts for more than one unit of achieved results (outputs).

Correlation analysis was used to assess the relationship between the resources provided and IA effectiveness. Correlation coefficients were calculated between values of integral indices of inputs and outputs. The regression analysis of panel data was used to assess the degree to which the IA results depend on the resources the region has.

The Results of the comparative analysis of innovation activity in NWFD regions

The assessment of IA in the regions of the NWFD was carried out for the period from 2009 to 2018. The study showed that the NWFD is characterized by an uneven distribution of resources and innovation results among its regions. More than 80% of technological innovation costs, internal research and development costs and the number of staff engaged in research and development are concen-

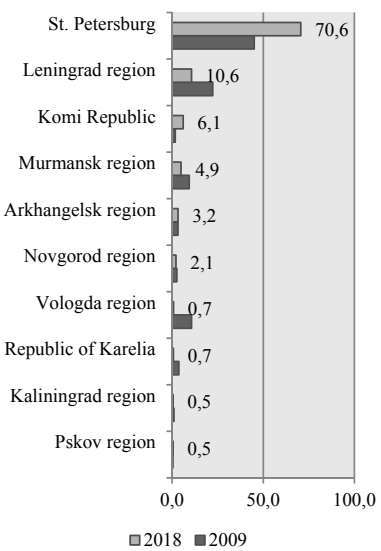
trated in only two regions: the city of St. Petersburg and the Leningrad Region. The values of the coefficients of variation indicate a high heterogeneity in the distribution of innovation resources, and the Herfindahl-Hirschman index indicates a high degree of their concentration (see fig. 2-4).

A similar situation was noted regarding the key output indicator – the volume of innovative goods, works and services (fig. 5). Another performance indicator, the number of advanced production technologies developed (fig. 6) shows a downward trend in differentiation and concentration (although they remain quite high).

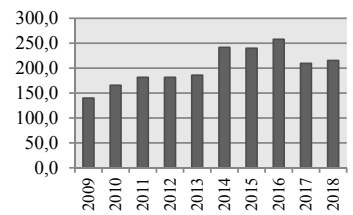
The dynamics of the integrated index of resource provision (fig. 7) clearly reflects the advantage of the northern capital where the IA average value compared with the average for the NWFD is twice as high as in other regions.

The integrated index of the EI results (fig. 8) shows that the northern capital exceeds the average values for the NWFD as a whole by more than 50 %.

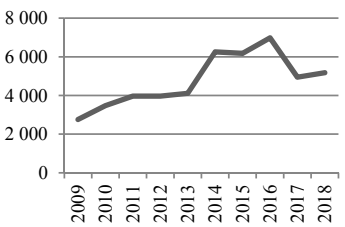
The combination of the values of the integrated indices of resource provision and the effectiveness of the IA allowed building a typology of regions of the NWFD (fig. 9). St. Petersburg is the only city in quadrant III of the complex evaluation matrix. During the given period, the city demonstrated a consistently high level of both resource provision and the ID performance. The remaining regions of the NWFD are mainly concentrated in quadrant I with a relatively low level of both the provision of resources and the effectiveness of IA.



a — the share of regions in the total cost of technological innovations in the NWFD, %

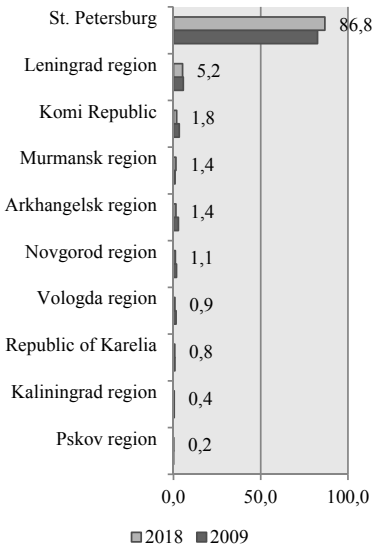


b — coefficient of variation

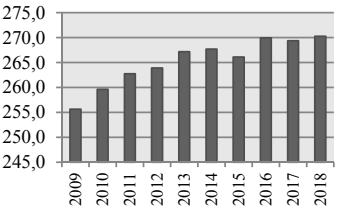


c — Herfindahl-Hirschman index

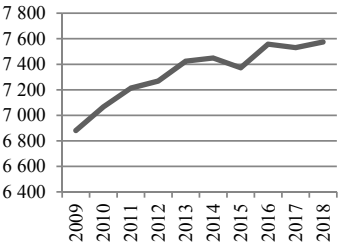
Fig. 2. Technological Innovation Costs



a — the share of regions in the total domestic research and development costs in the NWFD, %

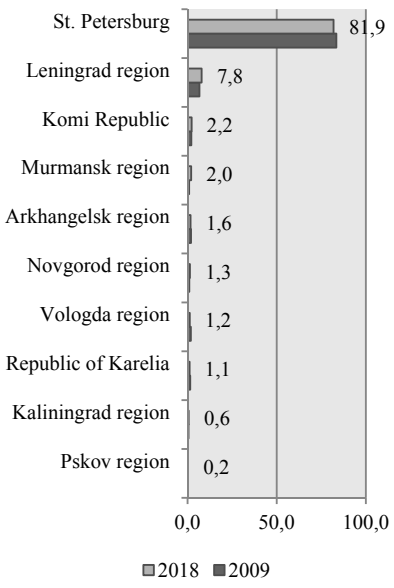


b — coefficient of variation

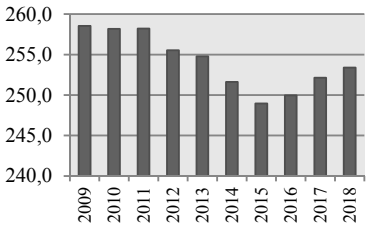


c — Herfindahl-Hirschman index

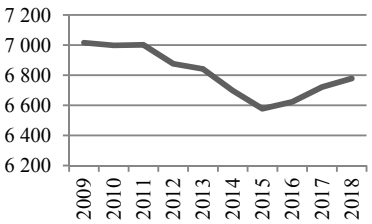
Fig. 3. Internal research and development costs



a — the share of regions in the total number of staff engaged in research and development in the NWFD, %

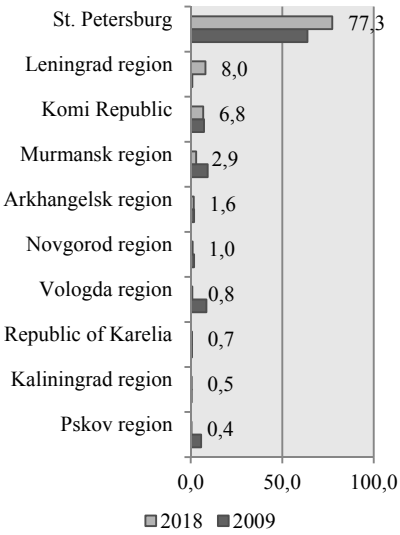


b — coefficient of variation

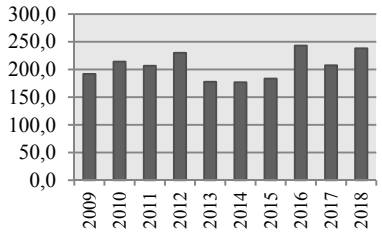


c — Herfindahl-Hirschman index

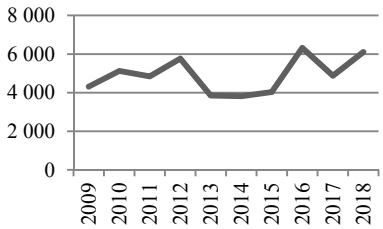
Fig. 4. Number of staff, engaged in research and development



a — the share of regions in the total amount of innovative goods, works and services in the NWFD,%

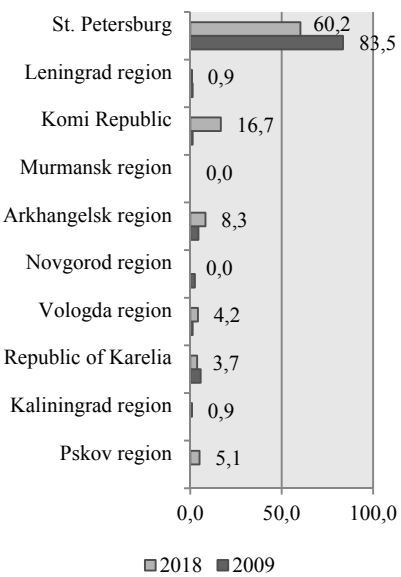


b — coefficient of variation

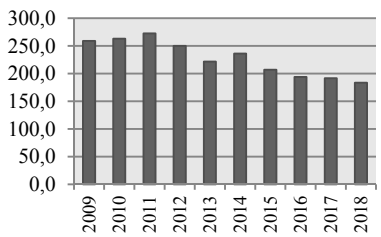


c — Herfindahl-Hirschman index

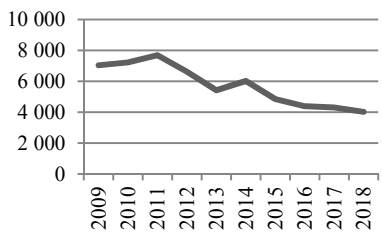
Fig. 5. Innovative goods, works and services



a — the share of the regions in the total number of the advanced manufacturing technologies, NWFD, %



b — coefficient of variation



c — Herfindahl-Hirschman index

Fig. 6. Number of advanced manufacturing technologies developed

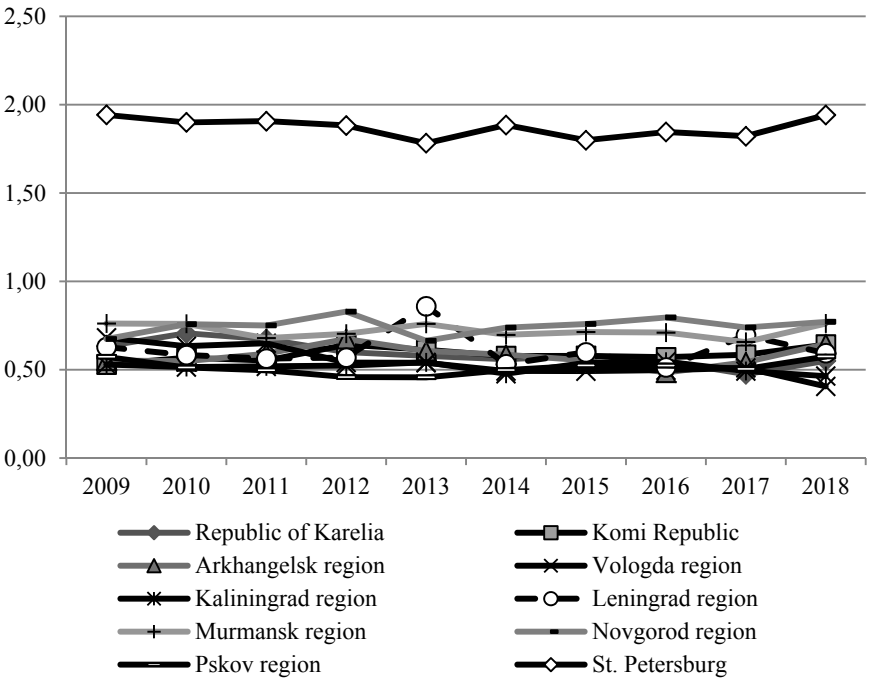


Fig. 7. Dynamics of the integral resource support index IA of the NWFD regions

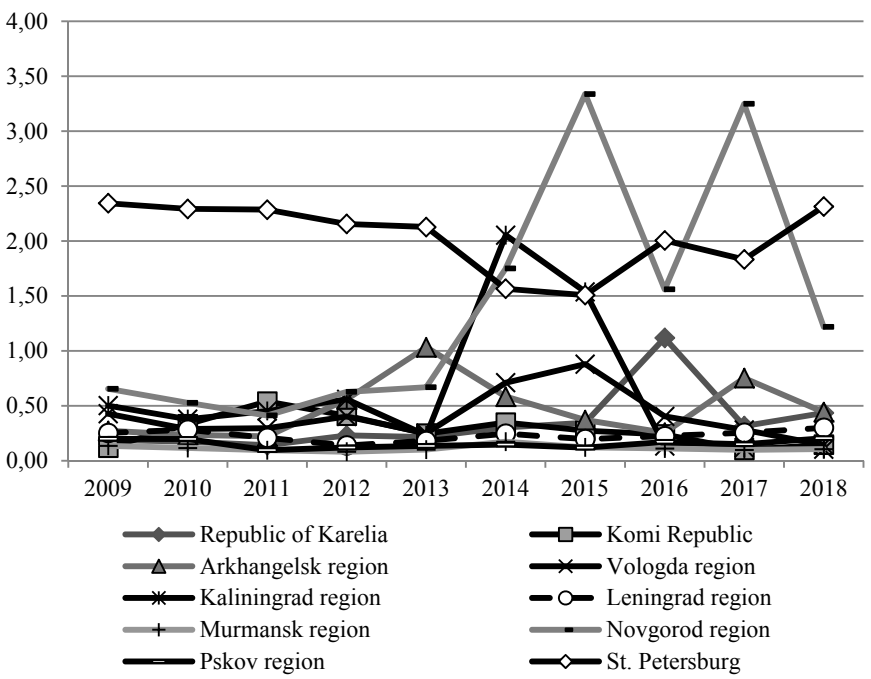


Fig. 8. Dynamics of the integral index of the NWFD results

Of particular note is the Novgorod region: having resources below the average level in the NWFD in recent years, the region has been showing results above the average level. The trajectory of its positions in the complex estimation matrix indicates the vector of motion from quadrant I to quadrant II (Fig. 10).

In many ways, the trend in the Novgorod region can be explained by the active position of the regional authorities implementing programmes of socio-economic and information and communication development, actively attracting private investment, developing various forms of public-private partnership [33, p. 870—872], and supporting foreign economic activity. An important factor is the proximity of the region to both capitals, the possibility of 'importing' innovations, scientific and technical integration and targeted support for innovative projects from the federal government. The fluctuations in the position of the region within the second quadrant indicate the necessity to stabilize the results achieved and to develop programmes aimed at ensuring its further progressive dynamics (with subsequent movement to quadrant III).

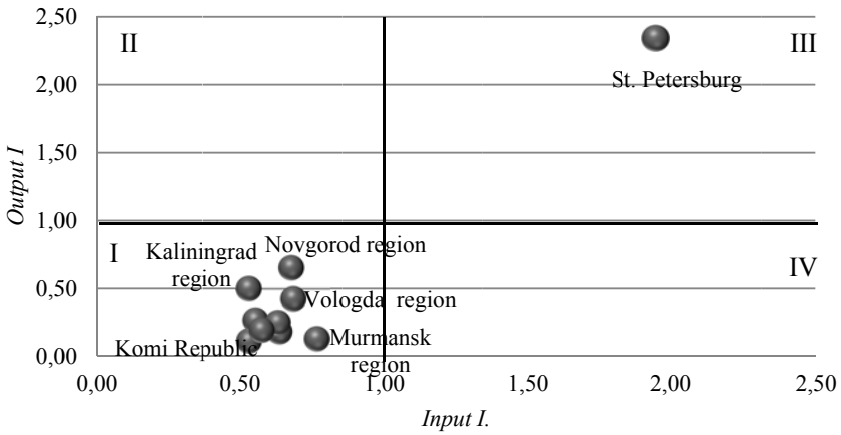
It has to be noted that the Kaliningrad region, which took a leap forward the same years as the Novgorod region did, was not able to hold its position in quadrant II (Fig. 11). This can be explained by the lack of necessary resources. Since 2015, the region has been experiencing a significant decline in both the number of scientific organisations and the number of research staff, accompanied by a drop in the total cost of technological innovation and, as a result, a significant decline in the number of advanced production technologies developed. By mid-2016, the cost of innovation had fallen 2.5 times, and the number of intellectual property objects used by enterprises of the region had halved. The lack of business ownership in the creation of R&D has exacerbated the situation [34]. The current situation explains the decrease in the effectiveness of the region's IA in recent years.

A similar situation, but in a less pronounced form (a leap in performance above the average) was observed in the Arkhangelsk region in 2013.

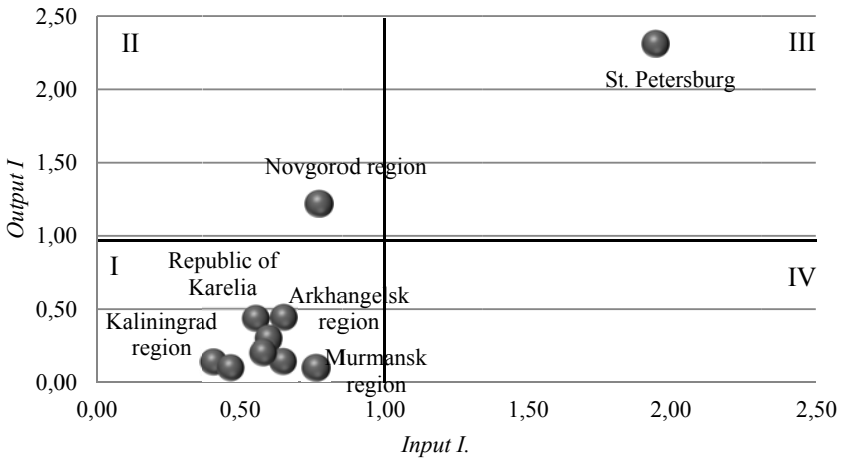
Table 1 shows the correlation of the values of integral indices of inputs and outputs of IR regions with the index of conditional efficiency of ID.

The comparison of the positions of regions in the matrix and the indicators of conditional efficiency of ID allows a conclusion that there is a correlation between the positions of regions in the matrix of complex assessment and the index of conditional efficiency. The regions with low resource provision generally demonstrate not only low ID efficiency (quadrant I), but also low effec-

tiveness. Regions moving to quadrant II show high innovation performance. The only region located in quadrant III (St. Petersburg) is characterized by a relatively high conditional efficiency of the ID with its high resource provision.



a — 2009



b — 2018

Fig. 9. Comprehensive assessment of ID of the NWFD regions

The correlation analysis revealed a high degree of interaction between resource provision and innovation performance in the NWFD regions (the coefficient of paired correlation between the corresponding integral indices was 0.6838).

Regression analysis of panel data was performed using the econometric package Gretl. Since the composition of the NWFD regions is fixed, two types of models were used: a model with fixed effects and a regular MNK model (pooled

regression model). The analysis included 10 spatial objects (regions of the NWFD). The length of the time series was 10 years. Thus, the total number of observations was 100. In modeling, robust standard errors were used.

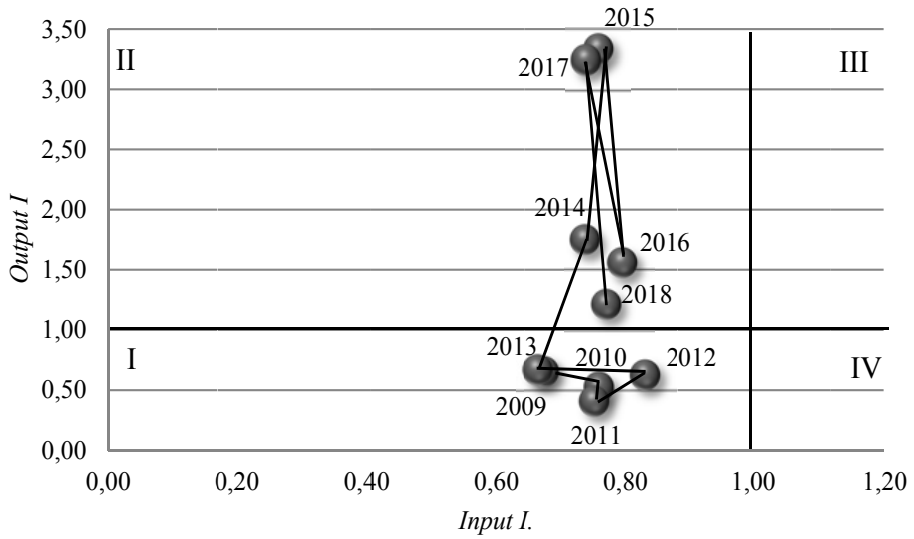


Fig. 10. Position trajectory of the Novgorod region in the complex evaluation matrix

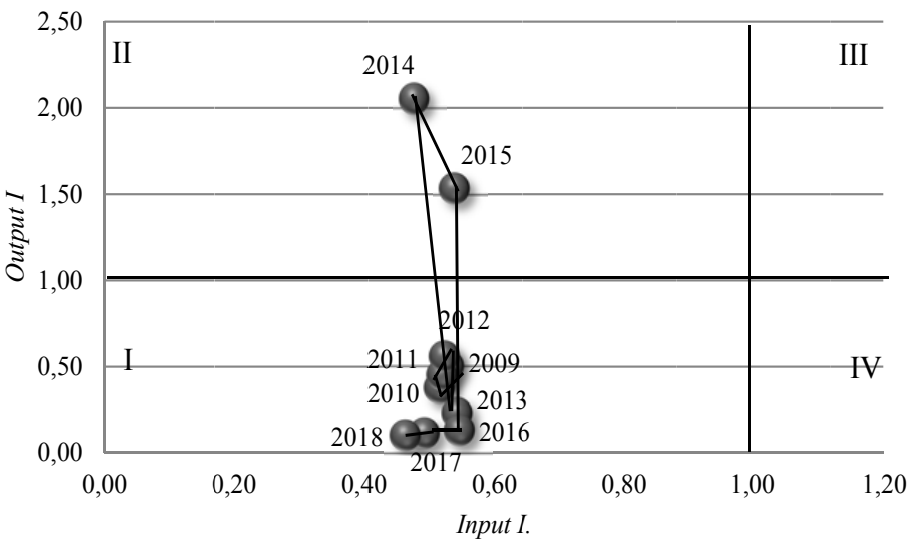


Fig. 11. Position trajectory of the Kaliningrad region in the complex evaluation matrix

Table 1

Conditional efficiency of innovation development (ID) of the NWFD regions

Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Republic of Karelia	0.41	0.40	0.29	0.37	0.42	0.53	0.54	**1.48***	0.67	0.74
Komi Republic	0.64	0.95	**1.03**	0.59	0.84	0.88	0.95	0.71	0.46	0.47
Arkhangelsk region	0.74	0.75	0.67	**1.04**	**1.53**	**1.02**	0.79	0.84	**1.28**	0.74
Vologda region	0.70	0.62	0.56	0.83	0.56	**1.16**	**1.40**	0.80	0.61	0.39
Kaliningrad region	**1.25**	0.88	0.99	**1.21**	0.85	**3.28**	**2.24**	0.56	0.47	0.41
Leningrad region	0.94	0.99	0.90	0.85	0.52	0.87	0.74	0.98	0.69	0.95
Murmansk region	0.68	0.63	0.55	0.51	0.50	0.64	0.52	0.52	0.50	0.35
Novgorod region	1.34	0.97	0.80	0.79	0.95	**1.77**	**3.06**	**1.47**	**2.98**	**1.21**
Pskov region	0.33	0.40	0.27	0.28	0.41	0.38	0.30	0.37	0.37	0.41
St. Petersburg	**1.02**	**1.03**	**1.06**	**1.03**	**1.07**	0.84	0.86	**1.01**	0.99	**1.12**

* In bold, the conditional efficiency values equal to 1 and > 1.

When comparing the integral indices of inputs and outputs of the NWFD regions, the model with fixed effects showed the statistical insignificance of spatial effects so the following MNK model (pooled regression) was built (standard errors are indicated in parentheses):

$$\hat{l}\_Output\ I = -0{,}074 + 0{,}491 \cdot l\_Input\ I + 0{,}559 \cdot l\_Output\ I\ (-1), \quad (5)$$
$$(0.0344) \qquad (0.0432) \qquad (0.0478)$$

where ^l_Output I is the logarithm of the integrated performance index ID (assessment); l_Input I — the logarithm of integrated index of resource provision of ID; l_OutputI (–1) is the logarithm of the integral index of the ID performance with a one year lag.

The model is statistically significant, the parameters l_Input I and l_Output I (–1) are significant at a 1% level, the constant is significant at a 10% level. The co-determination coefficient is 0.722, the p-value of the F-test is 2.84e-12, which indicates the statistical significance of the equation. The Ramsay test confirmed the correctness of the model specification; the test for normal distribution showed that errors are distributed according to the normal law. The value of the dispersion bloating factor showed no multicollinearity in the model.

It follows from the equation that the performance of the ID regions of the NWFD depends directly on the resource provision and the results achieved earlier. At the same time, an increase in the provision of resources by 1% will lead to an increase in the efficiency of the ID by 0.5%; and a 1% increase in efficiency in the last period ensures its growth in the current period by 0.6%.

Modeling the dependence of the key result of innovation, which is the amount of innovative goods, works and services, on the factor variables of inputs showed that in terms of parameters the MNK model (a model with fixed effects again revealed their statistical insignificance) of the following type was the best:

$$\begin{matrix} \hat{l}\_ITRU = -0{,}148 + 0{,}381 \cdot l\_ZTTI + 0{,}599 \cdot l\_ITRU(-1), \\ (0{,}136) \quad (0{,}132) \quad (0{,}118) \end{matrix} \qquad (6)$$

where ^ l _ ITRU is the logarithm of the standardized value of the volume of innovation goods, works and services (assessment); l_ZTTI is the logarithm of standardized cost of technological innovations; l_ITRU (–1) is the logarithm of the standardized value of the amount of innovative goods, works and services with a lag of one year.

The model is statistically significant, the parameter l_ZTTI is significant at 5% level, the parameter l_ITRU (–1) is significant at 1% level. The determinant coefficient is 0.6470, the p-value of the F-test is 2.60e-07, which indicates the statistical significance of the equation. The Ramsay test confirmed the correctness of the model specification, the test for normal distribution showed that the errors are distributed according to the normal law. The value of the dispersion bloating factor showed no multicollinearity in the model.

It follows from the equation that the efficiency of the volume of innovative goods, works and services produced in the regions of the NWFD depends directly on the costs of technological innovation and the results achieved earlier. At the same time, a 1% increase in costs of technological innovation leads to an increase in the amount of innovative goods, works and services by 0.38%, and a 1% increase in the amount of innovative goods production in the last period ensures its growth in the current period by 0.60%.

Discussion and conclusions

The method of comparative evaluation of IA proposed by the authors makes it possible to assess the differences in the innovative development of regions of the NWFD, the dynamics of their comparative positions in resource provision, and the effectiveness of innovation activity. The method proves to be effective in determining the type of a region, as well as factors influencing the dynamics of its development over several years. The study makes a scientific and methodological contribution to the development of the evaluation apparatus of innovation theory.

The practical significance of the proposed method has been proved by the results of its application. It allowed revealing the features of innovative development of the regions of the North-Western Federal District, the main ones being the extreme non-homogeneity of the distribution of resource provision and the results of innovation activities (St. Petersburg and the Leningrad region account for

the vast majority of them). The analysis of the integral resource indices and the EID results allowed a typology of the studied regions according to the resources spent and the results obtained. The study has also found that most NWFD entities exhibited low innovation efficiency. The city of St. Petersburg was the leader in efficiency and effectiveness during the whole period under study. A dynamic positive trend towards increasing the efficiency and effectiveness of innovation was observed in the Novgorod region.

The authors' analysis of the Volga Federal District (VFD) [35] showed high unevenness of distribution of the resources and results of innovative activity of the regions. This unevenness was indicated by the positions of the regions in the corresponding quadrants of the matrix of complex estimation. A significant difference was that in the NWFD, unlike the VFD, there were no regions having a relatively high level of resource provision that would show a relatively low performance of innovation activities. In addition, the regions of the VFD are characterised by higher instability of the values of integral indices in comparison to those in the regions of the NWFD.

It should be noted that sharp fluctuations in indicators of conditional efficiency of the ID regions (Table 1) are due to the instability of indicators of its resource provision and the efficiency in dynamics. Thus, when conducting a comparative assessment, a sharp increase in the impact of ID in one region will automatically lead to a marked decrease in performance indices in other regions. This can serve as both the advantage and the disadvantage of the proposed methodology. The disadvantage is the impossibility of conducting an automatic assessment of the efficiency and effectiveness of the ID in each region, and the advantage is the continuous comparison of the resource provision and efficiency of the ID in the region with other regions of the district. This comparison helps regional authorities to develop strategically correct solutions aimed at maintaining or increasing the rating positions of their own region, taking into account the dynamics of positions of other regions of the district.

Correlation-regression analysis based on panel data has shown a significant positive relationship between ID performance and its resource provision in the NWFD regions. The model of the dependence of the volume of innovative goods, works and services on the factor variables of the inputs has shown that the greatest impact on the result was by the costs of technological innovation and earlier results. It emphasises the importance of sustaining innovative development in the regions and regular investing in the improvement of production processes and technologies.

In case the resources for innovation are limited, it is important that the results achieved in one of the regions are available for implementation and use in other regions. This would enable low-resource regions (quadrant I) to increase the impact of their innovation activities (move to quadrant II) by using the results created in high-resource regions (quadrant III). Such a positive synergy effect could be a significant incentive for the development of the entire NWFD as a

single administrative-territorial system. In this context, the coordination of innovation development programs is very important, which would provide not only the creation but also the implementation of innovations beyond the territory of the constituent entity of the Russian Federation that had generated them.

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The authors

Prof. Elena A. Tretyakova, Perm State University, Russia.

E-mail: e.a.t.pnrpu@yandex.ru

https://orcid.org/0000-0002-9345-1040

Dr Alexey A. Noskov, Perm State University, Russia.

E-mail: noskov.alexey01@gmail.com

https://orcid.org/0000-0002-0704-0932

INSTITUTIONAL APPROACH TO ASSESSING THE TRANSITION TO A CIRCULAR ECONOMY: THE CASE OF THE KALININGRAD REGION

A. E. Shastitko [1, 2]
K. A. Ionkina [1, 2]
O. A. Markova [1, 2, 3]
A. N. Morozov [1, 2, 3]

[1] Lomonosov Moscow State University
1 Leninskie Gory, Moscow, 119991 Russia

[2] Russian Presidential Academy
of National Economy and Public Administration
82/1 Vernadskogo Ave., Moscow, 119571, Russia

[3] National Research University Higher School of Economics
20 Myasnitskaya, Moscow, 101000, Russia

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The article discusses possible reasons for the failure of Russia's waste management industry reform and highlights the ownership blurring as a factor that may hinder the transition to a circular economy, which has been proposed as one of the outcomes of the reform. This study aims to address possible obstacles to transitioning to a circular economy in the Kaliningrad region. Methodologically, the study uses instruments of new institutional economics: by comparing discrete institutional alternatives for municipal solid waste (MSW) management, the authors propose incentive schemes that will likely stimulate the transition to a circular economy in the region. It is shown that, in Russia, the identification of the holder of the property right to waste is complicated. This can be a hindrance to effective MSW management. Moreover, objects handled by MSW management services may fall into different types, but at the same time, it is possible to transfer objects from one type to another. One of the ways to improve the exclusion of services of MSW utilization is the introduction of incentive tariffs. Low-rise housing in the Kaliningrad region makes it an ideal region for the introduction of such a scheme. When calculating the unsorted waste transport fee, a multiplier can be used to reduce the payment for waste-separating households. This can serve as an additional incentive for overcoming collective action problem in MSW collecting and sorting. To prevent social resistance to such a policy, incentive schemes should be implemented on a voluntary basis.

Keywords:
municipal solid waste, recycling, recovery, externalities, circular economy, incentive schemes (pay-as-you-throw)

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Introduction

Transition to the circular economy is a necessary condition for achieving sustainable economic growth. The shift to the circular economy requires fundamental changes in municipal solid waste (MSW) management.[1] The MSW management reform has been extensively debated over the last four to five years. Unfortunately, as a whole, the MSW management reform in Russia has not yielded the expected results. What is more, despite some progress in MSW management that has been achieved recently, it is not considered as long lasting. This deplorable situation raises questions as to why the waste management reform has failed and what prevents Russia and its regions from solving MSW management problems and head towards the circular economy.

We describe this problem in the first section of this work. In the second, we define waste as an economic category and highlight the main features that may help to distinguish waste, goods and resources. The third section puts into the question the problems in building the relationships between different interest groups in the MSW management system that arise as a result of the existing shortcomings in legislation. Then we define services provided by the MSW management system based on rivalry and excludability. Section four explains how incentive tariffs may solve the waste management problem in the Kaliningrad region.

1. Problem setting

The waste management problem is becoming increasingly urgent all around the globe. According to the World Bank, without a global renovation of waste management systems, by 2050 humanity will produce 1.7 times more waste compared to present levels [1]. In Russia is extremely severe as well. In 2017 Russia produced 274.4m^3 of MSW and only 10% of this quantity was transported to waste recycling plants (27.9m m^3) and 2.2% to incineration plants, whilst 87% was buried.[2]

[1] Although the transition to the circular economy requires a change in both municipal and industrial waste management, this study will focus solely on municipal solid waste.

[2] *Governmental report On The Conditions and Protection of Environment in the Russian Federation in 2017*, 2018, Supervised by the Ministry of Natural resources and Ecology of the Russian Federation.

Overflowing authorised landfill sites, mushrooming non-authorised sites, and the absence of a waste segregation system necessitated the 'rubbish reform' of 2017—2019. As of the writing of this article, waste management reform in Russia is not considered to be successful. A report issued by the Accounts Chamber in 2020 admits that the reform 'has not met its promise'.[3] Moreover, if waste burial continues at the same pace, the existing landfill sites will fail to accommodate newly generated waste in many Russian regions.

Apart from this, much less volumes of MSW than expected was converted into resources, including electric power. In 2019, Russian regional operators handled 61.15m tonnes of MSW, 29.7% of which was recycled and less than 5% put back into production (this includes recycling,[4] regeneration,[5] and recovery[6]) or reused as a renewable energy source (2.67m tonnes). For comparison, one of the world's leaders in waste management, Sweden, incinerated 50% of MSW and recycled most of the rest in 2019 (only 0.8% of the waste generated nationwide was buried).[7]

Although Russia has adopted a national approach to the MSW reform, there are regional differences in waste generation and management. Regions and municipalities produce different volumes of waste. For example, in the Kaliningrad region, the namesake city and its neighbouring municipalities account for most regional waste (see fig. 1). In these territories, densely built-up areas experience considerable problems with setting up landfill sites and other waste management facilities.

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[3] Report on the Analysis of Implementation of Measures to ensure the Environmental Security of the Russian Federation as Regarding the Elimination of Accumulated Environmental Damage and the Formation of a Comprehensive Solid Waste Management System. Supervised by the Accounts Chamber of the Russian Federation, 2020. See p. 3. available at: https://ach.gov.ru/upload/iblock/41b/41b02dc50697e6fc57ec2f389a8b68f0.pdf?_ga=2.106291210.820111883.1605780584—216807580.1598522839 (accessed 15.03.2021).

[4] Recycling is the process of waste treatment, associated with their reuse as raw materials while manufacturing products with a similar purpose. Recycling stands for the return of waste into the production cycle.

[5] Regeneration means putting waste back into a circular process after treatment.

[6] Recovery is the retrieval of useful components from waste for repeated use.

[7] *Avfall Sverige — the Swedish Waste Management Association*, 2020, available at: https://www.avfallsverige.se/in-english/ (accessed: 22.10.2020).

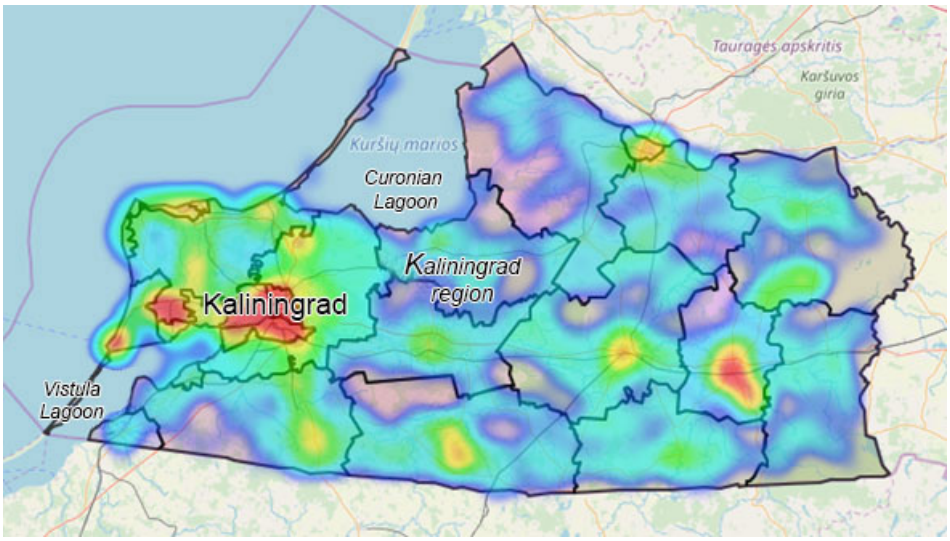

Fig. 1. Distribution of MSW generation sources
colours show how much MSW is generated by a district:
red indicates maximum waste production; blue, minimum

Source: Regional Waste Collection, Transport, and Treatment Scheme, Ministry of the Natural Resources and Ecology of the Kaliningrad region, available at: https://minprirody.gov39.ru/deyatelnost/obrashchenie-s-otkhodami/territorialnaya-skhema-obrashcheniya-s-otkhodami/ (accessed 11.08.2020).

The Kaliningrad region generates up to 1.5m tonnes of waste annually, up to 2.7m m^3 of which is MSW. Figure 2 shows the dynamics of waste produced in the region.

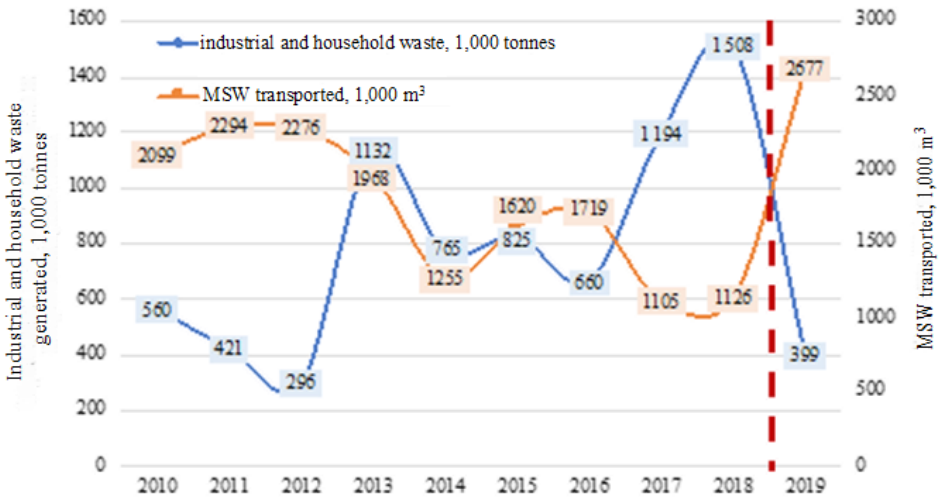

Fig. 2. Industrial and household waste production; MSW in the Kaliningrad region
(the dashed line marks the beginning of the 'rubbish reform')

Source: The Drafts of The Governmental reports on the conditions and protection of environment in the Russian Federation in 2017, 2018, and 2019 (available at: https://www.

mnr.gov.ru/docs/proekty_pravovykh_aktov/proekt_gosudarstvennogo_ doklada_o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_v_2017_godu/), 2018 (available at: https://www.mnr.gov.ru/docs/proekty_pravovykh_aktov/proekt_gosudarstvennogo_doklada_o_sostoyaii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsi/), 2019 (available at: https://www.mnr.gov.ru/docs/proekty_pravovykh_aktov/proekt_gosudarstvennogo_doklada_o_sostoyaniy_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsi/) (accessed 15.03.2021).

According to a Greenpeace ranking[8], 30% of Kaliningrad residential houses had access to waste sorting bins in 2018. In 2019, this proportion rose to 59%.[9] As of the end of 2018, in Kaliningrad there were two containers for bulky waste, and 313 for plastic. Most of the latter were found in the Leningradsky and Tsentralny districts, albeit the third city's district, Moskovsky, the largest by area and population had the least of the containers for sorted waste.[10]

The Kaliningrad region ranks lowest among Russia's territories located in the Baltic Sea catchment area in the proportion of recycled and processed waste (up to 90% of industrial and household waste remain untreated) [2].

Therefore, the increase in the volume of MSW transported to recycling plants is unlikely to be caused by the reform: in 2013, the region transported the record 42,000 m^3 of MSW to recycling plants (2% of the total collected MSW). The problems of the transition to the circular economy may lie in how the regional operator collects and processes waste (supply side) or in how residents collect and segregate it (demand side).

2. Waste as viewed by economics

Economic and other literature does not give an unambiguous definition of MSW. To produce a satisfactory one, let us consider what distinguishes MSW from other economic categories.

[8] I. Skipor. Reyting Greenpeace: kazhdy tretiy zhitel krupnogo goroda Rossii imeet dostup k razdelnomu-sboru [Greenpeace ranking: each third resident of a Russian city has access to waste segregation sites], 2020, *Greenpeace,* available at: https://greenpeace.ru/blogs/2020/03/12/rejting-greenpeace-kazhdyj-tretij-zhitel-krupnogo-goroda-rossii-imeet-dostup-k-razdelnomu-sboru/ (accessed 14.09.2020).

[9] I. Skipor. Reyting Greenpeace: kazhdy tretiy zhitel krupnogo goroda Rossii imeet dostup k razdelnomu-sboru [Greenpeace ranking: each third resident of a Russian city has access to waste sorting], 2020, *Greenpeace*, available at: https://greenpeace.ru/blogs/2020/03/12/rejting-greenpeace-kazhdyj-tretij-zhitel-krupnogo-goroda-rossii-imeet-dostup-k-razdelnomu-sboru/ (accessed 14.09.2020).

[10] Regional Waste Collection, Transport, and Treatment Scheme, 2020, *Ministry of the Natural Resources and Ecology of the Kaliningrad region*, available at: https://minprirody.gov39.ru/deyatelnost/obrashchenie-s-otkhodami/territorialnaya-skhema-obrashcheniya-s-otkhodami/ (accessed 11.08.2020).

MSW can be considered as 'an output with no or negative economic value' [3]. This definition captures the central features of waste — the unwillingness or inability of the waste holder to use it, directly or indirectly, as a consumer good.

This definition also reveals the problems that researchers face when defining waste. The process of MSW generation in itself does not shed light on the difference between waste and by-products, which are incidental or secondary goods produced while manufacturing the main product. Although by-products can be sold in the market, their production is not essential for the firm (in terms of motivation rather than technology) [4]. Unlike by-products, waste cannot be traded by definition. Buyers and sellers cannot find each other in the current institutional environment and a transaction turns out to be not feasible due to the search frictions in the market.

Differences between waste and by-products are shown schematically in Figure 4: by-products and the main products are produces with a help of resources, and the manufacturing of both is accompanied by waste generation.

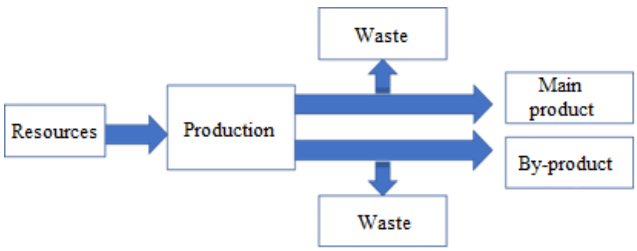

Fig. 4. Differences between waste, the main product, and by-products

Source: prepared by the authors

When not bought by-products are considered as waste. If the costs of turning resources into a product (transformation costs) and the costs of building a contract (transaction costs) change in the economy, waste may be seen as a by-product. The reverse process is also possible.

In effect, MSW is any substance or object that has been used for its intended purpose (or served its intended function) by the consumer and will not be reused [5]. On the one hand, this definition reflects another distinctive feature of waste — the unwillingness of the consumer to use the product for its intended purpose. On the other hand, it does not consider possible repurposing of a good. For example, the product may lose some properties and hence its value (in full or in part). Economic agents will decide to discontinue its consumption. In contrast, one may stop using a product for a different reason — for instance, because of having consumed enough. Furthermore, some products are no longer used and discarded while retaining their original features. A good example is food, which retains its qualities and can still be used but is, nevertheless, thrown away by the holder.

An interesting case of changes in the value of a product is related to the substances used in agriculture (agrochemicals and fertilisers): they can be introduced into the soil in amounts greater than needed. In such a case, these substances are no longer goods, but they do not fall within the definition of 'things that the owner disposes of or wants to dispose of' [5].

Since waste is the substances and products that individuals cannot or do not want to use any longer [6], this category may be extended to include not only products and substances that have fulfilled their function as consumer goods but also any other unusable object.

These characteristics of waste can be combined in order to build following definition that embrace two central properties of waste: *waste is (1) useless and unused things and substances which (2) the holder wants to discard in the current institutional environment.*[11]

The features of MSW covered by this definition suggest that, in the current conditions, waste is a bad that requires elimination. Changes in the institutional environment or technology, which impact the level of transaction and transformation costs [7], may affect the net benefit of disposing of MSW. Alternative ways to handle waste may become more profitable as a result. In other words, economic agents may change their mind and sell rather than discard MSW. In such a case, the economic nature of MSW changes — the bad turns into a good or resource.

MSW interpretation as a good or a 'bad' is determined by type of market defined. On the one hand, MSW can be considered within a market trading in goods. Municipal waste will be a bad, and the economic agent will consume a set of products that includes both goods and 'bads'. On the other hand, MSW can be defines as a product on the waste market. In the latter case, waste is traded as an ordinary good or at a negative price when purchasing them entails losses.

Transition to the circular economy, which is enabled by changes in level of transaction and transformation costs facilitated by both businesses and the state [8], means exchanging goods that earlier were of no value to their holders. Therefore, the unique phenomenon of waste disappears upon transition to the circular economy.

How could waste be turned into a good or resource? Answering this question requires the identification of factors influencing supply and demand. If one wants to turn waste into a good or a resource, they need to either increase the value sorted and cleaned waste of decrease the cost of waste cleaning, sorting, and transporting (including transaction costs) so that to make waste management profitable for the actors in the MSW management system. However, the

[11] In the current condition, potential transactions involving such product or substances may occur outside market exchanges, and potential customers may attract resources from other sources.

value of waste depends directly on agents willing to use waste in manufacturing goods or generating energy (once again, transaction costs must be allowed for). Moreover, if a territory produces copious amounts of sorted and cleaned waste,[12] one can have an incentive to start a company that will treat MSW. Hence, to turn waste into a resource or good, we need have in mind three necessary conditions: waste should be pure, considerable quantities of waste are to be produced and demanded.

All the above mentioned definitions have one common feature: there should exist a holder of waste who wants to dispose of it. This turns out to be especially important when we consider negative externalities (the impact of discarded waste on the environment and the wellbeing of other agents) that emerge in the MSW management. If the waste holder neglects negative externalities when disposing of waste, the amount of goods/bads that are produced in the economy is ineffective. Still, it is often difficult to establish the actual ownership of waste. This is yet another obstacle on the road to the circular economy.

3. Obstacles on the way to the circular economy: the problem of an MSW management system

To understand what stands in the way to the circular economy, it is vital to have a good idea of the industry of waste management services. These services are usually viewed as a pure public good, which is non-excludable and non-rivalrous [9]. Indeed, it is almost impossible to exclude individuals (for example, non-payers) from consuming these services since clean streets and waste collection are essential to citizens' health and environmental protection. Delivered to some residents of an area, these services benefit all residents. The basic waste management service is not rivalrous, and any individual can use the service without reducing its availability to others.

Despite the public nature of the service, the state or municipalities do not always draw exclusively on their own resources when fulfilling this function. The private sector often comes to rescue [9]. Overall, the extent of involvement of the private sector in MSW management is influenced by multiple factors and initial conditions (including resource availability, community accountability, and the features of the institutional environment). MSW treatment contracts are vulnerable to changes in the environmental and tax law, as well as to foreign exchange risks (if MSW is exported). They are also associated with diseconomies of scale and negative externalities. Thus, effective contractual relationships with private waste management companies are impossible without transparent rules of play and incentives (for example, guarantees) from the state.

[12] Separated from other materials to the fullest possible degree. Different types of waste management systems require different waste of treating and cleaning waste.

The MSW management system is a complex comprising disparate elements. It includes the collection, sorting, treatment, and disposal of waste. Each element of this complex can be considered as a good in its own right. Moreover, these elements have features of goods of different types. MSW management can be schematised, as shown in figure 5.

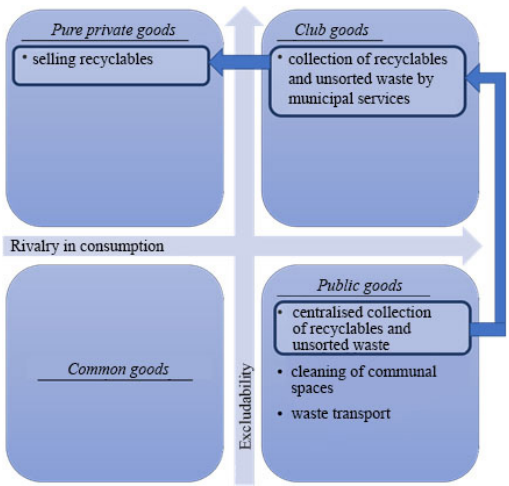

Fig. 5. Elements of the waste management complex according to excludability and rivalry

Source: prepared by the authors based on [10].

Some components of the MSW management complex can be seen as public goods, others as club goods, which are nonrivalrous and nonexcludable. There are also elements that have features of private goods, for instance, sales of recyclable materials.

In traditional MSW management systems, elements that can be classified as private or club goods do not play a pivotal role. Most waste is collected and transported on a centralized basis, and all consumers have equal and almost unlimited access to the MSW management system.

Transition to the circular economy alters this pattern — elements falling under club or private goods start playing a more prominent role. This change may be a result of the elements undergoing modification. For instance, earlier centralised waste collection may be performed now by each household individually. This way, excludability appears, and the service turns into a club good. Increasing the excludability in the waste management system is closely linked to the possibility of establishing the ownership of waste. In the circular economy, established ownership enables transactions in which waste is seen a recyclable.

Countries that excel in waste management embrace waste sorting, recycling, and incineration to minimise burial, increase the excludability of MSW management services, and thus facilitate the transition to the circular economy.

In many other countries, waste burial remains the most common approach to waste treatment. Russia is one of them: 90% of the waste produced nationally ends up in landfills. The country's waste management problems are diverse: no access to the infrastructure, few incentives for households to sort waste, the free-rider problems occurring when it comes to transporting of sorted waste, and non-transparent tariff setting.

The lack of access for residents to the waste infrastructure is one of the main problems in MSW management [11]. When households do not separate waste, an increase in the proportion of recycled MSW is only possible when the waste treatment and sorting industry is rapidly developing. What is more, the latter process must be accompanied by a gradual introduction of waste sorting rather than stand in its way. For example, St Petersburg plans to collect all the waste as mixed and take it to sorting stations. The only waste sorting option will be orange bins for hazardous waste — mercury-vapour lamps, batteries, and mercury thermometers [12]. Recyclable materials segregated by households are 'purer' than waste sorted at stations — sorting stations retrieve only 5—15% of recyclables from mixed waste [12].

Nevertheless, open and uncontrolled access to the waste sorting infrastructure may become another source of problems. Orlov et al. [13] emphasise that the fact that third persons can easily remove the sorted waste may discourage waste operators from supporting waste sorting schemes because of the potential losses of useful materials.[13] Thus, the development of waste sorting requires both dedicated bins and controlled access. It is possible to fence off the bins, with access granted only to residents of a concrete house.

Greater engagement from residents is essential to a complete transition to the circular economy [12—15]. Moreover, the 'rubbish reform' has not yet made a sea change in the industry but rather led to growing tariffs. And this circumstance contributes to the negative attitude of the general public to the reform [13].

Tariff differentiation based on the volume of produced waste and waste disposal discounts for households that sort waste has been promoted as a measure to motivate residents [14]. The approach based on waste storage targets, which is widely used in Russia, is not sufficiently transparent. Particularly, linking the targets to the materials composition of the waste as well as its volume raises questions [16]. By no means does this approach encourage households to segregate waste.

Another barrier to the circular economy is that the state does not seem interested in shaping a single policy on tariffs for different stages of waste management,

[13] An equally acute problem is that people may impair the quality of recyclable materials by throwing general waste into dedicated bins.

including final waste treatment. Alksnis provides evidence that the gate fee levied on access to open landfills sites is lower than that charged for access to sanitary landfill sites. This difference in fees does not prompt waste operators to choose better alternatives [17]. In other countries, higher fees for using landfill sites and incineration are common practice.

All the above problems seem to be a consequence of waste perceived as a bad by economic agents. This perception ensues from the definition of waste (see section 2). Waste does not have any value for its holder that strives to disposes of it, and the lines of waste ownership become blurred. As a result, fuzzy ownership of waste makes it impossible to solve the problem of externalities without governmental intervention. The only solution is to employ the Pigouvian, or the regulatory approach.

In the circular economy, waste ceases to be a bad and becomes a valuable resource. All the barriers discussed above are lifted automatically, without governmental intervention. Waste operators seek to provide households with the infrastructure and set acceptable tariffs, whilst consumers are interested in effective waste segregation. One of the causes of 'conflicts over rubbish' is the fuzzy ownership of waste [10]. Let us now consider how ownership is established in Russian law execution practices.

The legal framework for MSW management in the Russian Federation is federal law No. 89 On Industrial and Household Waste, which contains the following definition: 'industrial and household waste are substances or objects that are produced in the course of manufacturing, work performance, service provision or consumption and that are disposed of, meant for disposal, or designated for disposal…'

The same federal law defines MSW as a subtype of industrial and household waste as follows: 'the waste produced in residential properties in the course of consumption by individuals or goods that have lost their original use-value in the course of usage by individuals satisfying their personal and everyday needs in residential properties'.[14]

Although relationships regarding MSW presuppose the establishment of ownership as a foundation for economic exchanges, ownership is absent in both above definitions. For comparison, EU countries[15] defines waste as '*any substance* or

[14] Federal Law of 24.06.1998 N 89-FZ On industrial and household waste, 1998, *Garant*, available at: http://base.garant.ru/12112084/ (accessed 15.10.2020).

[15] National practices of EU countries are guided by Waste Framework Directive 2008/98/EC, 2008, *EUR-Lex,* available at: https://eur-lex.europa.eu/eli/dir/2008/98/oj (accessed 15.03.2021).

object which the holder[16] discards or intends or is required to discard'.[17] This way, ownership is specified in the initial definition of waste.

Yet, the absence of a reference to the waste holder in the basic definition of waste given in Russian laws does not mean that there is no owner. Particularly, the transfer of waste ownership is regulated by the Civil Code of the Russian Federation. Waste generated industrially belongs to the owner of the resource from which it was produced. Yet the law does not specify the holder of municipal waste.

The fact that the MSW holder is not defined in regulations causes disputes between municipal utility management companies (MUMCs) and the Federal Service for Supervision of Natural Resources (Rosprirodnadzor). For instance, disputes about environmental charges arose in 2014—2018. Many regional branches of Rosprirodnadzor were charging MUMCs for environmental damages.[18] The amount of the payment was calculated based on the volume of household waste collected by the MUMCs. Courts of the first instance and appeal satisfied the claims from Rosprirodnadzor, specifying that the households transfer the ownership of waste and the responsibilities of the waste holder to the MUMCs under a utility management contract. Yet contracts between MUMCs and MSW carriers do not entail a transfer of ownership. Consequently, MUMCs have to pay for environmental damage. In 2018, the Court Board on Economic Disputes of the Supreme Court ruled that the decisions of the court were wrong and utility management contracts did not entail a transfer of MSW ownership from households to MUMCs.[19] Who is the holder of waste after all?

Table 1 lists agents involved in the MSW management system. Surprisingly, the definitions given in federal law No. 89 On Industrial and Household Waste Management mention only those agents that are immediately engaged in waste management (waste operators performing different functions). For comparison, EU laws explicitly mention waste producers and holders alongside agents fulfilling waste management functions (dealers and brokers).

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[16] A waste holder is the waste producer or the natural or legal person who is in possession of the waste. A waste producer is anyone whose activities produce waste (original waste producer) or anyone who carries out preprocessing, mixing or other operations resulting in a change in the nature or composition of this waste (available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32008L0098&from=EN).

[17] Waste Framework Directive 2008/98/, 2008, EC *EUR-Lex,* available at: https://eur-lex.europa.eu/eli/dir/2008/98/oj (accessed 15.03.2021).

18 Supreme Court has figured out who is the holder of the MSW, 2021, *Pravo.Ru*, available at: https://pravo.ru/review/view/147701/ (accessed 15.03.2021).

[19] Supreme Court. Decision of the Court Board on Economic Disputes of the Supreme Court of the Russia Federation of 31.01.2018 in case N 305-ЭС17—10622, A41—25079/2016, 2016, *Consultant*, available at: http://www.consultant.ru/cons/cgi/online.cgi?req=doc; base=ARB; n=526857#0006818497252045752 (accessed 12.10.2020).

Table 1

MSW management agents

Function	*Russia*	*EU*
Waste treatment	MSW operator regional MSW operator federal hazardous waste (classes I and II) operators Russian environmental operator hazardous waste (classes I and II) operator	waste dealer waste broker
Waste ownership	—	waste producer waste holder

Source: prepared by the authors based on [20] and [21].

The operators do not become MSW holders after they have received it from the owners (legal or natural persons). A contract between the waste holder (this is the first time the 'waste holder'[22] is mentioned) and the regional operator does not entail a transfer of ultimate ownership[23] of waste.

The procedure of establishing waste ownership looks extremely ambiguous in the Kaliningrad region because of its special geographical position. Since major recyclable plastic consumers are located outside the region (in other Russian territories, Lithuania, and Latvia)[24], the collected and sorted plastic waste has to be taken across the border.[25]

[20] Federal law of 24.06.1998 N 89-FZ On industrial and household waste, 1998, *Garant*, available at: http://base.garant.ru/12112084/ (accessed: 15.03.2021).

[21] Waste Framework Directive 2008/98/EC, 2008, *European Commission*, available at: https://ec.europa.eu/environment/waste/framework/ (accessed: 15.03.2021).

[22] Article 24.7 Federal law of 24.06.1998 N 89-FZ On industrial and household waste, 1998, *Garant*, available at: http://base.garant.ru/12112084/ (accessed: 15.03.2021).

[23] Ultimate ownership is a power (Honoré's standard incident of ownership) that makes it possible in case of uncertainty to establish who is entitled to take the final decision. This concept reflects an idea that an owner that is entitled to take the final decision [29].

[24] Although some plastic consumers operate in the region, most of the collected plastic was sold to other regions and countries [Vylegzhanina, U. 2018, Stranded at customs, *Rossiyskaya gazeta* [Russian newspaper], available at: https://rg.ru/2018/07/31/reg-szfo/othody-na-pererabotku-iz-kaliningradskoj-oblasti-stali-zolotymi.html (accessed 13.08.2020) (in Russ.)]

[25] Despite the demand for plastic from companies involved in regeneration, most Kaliningrad plastic ends up in landfill: according to the Zeleny Front interregional environmental non-profit organisation, only 10% of plastic waste is recycled in the region [Household solid waste situation. Kaliningrad region, 2020, *Zeleny Front*, available at: http://green-front.su/post/5293 (accessed 25.10.2020) (in Russ.)].

The special economic status of the Kaliningrad region (it is a special economic zone) allows local entrepreneurs to import goods for personal use without paying customs fees. Yet such goods are considered bonded and cannot be brought to other Russian regions. As the new Customs Code of the Eurasian Economic Union came into effect, the local customs started to demand a proof of status for any exported good. According to the Customs Code, any good produced from an imported good is an imported good.[26] As a result, Kaliningrad plastic recycling businesses had to pay customs duties and VAT as if they were exporting a new good manufactured from imported materials.[27] If the waste is of unclear ownership or has come from MSW, it is impossible to provide a proof of origin of the good (a recyclable in this case).[28] Some companies stopped selling plastic to other Russian regions, and this aggravated the situation even further. The price of plastic went down in Lithuania and Latvia in 2018[29], probably because some Kaliningrad companies, unable to sell plastic to Russia for their economic benefit, had switched to those countries.

A manufacturer of number plate frames, ARS, which used the packaging of Kia and Hyundai CKD kits assembled at Kaliningrad plants as raw material, sued the Federal Customs Service of Russia (FCS). In 2019, the Supreme Court acknowledged the viability of the claim brought by ARS against the FCS and decided that the waste had lost its value in the course of use (in accordance with its original purpose) and thus could be considered a good fully produced in the Russian Federation.[30]

To solve the problems of ownership blurring, it was proposed to supplement the definition given in federal law No. 16 On the Special Economic Zone in the

[26] Customs Code of the Eurasian Economic Union, 2021, *Consultant,* available at: http://www.consultant.ru/document/cons_doc_LAW_215315/ (accessed: 15.03.2021).

[27] Kuznetsova, D. 2019, In the Kaliningrad region recyclable material collectors are refusing plastic, *Obshchestvennoe Televidenie Rossii* [Public Television of Russia], available at: https://otr-online.ru/news/v-kaliningradskoy-oblasti-sborshchiki-vtorsyrya-otkazyvayutsya- prinimat-plastik-134907.html (accessed 12.10.2020) (in Russ.).

[28] Vylegzhanina, U. 2018, Stranded at customs, *Rossiyskaya gazeta* [Russian newspaper], available at: https://rg.ru/2018/07/31/reg-szfo/othody-na-pererabotku-iz-kaliningradskoj-oblasti-stali-zolotymi.html (accessed 13.08.2020) (in Russ.) /

[29] After new Customs Code of the Eurasian Economic Union came into effect on the 1st of January 2018.

[30] Supreme Court. Decision of the Court Board on Economic Disputes of the Supreme Court of the Russia Federation of 31.01.2018 in case N 305-ЭС17—10622, A41—25079/2016, 2016, *Consultant*, available at: http://www.consultant.ru/cons/cgi/online.cgi?req=doc; base=ARB; n=526857#0006818497252045752 (accessed 12.10.2020).

Kaliningrad region[31] with the term final consumption.[32] The resulting definition would draw a line between goods and waste. As of the writing of this article, an amendment to federal law No. 16 has received a positive feedback 'as a result of the regulatory impact assessment'. As demonstrated above, the solution to the problem may lie in establishing the ownership of waste. In such a case, it will be required to calibrate the mechanism for establishing ownership of waste or to use incentive tariffs to encourage waste management stakeholders to acquire ownership of MSW.

4. Incentive tariff as a solution to the problem. The untapped potential of Kaliningrad

As auditors of the Accounts Chamber emphasise, 'the situation in this area [in the area of MSW management — authors] is still unfavourable', and the reform 'has not yet led to the expected results'[33]. In the Kaliningrad region, the only outcome of the reform was a rise in tariffs for households and the replacement of many waste carriers by a single one — the regional operator. The MSW collection routes did not change, and most waste is still taken to landfill sites.[34] The future of the reform depends on the actions of regional authorities, which are responsible for arranging the MSW management system.

[31] Federal law of 10 January 2006 No. 16-FZ On the Special Economic Zone in the Kaliningrad region and amendments to some regulations of the Russian Federation (current version), 2006, *Consultant*, available at: http://www.consultant.ru/document/cons_doc_LAW_57687/ (accessed 15.03.2021).

[32] Final consumption is the use of a good, following which the good is no longer suitable for the intended purpose, or usage that results in the impossibility of using the good, its components and materials, particularly due to the physical absence of the good, its components, and materials [Draft federal law on amendments to Federal law of 10 January 2006 No. 16-FZ On the Special Economic Zone in the Kaliningrad region and amendments to some regulations of the Russian Federation, 2006, *Federal'nyi portal proektov normativnykh pravovykh aktov* [Federal portal of draft regulations], available at: https://regulation.gov.ru/projects#npa=107916 (accessed 15.03.2021)].

[33] Report on the results of the expert and analytical study ' The analysis of the implementation of measures to ensure the environmental safety of the Russian Federation, in terms of liquidation of objects that accumulate harm and the formation of an integrated system for the MSW management', 2020, *Accounts Chamber of the Russian Federation*, availavle at: https://ach.gov.ru/upload/iblock/41b/41b02dc50697e6fc57ec2f389a8b68f0.pdf?_ga= 2.106291210.820111883.1605780584—216807580.1598522839 (accessed: 15.03.2021).

[34] Budrina, N. 2020, This week's top stories. On the waste reform in the Kaliningrad region, *RBC*, available at: https://kaliningrad.rbc.ru/kaliningrad/07/10/2020/5f7dba499a0794788d24ac0ab (accessed 17.10.2020) (in Russ.).

A Kaliningrad MSW management system should take into account the region's needs. The Kaliningrad region is unique in many respects, one of which is the predominance of low- and mid-rise buildings, both new and old, which distinguishes Kaliningrad from other regional centres with similar populations. Despite this fact, the tariffs set by the regional MSW operator are very close to the average across the regions under consideration (see table 2).

Table 2

Access to waste segregation sites in Russian cities in 2018—2019

	Population (1,000 people, 2018)	Earlier built housing	New builds	% age of houses with access to WS[1]		Threshold uniform tariff on the regional operator's services (across the region), 2019, VAT included
				2018	2019	
Penza	524	9	17	9	60	from 4307.12 to 4408.87 rouble/ tonne[2]
Lipetsk	510	9	17	4	44	from 492.38 to 548.66 rub/m^3 [3]
Kirov	507	6	15	37	0	from 949.62 to 960.68 rub/m^3 [4]
Cheboksary	492	9	16	0	4	from 449.71 to 456.82 rub/m^3 or from 4208.78 to 4267.86 rub/tonne [5]
Tula	483	6	14	1	1	from 518.25 to 623.02 rub/m^3 [6]
Kaliningrad	475	5	9	30	59	510.75 rub/m^3 or 3648.24 rub/tonne [7]
Kursk	449	9	10	0	34	from 491.12 to 570.11 rub/m^3 or from 2633.16 to 2463.47 rub/tonne [8]
Stavropol	434	10	16	31	9	from 640.01 to 683.56 rub/m^3 [9]
Tver	420	8	12	34	100	606.55 rub/m^3 [10]

Sources: [35], [36], [37], [38].

[35] Federal State Statistics Service, *Rossikyskiy statisticheskiy ezhegodnik* [Russian statistical yearbook], 2020, available at: https://rosstat.gov.ru/folder/210/document/12994 (accessed 15.09.2020).

[36] Russian cities ranked by tallness of buildings, 2020, *Domofond.ru*, available at: https://www.domofond.ru/statya/reyting_gorodov_rossii_po_vysotnosti_domov/8075 (accessed 24.10.2020) (in Russ.).

[37] Skipor, I. 2020, Greenpeace ranking: each third resident of a large Russian city has access to waste sorting, *Greenpeace*, available at: https://greenpeace.ru/blogs/2020/03/12/rejting-greenpeace-kazhdyj-tretij-zhitel-krupnogo-goroda-rossii-imeet-dostup-k-razdelnomu-sboru/ (accessed 14.09.2020) (in Russ.).

[38] Threshold uniform tariffs on MSW treatment by the regional operator, 2020, *News. solidwaste.ru*, available at: https://news.solidwaste.ru/predelnye-tarify-na-uslugi-regionalnogo-operatora/ (accessed 12.01.2020) (in Russ.).

The section below analyses how the number of storeys and some other factors can be employed in solving the above-mentioned problems.

Experts argue that the Kaliningrad region recovers a very small proportion of MSW because operators are not interested in delivering waste for recycling.[39] At the same time, many Russian recycling plants, which operate below their full capacity, have to import waste.[40] These companies would buy Russian waste if it were properly sorted. Thus, a possible way to break the deadlock in the 'rubbish' reform is to increase households' engagement.

Sorted waste is recycled more effectively than mixed waste. Both sorting by the operator (or a waste treatment company) and the often costly sorting by households are critical. Firstly, some segregated waste is further sorted at special facilities. For example, plastic and glass may be arranged by colour and chemical composition. Secondly, when stored with other waste, some types of MSW can no longer be recycled. Since food waste accounts for a significant part of mixed MSW, the latter is often referred to as wet waste. Recycling companies are especially interested in 'dry' waste that has never been in contact with wet materials. Only clean paper and cardboard can be recycled. After contacting food waste, they can no longer be used as recyclates. Finally, the recycling value of some types of MSW depends on its physical integrity. For example, bottles and other glassware are more valuable for recycling companies when whole. Once in a bin, glassware can be broken, that is why it has to be collected separately at special drop-off points. Altogether these factors make waste segregation by households the central element of MSW management.

Low engagement from consumers can be viewed as a free-rider problem, which is solved by making punishment for non-cooperative behaviour a real threat. Another solution is a fir promise of a reward for expected behaviour. As regards MSW management, punishments or rewards may be administered through a tariff policy, particularly, by introducing incentive tariffs.

Incentive tariffs have proven their efficiency in increasing consumer engagement in waste sorting. Baltic region states are a good illustration. Germany [18; 19] and most municipalities of Sweden[41] have adopted the pay-as-you-throw principle. Similar systems function in other Western European countries, the Republic of Korea, and Japan [20; 21]. This approach both encourages residents to segregate MSW [21] and reduces the volumes of generated waste by 20—30%, as compared to that produced under a fixed rate tariff [21; 22].

[39] Budrina, N. 2020, This week's top stories. On the waste reform in the Kaliningrad region, *RBC,* available at: https://kaliningrad.rbc.ru/kaliningrad/07/10/2020/5f7dba499a794788d24ac0ab (accessed 17.10.2020) (in Russ.).

[40] Galcheva, A. 2019, Russia has increased plastic waste imports by third, *RBC,* available at: https://www.rbc.ru/economics/30/08/2019/5d67e17f9a7947d966d7fd3d (accessed 15.03.2021) (in Russ.).

[41] *Avfall Sverige Swedish Waste Management Association*, 2020, available at: https://www.avfallsverige.se/in-english/ (accessed 22.10.2020).

Remarkably, despite a common institutional framework of the EU environmental law and common waste treatment rules, Southern Europe lags behind in waste management. This situation has been explained, among other things, by the insufficient employment of incentive tariffs in those countries [23].[42, 43]

Incentives tariffs have been proposed as a solution to the problem of moral hazard or post-contractual opportunism, which stems from information asymmetry when the actions of counteracting institutions cannot be observed. Yet, unlike the situation of moral hazard, in the latter case, the consumer of MSW management services does not take on the obligation to sort waste. This situation is somewhat of a social dilemma: a private benefit from the action does not exceed a public one, and the free-rider problem arises. What is more beneficial to an individual is not in society's best interest.

The approach discussed in the previous section can be used to demonstrate that incentives tariffs are an effective solution to the free-rider problem. Such tariffs bring in an element of excludability into access to the waste management system, an initially non-excludable good. An incentive tariff means that a consumer gets a discount (that is, is rewarded) if they properly sort waste. The discount is excludable — if the consumer fails to meet the requirement, they pay more (that is a kind of menu pricing scheme). Nevertheless, their access to waste collection services is not restricted in any way. Becoming ineligible for the discount is a real threat that reconciles private benefits with the public ones.

An incentive tariff can be levied in two ways — on mass or volume. If the tariff is levied on mass, the vehicles that collect waste must be equipped with weighing devices, and this means extra costs incurred by the operator.

If the tariff is levied on volume, there is no need for additional measurements. Usually, a bin or a bag is used as the measurement unit [24]. In the first case, the operator's staff collect waste as soon as the bin is full. Still, bins may vary in volume depending on the needs of a concrete household. This scheme is common in the countryside. The second variant means that consumers use special rubbish bags of a fixed volume. Sometimes, different types of waste are collected in bags of different colours. The operator charges a household based on the number of bags. A significant deficiency of this system is that it is difficult to use in multi-household buildings since it is next to impossible to determine how much waste was produced by each flat. In Germany, for ex-

[42] Planelles, M. 2019, Why Spain gets a failing grade when it comes to recycling, *El Pais*, available at: https://english.elpais.com/elpais/2018/02/28/inenglish/1519836799_117305.html (accessed 17.09.2020).

[43] Summary of Recommendations for Spain, 2020, *Official website of the European Union*, available at: https://ec.europa.eu/environment/waste/framework/pdf/facsheets and roadmaps/Roadmap_Spain.pdf (accessed 22.10.2020).

ample, the tariff is calculated based on the volume generated by several flats sharing a bin chute or by the whole building if the rubbish bins are installed outdoors.[44]

All the above suggests that Kaliningrad is a more suitable candidate for an incentive tariff scheme than many other Russian regional centres. A unique feature of the city is the predominance of low- and mid-rise buildings. Residents of multi-household buildings will have to act collectively to economise on waste collection. The basic tenet of collective action theory is that the success of joint efforts decreases as the number of participants grows [25].[45] Thus, the fewer people live in a building, the more easily they will reach a consensus over the joint action. Moreover, a smaller number of participants means a lower cost of monitoring and detection of individual violations.

Such a system should create not only negative ('cut down on waste, or it'll be the worse for you'), but also positive incentives or residents. In some Swedish and German regions, the collection of recycling bins is free of charge, and residents pay only for mixed waste. There are not only negative incentives (if mixed waste is thrown into the bins that are collected free of charge, no bins are collected). After a series of violations, the operator may stop collecting waste from the offenders. All this creates perfect conditions for both waste sorting and a reduction in waste volumes.

When discussing incentives created within this system, it is necessary to examine opportunistic behaviour. If the tariff depends on the volume or mass, people will do their best to minimise it. Some will throw their rubbish into the neighbours' bin, leave it in the street [26], or take up 'rubbish tourism'.[46] The need for monitoring, as well as other technical issues, such as weighing and tariff calculation, results in extra costs.

The simplest solution is fencing off and roofing a building's rubbish bins. Access to the site will be granted only to the residents of the building and the operator's staff. These precautions will rule out the possibility of unscrupulous residents dumping their rubbish in their neighbours' bins. It is important to understand that these measures will lead to rubbish accumulating on lawns, in litter bins, and other places. This situation calls for control. Economic theory, however, suggests that incentives might be more effective than immediate monitoring [27;

[44] Zagumennov, D. 2019, 'When everyone pays the same, it doesn't matter how you sort rubbish'. Why Germany has defeated landfill], *Properm.ru*, available at: https://properm.ru/news/society/177821/ (accessed 23.10.2020).

[45] Although this thesis has been repeatedly criticised in the literature (see, for example, [30; 31]), the situation in questions is very similar to the classical case: the group has homogenous purposes, individual participants contribute equally to the common cause.

[46] Zoccatelli, Z., Jaberg, S. 2018, Why the Swiss dump their rubbish in France, *Swissinfo.ch*, available at: https://www.swissinfo.ch/eng/what-a-waste_why-the-swiss-dump-their-rubbish-in-france/44238560 (accessed 13.01.2021).

28]. For example, not only discounts but even negative tariffs can be applied to recycle bins, i.e. residents will receive payment for waste collection. In such a case, they will be motivated to fill the bins as effectively as possible. The operator only has to collect the waste on time.[47]

The success of any reform depends on public attitudes. If the only incentives are fines and increased tariffs, residents will be unlikely to welcome the change. Transition to an incentive tariff will be easier if residents themselves decide to participate in this system. Otherwise, opposition from society is possible: people will link the new scheme with the rising rates. After the reorganisation of the industry in 2019, a very peculiar situation developed in Kaliningrad. The revision of waste collection rates resulted in a 30-fold increase in payments charged to the Museum of the World Ocean, although the amount of the waste generated by the establishment had not changed.[48]

Companies specialising in waste sorting and recycling have been active in Kaliningrad for a long time, but many residents suspect that sorted waste will not be recycled but rather buried at a landfill site.[49] These doubts are another factor that affects residents' engagement in waste segregation. The awareness campaigns may prove to be ineffective.[50] The best solution is to set a positive example. For instance, there is a company in Kaliningrad that manufactures furniture from segregated plastic.[51] It can process up to 180 tonnes of plastic per year, which is obviously insufficient for a region that generates 82,000 tonnes of plastic waste annually.[52]

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[47] When speaking of sorted waste, it is important to understand that it is a resource rather than rubbish. As a rule, waste operators are interested in handling such MSW. Thus, one can expect that communal bins will be collected without delays.

[48] Museum asked to pay for non-existent waste in Kalinigrad region, 2019, *NTV*, available at: https://www.ntv.ru/novosti/2160341/ (accessed 14.10.2020) (in Russ.).

[49] Markov, I. 2020, Tested first-hand: how Kaliningrad is sorting rubbish, *Komsomol'skya Pravda,* available at: https://www.kaliningrad.kp.ru/daily/27091/4164072/ (accessed 12.10.2020) (in Russ.).

[50] Experience shows that consumers know very little about waste fractions — which are recyclable and which are not [Markov, I. 2020, Tested first-hand: how Kaliningrad is sorting rubbish, *Komsomol'skya Pravda,* available at: https://www.kaliningrad.kp.ru/daily/27091/4164072/ (accessed 12.10.2020) (in Russ.).

[51] Wastelessness: what the Kaliningrad region makes from waste, 2020, *Kaliningrad kgd.ru news portal*, available at: https://kgd.ru/news/society/item/91426-bezothodnost-chto-delayut-iz-pererabotannogo-musora-v-kaliningradskoj-oblasti (accessed 24.10.2020) (in Russ.).

[52] According to the regional waste collection, transport, and treatment scheme, the region produces yearly 246,000 tonnes of waste (Table 1.1); plastic comprises a third of this (Table 8, lines 5 and 6). [Regional Waste Collection, Transport, and Treatment Scheme, 2020, *Ministry of the Natural Resources and Ecology of the Kaliningrad region*, available at: https://minprirody.gov39.ru/deyatelnost/obrashchenie-s-otkhodami/territorialnaya-skhema-obrashcheniya-s-otkhodami/ (accessed 11.08.2020).

Regional and municipal authorities have to support this and similar initiatives by granting subsidies for the manufacturing of urban infrastructure from recycled plastic. Such infrastructure includes benches, fences, street signs, flowerbeds, flower pots, etc. These objects should carry a label saying that they were made from recycled waste. Coming across these tangible proofs in their everyday lives, residents will see that their segregation efforts will not be in vain.

Since Kaliningrad does not share a border with any other Russian territory, creating and developing such businesses in the region will alleviate the problem of transboundary movement of MSW.[53]

A further study needs to be carried out into the possibility of granting preferences to businesses using recycled materials as regards state and municipal procurement. Naturally, preferences must be granted without violating the law and jeopardising competition.

Conclusion

This study set out to establish the reasons why the waste management reform had failed and what stood in the way of the circular economy in Russia. Kaliningrad was chosen as the test case.

Waste was defined as (1) useless and unused things and substances, (2) which the owner wants to dispose of in the current condition of the institutional environment. This definition stresses that waste is a bad as compared to goods and resources, on the one hand. It also emphasises that waste has an owner, on the other. The latter may simplify the internalisation of negative externalities associated with waste treatment. The definition also suggests that changes in the institutional environment and technology can cause waste to move from the category of bads to that of goods and resources. Such transition, however, will require a considerable volume and purity of waste, as well as sufficient demand for it.

Moreover, the study explored certain aspects of legal relationships in waste management and demonstrated that problems in the field might arise from the fuzzy ownership of waste and the peculiarities of waste management as a service. It is concluded that elements of the MSW management systems have features of different types of goods (public, club, and private ones). At the same time, greater excludability can cause a change from the category of public goods to that of private ones.

[53] In 2018, regional companies were faced with the need to pay VAT and customs duties when transporting MSW to other Russian regions [Ulyana Vylegzhanina. Zastryali na tamozhne [Stranded at customs]. URL: https://rg.ru/2018/07/31/reg-szfo/othody-na-pererabotku-iz-kaliningradskoj-oblasti-stali-zolotymi.html (accessed 13.08.2020).

Incentive tariffs can increase the proportion of recycled MSW. Furthermore, they will provide an effective solution to the free-rider problem if mechanisms to counter opportunistic behaviour are developed.

We believe that the Kaliningrad region — a city of low- and mid-rise buildings — is an ideal testing ground for setting incentive tariffs, which require collective action. The fewer people live in a building and the fewer storeys it has, the easier it is to act jointly.

The findings suggest that transition to incentive tariffs should be carried out on a voluntary basis. In additions, recycled waste may be used to manufacture urban infrastructure objects marked with corresponding labels. All this will help overcome residents' negative attitude to the reform and increase engagement in waste segregation. In its turn, the development of recycling in the region contributes to solving the problem of waste transportation to other Russian regions.

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The authors

Prof. Andrey E. Shastitko, Head of the Department of Competition and Industrial Policy, Faculty of Economics, Lomonosov Moscow State University, Russia; Director, Centre for Competition and Economic Regulation Studies, the Russian Presidential Academy of the National Economy and Public Administration, Russia.

E-mail: aes@ranepa.ru

https://orcid.org/0000-0002-6713-069X

Karina A. Ionkina, Teaching Assistant, the Department of Competition and Industrial Policy, Lomonosov Moscow State University, Russia; Junior Researcher, Centre for Competition and Economic Regulation Studies, the Russian Presidential Academy of the National Economy and Public Administration, Russia.

E-mail: ionkina-ka@ranepa.ru

https://orcid.org/0000-0001-6333-7282

Olga A. Markova, Teaching Assistant, the Department of Competition and Industrial Policy, Lomonosov Moscow State University, Russia; Junior Researcher, Centre for Competition and Economic Regulation Studies, the Russian Presidential Academy of the National Economy and Public Administration, Russia; Chief Expert, the Institute for Competition Policy and Market Regulation, National Research University Higher School of Economics, Russia.

E-mail: markovaoa@outlook.com

https://orcid.org/0000-0002-3512-6282

Anton N. Morozov, Teaching Assistant, the Department of Competition and Industrial Policy, Lomonosov Moscow State University, Russia; Junior Researcher, Centre for Competition and Economic Regulation Studies, the Russian Presidential Academy of the National Economy and Public Administration, Russia; Chief Expert, the Institute for Competition Policy and Market Regulation, National Research University Higher School of Economics, Russia.

E-mail: morozov-an@ranepa.ru

https://orcid.org/0000-0001-5402-8023

SOCIAL DEVELOPMENT IN THE BALTIC SEA REGION

SPATIAL STRUCTURE AND THE DEVELOPMENT OF SETTLEMENTS IN THE SAINT PETERSBURG AGGLOMERATION

S. S. Lachininsky [1, 2]
I. S. Sorokin [1]

[1] St Petersburg State University
7/9 Universitetskaya nab., St Petersburg,199034, Russia

[2] Institute for Regional Economies Russian Academy of Sciences
38 Serpukhovskaya ul., St Petersburg, 190013, Russia

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This article explores the spatial structure and development of settlements comprising the Saint Petersburg agglomeration. Previous studies and database sources, which were never used before (the Federal Tax Service [FTS] database and SPARK-Interfax), are analysed to reveal factors in the economic development of metropolitan areas as well as to understand how settlements develop in Russia's second-largest city agglomeration. The borders and composition of the Saint Petersburg agglomeration are brought up to date. Examining the population size of the settlements helps locate the 'growth belt' of the agglomeration. Lists of major enterprises of the city and the region make it possible to identify patterns in the economic development of the study area. The SPARK-Interfax database aids in clarifying relationships between spatial elements of the agglomeration (its core and satellites) in the distribution of revenues of economic agents. Data on the location of the largest retail stores — shopping malls and hypermarkets — are used to identify the main centres of commerce in the Saint Petersburg agglomeration. A map chart has been drawn using 2GIS and Yandex Maps geoinformation services. An important step in agglomeration analysis is the identification of residential development hotspots. FTS data on property tax base are the main source of relevant information. FTS reports contain data on the number of residential buildings and units covered by the database. Further, FTS statistics is employed to trace income and job distribution across the study area. The current functions of settlement in the Saint Petersburg agglomeration have been determined. According to the findings, the spatial structure of the agglomeration has three groups of 'backbone centres'. The agglomeration includes a core, a population growth area ('growth belt'), commuting sources and recipients, and 'backbone centres'.

Keywords:
Saint Petersburg agglomeration, city, spatial structure, backbone centres, economic security

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Previous research and problem statement

This study is devoted to assessing the role and place of urban settlements in the settlement system of the second largest urban agglomeration in Russia — the St. Petersburg agglomeration. Its determinant features include monocentrism in the spatial structure, seaside and 'metropolitan' position, 'loose' transport structure, rudiments of Soviet industrialization as the basis for the formation of large urban settlements, the expansion of suburbia due to multi-storey housing areas and cottage settlements, new industrialization in the 2000s due to the rapid influx of foreign investment.

Two concepts lie in the foundation of this research, *economic security* and *self-development of settlements*. And while the former is described in sufficient detail [1—2], the latter is a more vague and indefinite term. Self-development is often understood as development primarily through internal resources [3—6]. Some researchers[1],[2] consider the issues of self-development in a broader spatial aspect in the context of self-organisation, self-sufficiency, self-realization [7]. In regional economy, *self-development* at the regional level [8—9] is linked to the ability of the region to ensure expanded reproduction with its own income sources, to the achievement of a stable state of the economy and its structural elements.

Within systemic approach, self-development of a municipality is seen as the fullest possible use of mainly local, but also external resources in order to create favorable living conditions for the population of a given territory in short- and long-term periods [10—11].

Under self-development of urban settlements within the framework of an agglomeration, we understand such socio-economic development that leads to the full use of internal and external resources in order to create favorable living conditions for a population, taking place in the circumstances of steady population growth, based on the multi-sectoral structure of the economy and several backbone enterprises.

Urban agglomerations are a very long-living research topic. It is believed that the term *agglomeration* was first used by the French geographer Rouget (1973) in the following meaning: "A group of suburbs merged with a main city or several small cities merged." The author believed that an agglomeration occurs when "the concentration of urban activities goes beyond the administrative boundaries and spreads to neighboring settlements" [12].

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[1] China's Population and Development in the 21st Century, 2020, China.Org.Cn, availe able at: http://www.china.org.cn/e-white/21st/index.htm (accessed 20.04.2020).

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In the 1970s and 1980s, when the concept of agglomeration was firmly entrenched in the scientific world, a number of studies gave a definition of urban agglomeration. In 1987, Lappo wrote that an agglomeration is "a compact territorial grouping of urban and rural settlements, united into a complex dynamic local system by diverse intensive connections — communal-economic, labour, cultural and household, recreational, as well as the joint use of this area and its resources" [14].

Basically, most of researchers identify the same elements of an urban agglomeration: the city-centre, its zones of influence (most often there are three: near, middle and distant), satellite settlements, various connections of settlements within the agglomeration with the city-centre. Similarities in the development of the settlement system in socialist countries and countries of "free entrepreneurship" were noted by the French scientist Beaujeu-Garnier [15]. This indicates that agglomeration is an objective process.

Territorial growth and rising power of cities made researchers pay more attention to the functional and spatial urban structure. In the context of suburbanization phenomenon, the suburbs of large cities got broader functions. The most common way to describe the spatial structure of an urban agglomeration is to divide the territory into belts, depending on the distance from the centre. This concept became so widespread in Russia that it formed the basis for a number of strategic planning documents, for example, The Concept of Socio-Economic Development of the Leningrad Region for the period up to 2025 [17]. The approach is based on the identification of the agglomeration core, which has high building and population density, concentrating significant or even prevailing share of jobs, service organisations, cultural and leisure institutions of the agglomeration. Several belts around the core can be detected (usually two or three), the inhabitants of which have the opportunity to regularly visit the core for labour or recreational purposes. Researchers believe that 75—80% of regular commutations are locked within these boundaries [18].

For a long time, suburbs of large cities performed mainly housing and recreational functions. However, in the 1970s and 1980s suburbanization affected office, business, research and production activities [19]. It soon became apparent that suburban areas (satellite metropolitan area) were taking on more and more functions that had previously been inherent to the city centres. Centres of trade, business activity, research institutions and industrial enterprises moved to the periphery of agglomerations. This led to the decline of traditionally powerful central business districts of large cities. Similar processes of unloading agglomeration centres and shifting some functions to the outskirts were observed for the post-Soviet spaces [16, 20][3]. At present, the development of agglomerations is

[3] Housing market and settlement patterns in the Moscow region, 2020, *Demoscope*, available at: http://www.demoscope.ru/weekly/2006/0247/tema06.php (accessed 12.03.2020).

transitioning from suburbanization to post-suburbanization, with suburbs (satellite zones) increasing their functional diversity [19]. All this has set a new task for researchers: to characterize the territorial-functional structure of urban agglomerations.

In the early 1990s, the American scientist and journalist Joel Garreau introduced the concept of an *edge city*. Garreau described his idea in his 1991 book, *Edge City: Life on the New Frontier*. Edge cities are located on the periphery of urban agglomerations and provide for the neighboring residents some functions of the core, which the former cannot regularly reach. The author considered the emergence and development of such edge cities to be a symbol of a new stage in urbanization.

Soviet researchers also paid attention to the development of large local centres within urban agglomerations. In the early 1970s, when analyzing development trends of Moscow agglomeration, Lappo introduced the concept of *second-order agglomeration* [21]. Later, this concept was developed both in the works of Lappo himself and in those of Pertsik and Makhrova [22].

Second-order agglomerations are structural subdivisions of first-order agglomerations (main agglomerations). They are characterized by a developed system of functional connections both within the second-order area and with the core of the main agglomeration. Such agglomerations have their own centre (core), to which all other settlements gravitate, but at the same time the entire agglomeration of the second order acts as a satellite zone of the main agglomeration core.

The centre of second-order agglomeration should differ from the surrounding settlements by a high number and density of population, well-developed and stable functional structure, well-developed transport, industrial and engineering infrastructure. Pertsik and Makhrova believed that the population of second-order agglomeration centres should be at least 50 thousand inhabitants, and the boundaries of the agglomeration should correspond to a 1.5 hour isochron of transport accessibility [22].

Today new methods for studying spatial structure of agglomerations, and second-order centres in particular, have become widespread. The use of data on the movements of customers from mobile network operators provides researchers with many opportunities [37]. It is now possible not only to determine the boundaries of the largest Moscow agglomeration in Russia, but also to identify local centres of attraction on its territory that receive pendulum migrants from the surrounding territories [38; 39]. The role of such centres in the socio-economic development of agglomerations has not yet been fully determined, but research data once again confirms the presence of local *key centres* (*backbone centres*) in large urban agglomerations, which take on some functions of the original core.

It is no coincidence that in most of the classical works of Western researchers, centres of attraction (or centres of activity) are understood as territories characterized by high concentration of jobs [25]. One of the latest worsk by European researchers studying cities in France and the Netherlands [31] indicates that satellite cities or sub-centres are rapidly transforming from 'business-only' areas into multifunctional places with residential, office, commercial, industrial and storage areas.

Research methodology

This paper presents the results of a study of socio-economic development heterogeneity of the St. Petersburg agglomeration territory. The following indicators have been selected for the analysis: population size and its dynamics, number of backbone enterprises, revenue of enterprises, number of large retail facilities (shopping and entertainment centres and hypermarkets), housing construction, number of workplaces.

The databases of the Federal Tax Service and the SPARK-Interfax database, as well as regional lists of backbone organisations, have been used for this study. The SPARK-Interfax database has made it possible to show the share of spatial elements of agglomeration (the core and the satellite zone) in revenue distribution. Data from the geoinformation services 2GIS and Yandex. Maps has been used in schematic map of the largest retail facilities location: shopping and entertainment centres (SEC) and hypermarkets. Housing construction areas have been identified using data from the Federal Tax Service on property tax of individuals. In addition, with the help of the Federal Tax Service statistics the features of population income and workplaces distribution have been analysed.

Population dynamics analysis allows to identify municipalities with high rates of population growth, localized at the boundaries of an agglomeration core forming a "growth belt".

To study the features of pendulum migration the authors have used data on the number of jobs from the Federal Tax Service of the Russian Federation and data on the size of the population from the Federal State Statistics Service. Donors and recipients of pendulum migration were identified among the municipalities that make up the St. Petersburg agglomeration.

The allocation of agglomeration's key centres has been carried out taking into account all the indicators mentioned, including the calculated jobs to population ratio.

Composition and boundaries of the St. Petersburg agglomeration

St. Petersburg agglomeration is located on the territory of two federal subjects — the federal city of Saint Petersburg and the Leningrad region. As for the city of St. Petersburg, most researchers agree that its entire territory constitutes a part of the agglomeration; yet there are several approaches to defining agglomeration boundaries on the territory of Leningrad region.

A fundamental study on agglomeration boundaries was carried out during the preparation of the General Plan of St. Petersburg from 2002 to 2005, as well as in 2012 for The Concept of Socio-economic Development of the Leningrad Region for the Period until 2025 [17]. Another noteworthy study is that by Reznikov, published in 2017 [35].

For the purposes of this research, we believe that it is correct to consider the districts of the Leningrad region (Vyborgsky, Vsevolozhsky, Kirovsky, Tosnensky, Gatchinsky, Lomonosovsky) and Sosnovoborsky urban district adjacent to St. Petersburg as part of agglomeration; our approach being helpful for a number of reasons. Firstly, it allows access to a number of statistical indicators that are not available at the lower level of administrative division. Secondly, while some previous studies focused on individual types of public transportation (buses, suburban commuter rail), at the moment there is no study describing pendulum migration using all modes of transport between the satellite zone and the core of the agglomeration.

It is precisely the high share of pendulum migrants in the total number of those employed that makes it possible to classify the territory as an urban agglomeration. Without this indicator, it is impossible to unambiguously judge which parts of the Leningrad region adjacent to St. Petersburg are part of the agglomeration and which are not. In order to fully cover the potential territory of the St. Petersburg urban agglomeration, we consider it necessary to include the areas described above in their entirety.

Now, it is necessary to identify the agglomeration core on the territory of the federal city of Saint Petersburg. The federal city includes three types of municipalities: municipal districts, cities and settlements. All cities that are part of St. Petersburg can be considered independent satellite cities. All urban settlements are located on the periphery of St. Petersburg, within the Kurortny, Petrodvortsovy, Pushkinsky, Kolpinsky, Vyborgsky and Primorsky districts and have poor transport connection with the core. Therefore, within the framework of this study we propose to consider the aggregate of municipal districts of the federal city of St. Petersburg as the agglomeration core.

Some necessary indicators (data from the SPARK-Interfax database) are available only for the level of municipal districts of the Leningrad region and districts of St. Petersburg. When using such indicators, it is necessary to revise the composition of the agglomeration core and the satellite zone. Agglomeration boundaries in the Leningrad region will remain unchanged. In St. Petersburg, the core zone of agglomeration includes the territory of 13 municipal districts: Admiralteisky, Vasileostrovsky, Vyborgsky, Kalininsky, Kirovsky, Krasnogvardeisky, Krasnoselsky, Moskovsky, Nevsky, Petrogradsky, Primorsky, Frunzensky, and the Central district. At the same time, on the territory of Krasnoselsky district there is the city of Krasnoe Selo, which belongs to the satellite zone of agglomeration; on the territory of Primorsky district there is the settlement of Lisiy Nos; on the territory of Vyborg district — settlements of Pargolovo and Levashovo. Total population of these municipalities is 145 thousand inhabitants (7.3% of the satellite zone population). Unfortunately, these municipalities have to be counted as the core of agglomeration.

Thus, the agglomeration core includes 13 previously mentioned districts. The satellite zone consists of five districts of St. Petersburg (Kolpinsky, Kronstadtsky, Kurortny, Petrodvortsovy and Pushkinsky), six districts of the Leningrad region (Vyborgsky, Vsevolozhsky, Kirovsky, Tosnensky, Gatchinsky, Lomonosovsky), and one urban district of the Leningrad region — Sosnovoborsky.

Population dynamics of the agglomeration

In 2019, the total population of the area under consideration was 6.6 million people. The core is home to about 70% of the agglomeration's population. From 2010 to 2019, the population of the St. Petersburg agglomeration increased by 11.2% (660 thousand people). However, the growth had been uneven.

Population growth is mainly concentrated around the agglomeration core. The fastest growing territories are located close to St. Petersburg. For clarity, we can divide the municipalities into those that have grown by more than 11.2% (average population growth in the agglomeration), and those where the population has decreased or increased by less than 11.2%. Thus, we can identify a conditional 'growth belt'.

The population 'growth belt' is rather monolithic — it is a belt of municipalities around the agglomeration core (fig. 1). The total 'growth belt' population in 2019 was 997 thousand people (about half of the satellite zone population), having grown by 330 thousand (about a third) compared to 2010.

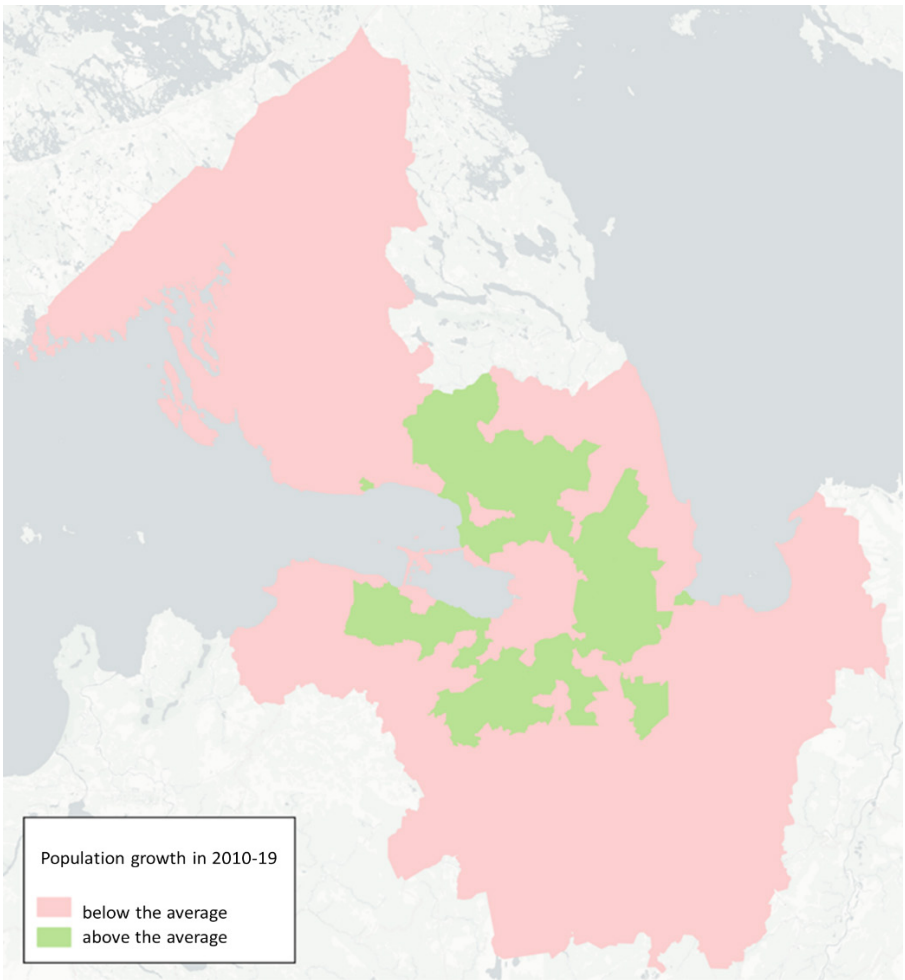

Fig. 1. Population 'growth belt' of the St. Petersburg agglomeration
(compiled by the author using Municipal statistics database[4])

Backbone enterprises of the agglomeration

In April 2020, the administration of St. Petersburg and the government of the Leningrad region compiled lists of 'system-forming' (*backbone*) enterprises. System-forming enterprises, according to the definition of regional authorities, are organisations of regional importance with a significant impact on the employment of the population and social stability in the region. 154 enterprises were classified as backbone in St. Petersburg[5], and 79 in the Leningrad region.[6]

[4] Municipal statistics database, 2020, Rosstat, available at: rosstat.gov.ru/storage/mediabank/munst.htm (accessed 02.05.2020).

[5] List of Backbone Enterprises Defined, 2020, *St Petersburg Administration,* available at://www.gov.spb.ru/gov/admin/elin-ei/news/186855/ (accessed 08.05.2020).

[6] List of Backbone Enterprises of the Leningrad region, 2020, *The government of the Leningrad region,* available at: lenobl.ru/ru/informaciya/perechen-sistemoobrazuyushih-organizacij-leningradskoj-oblasti/ (accessed 07.05.2020).

Consider the location of backbone enterprises of St. Petersburg and the Leningrad Region within the St. Petersburg agglomeration. Of all the organisations listed, 193 are located within the agglomeration. Of these, 129 are located within the agglomeration core. 64 organisations are located within the satellite area. They are unevenly distributed over the satellite zone, mostly near the agglomeration core (fig. 2). The largest number of such organisations can be found in the cities of Vsevolozhsk, Gatchina, Kolpino, Kommunar, Otradnoye, the settlenment of Sverdlov and the settlenment of Pargolovo.

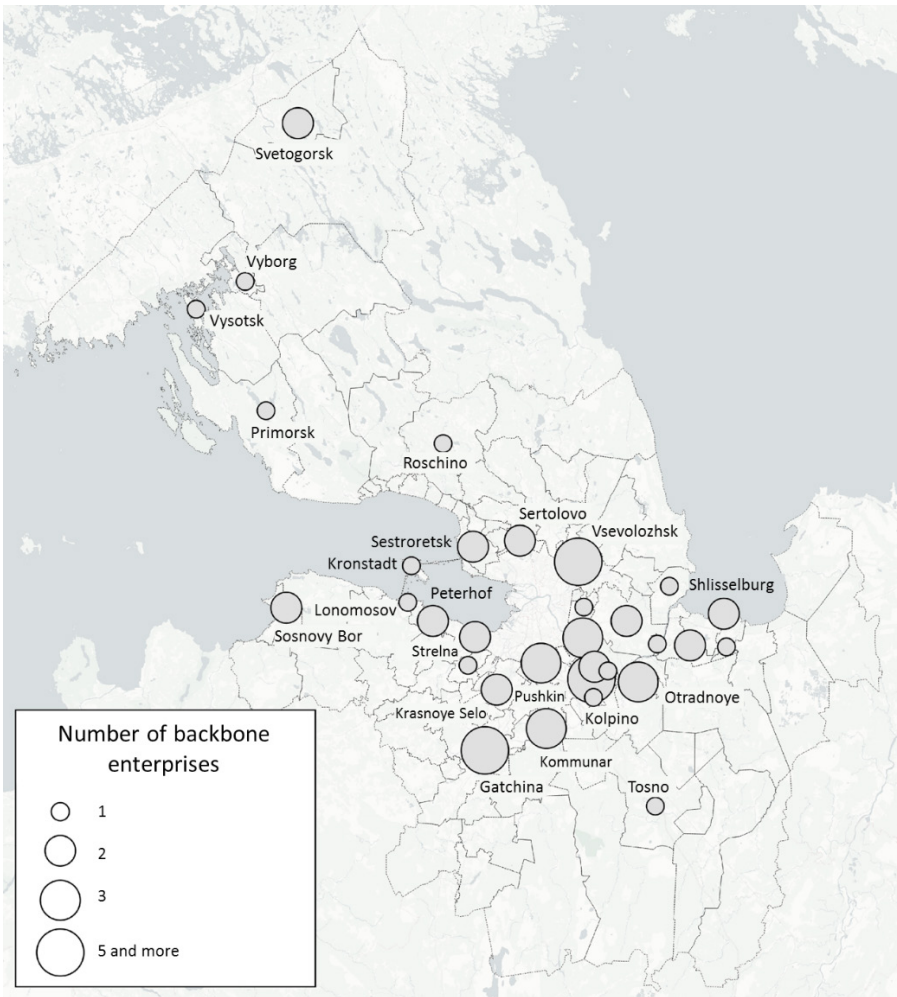

Fig. 2. Distribution of backbone enterprises of St. Petersburg and the Leningrad region over the St. Petersburg urban agglomeration satellite zone (compiled by the author[7])

[7] List of Backbone Enterprises, 2020, *St Petersburg Administration,* available at://www.gov.spb.ru/gov/admin/elin-ei/news/186855/ (accessed 08.05.2020).
List of Backbone Enterprises of the Leningrad region, 2020*, The government of the Leningrad region*, available at: lenobl.ru/ru/informaciya/perechen-sistemoobrazuyushih-organizacij-leningradskoj-oblasti/ (accessed 07.05.2020).

Most of economic indicators in the municipal statistics database are available only at district level. Therefore, it is the data of municipal districts and urban districts of the Leningrad Region and districts of St. Petersburg that has been used to characterize economic development. This level of detail only makes it possible to assess the differences between the agglomeration core and the satellite area, but not to describe the heterogeneity within the satellite area, as it has been done for the previous section.

The SPARK-Interfax database publishes its own statistics on the revenue of organisations. The data is available for the federal subjects of Russian Federation, as well as for municipal districts. Urban and rural settlements, as well as municipalities of St. Petersburg are not considered in this case. The boundaries of the core and the satellite zone when using such data turn out to be somewhat different, which is described in detail in the section Composition and Boundaries of the St. Petersburg Agglomeration.

In 2018, the total revenue of organisations in the St. Petersburg agglomeration amounted to 23.7 trillion roubles. According to SPARK, this constituted 10.6% of the total revenue of all organisations in Russia. The share of agglomeration core in organisations revenue was 90.2%. On average for the period from 2014 to 2018, the share was 90.1%.

Table 1

Total revenue of organisations, billion roubles in 2018 prices (according to the SPARK database)[8]

Year	2014	2015	2016	2017	2018
Agglomeration total	22390,5	23582,3	23692,7	23398,1	23666,0
Core[1]1	20235,7	21271,2	21265,7	21005,5	21338,6
Satellite zone	2154,8	2311,2	2427,0	2392,6	2327,5
Share of the core, %	90,4	90,2	89,8	89,8	90,2

Retail

Retail is an important component of urban economy. Moreover, large volume of retail space in the city can attract pendulum migrants from the suburbs to make purchases. In his concept of the *edge city*, Joel Garreu emphasized that such city should have a large volume of retail space and be a retail centre for the surrounding areas.

To identify the most important shopping areas in the St. Petersburg agglomeration, we have used data on the location of the largest retail facilities: shopping and entertainment centres (SEC) and hypermarkets.

Researchers note that such retail facilities have a wide service area with a radius of 10—15 kilometers (about half an hour transport accessibility) [36]. Settlements where such shopping facilities are located can be local points of attraction serving the needs of surrounding territories.

[8] *SPARK database*, 2020, available at: www.spark-interfax.ru/ru/statistics (accessed 07.05.2020).

There are 104 hypermarkets and 63 shopping and entertainment centres in St. Petersburg urban agglomeration. Of these, 79 hypermarkets and 44 shopping centres are located in the agglomeration core, 25 hypermarkets and 19 shopping and entertainment centres are located in the satellite zone. Shopping facilities are concentrated in several cities (fig. 3). The major shopping locations are Vyborg, Gatchina, Vsevolozhsk, Kolpino, Krasnoe Selo, Peterhof, Zanevskoe and Bugrovskoe settlements and Pargolovo.

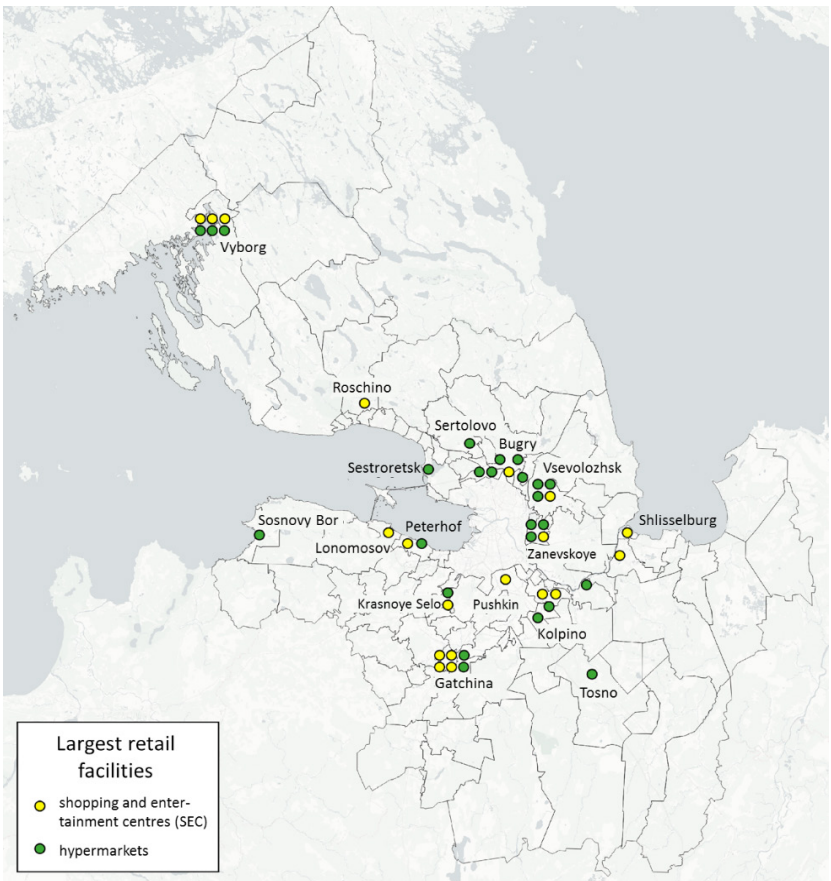

Fig. 3. The largest retail facilities in the St. Petersburg agglomeration (compiled using 2GIS and Yandex.Maps map services)

Housing construction

Another important indicator is housing construction in the agglomeration. The main source of information has been the Federal Tax Service data on the property tax of individuals. The Federal Tax Service reports provide data on the number of residential buildings and residential premises (apartments, rooms), their data is available for the period from 2015 to 2018.

In 2018, the share of the agglomeration core in residential buildings amounted to 71.4% in apartments and 2.6% in houses. In the period from 2015 to 2018, the share of the agglomeration core was decreasing, which points to more intensive housing construction in the satellite zone.

According to the Federal Tax Service, in the period from 2015 to 2018 the agglomeration core accounted for 46.7% of new housing. Since the share of the core in population of agglomeration is about 70%, it may be that significant part of new housing in the satellite zone was constructed for the residents of the core.

We have been able to determine the locations where housing construction exceeded the internal needs of municipalities. For this, the number of new residential properties (apartments, houses) built in the period from 2015 to 2018 has been divided by the average population of municipalities in the same period (fig. 4). For example, in Murinsky rural settlement and Zanevsky urban settlement there were built more than two housing objects per inhabitant.

High rates (from 0.5 to 1 object per inhabitant) are also typical for Villozsky, Ropsha, Penikovsky and Yukkovsky settlements located directly near the agglomeration, as well as for Trubnikoborsky settlement, which is located at a fairly large distance.

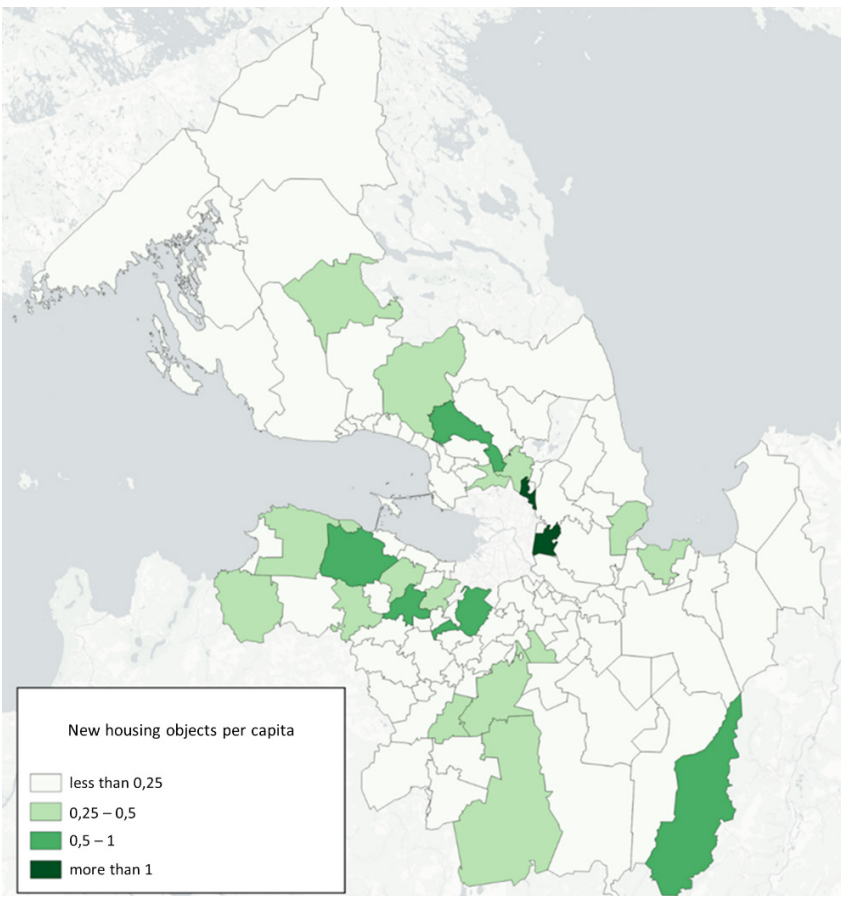

Fig. 4. Housing construction per capita in the period from 2015 to 2018 in the satellite zone municipalities of the St. Petersburg agglomeration (compiled by the author using data of the Federal Tax Service[9] and Municipal statistics database[10])

[9] *Federal Tax Service* (FTS), 2020, available at: https://www.nalog.ru/rn78/ (accessed 25.05.2020).

[10] *Municipal statistics database*, 2020, available at: rosstat.gov.ru/storage/mediabank/munst.htm (accessed 02.05.2020).

Population income and jobs

As mentioned above, data on the population income in Municipal statistics database is available only for municipal districts (in the Leningrad region), which makes it impossible to assess differences within the agglomeration at a lower level. There is also no information on the number of employees in the organisations in this database.

The Federal Tax Service provides data on the calculation and collection of personal income tax (PIT) on its official website. Data on the PIT base (actually the income of individuals) is available, broken down by "income codes" (sources of income, including salaries).

Within the framework of this study, the authors have used the data on the number of filed PIT declarations (number of *personal income files*) to substitute the missing data on the number of employees of organisations.

In 2018, 4.2 million personal income files were registered on the territory of the agglomeration (table 2). Of these, 3.3 million were in the core and 0.8 million in the satellite zone. If we assume that this indicator reflects the number of jobs and compare it to the Federal State Statistics Service data (according to which working age population of St. Petersburg is about 3 million) this estimate looks overstated.

Table 2

Number of personal income files in St. Petersburg agglomeration, thousand roubles[11]

Year	2012	2013	2014	2015	2016	2017	2018
Agglomeration total	4,280.0	4,298.9	4,214.8	4,075.3	4,054.6	4,129.8	4,155.7
Core	3,481.5	3,498.3	3,413.4	3,328.6	3,292.1	3,348.1	3,346.5
Sattelite zone	798.6	800.6	801.4	746.7	762.4	781.7	809.2
Share of the core, %	81.3	81.4	81.0	81.7	81.2	81.1	80.5

The number of personal income files in the satellite zone of agglomeration in 2018 amounted to 809.2 thousand. Compared to 2012, the number remained almost unchanged (798.6 thousand roubles). Thus, about 80% of personal income files, which we interpret as the number of jobs, is concentrated in the agglomeration core. On average, for 2014—2018, this share was 81.1%. This is significantly higher than the share of the core in population (averaged 70.7%) over the same period.

Another important indicator by the Federal Tax Service is the income of individuals (personal income tax base). In 2018, individuals' income in the St. Petersburg agglomeration amounted to 2.1 trillion roubles. Of these, the core accounted for 1.8 trillion roubles, the satellite zone — 363 billion roubles. Thus, the share of the core in the income of individuals was 83.1%, which corresponds to the share

[11] *Federal Tax Service* (FTS), 2020, available at: https://www.nalog.ru/rn78/ (accessed 25.05.2020).

of the core in the estimated number of jobs. On average, for the period from 2014 to 2018, the share of the core in the income of individuals was 83.1%. Compared to 2012, the amount of individuals income in the satellite zone had grown significantly: from 284.9 to 365.8 billion roubles (+28%).

Table 3

Personal income tax base (income of individuals) in the St. Petersburg agglomeration, billion roubles in 2018 prices[12]

Year	2012	2013	2014	2015	2016	2017	2018
Agglomeration total	2068.5	2102.9	1978.6	1828.8	1972.7	2104.2	2141.8
Core	1783.6	1800.4	1655.4	1526.2	1634.4	1738.5	1779.0
Satellite zone	284.9	302.5	323.2	302.6	338.3	365.7	362.8
Share of the core	86.2%	85.6%	83.7%	83.5%	82.9%	82.6%	83.1%

Pendulum labour migration

There is no data on the number of jobs in municipalities in the Municipal statistics database. Instead, we can use the data of the Federal Tax Service on the personal income tax base. About 80% of jobs in the agglomeration are located in the core (while the share of the core in the agglomeration population is about 70%). It is obvious that part of the jobs in the core are occupied by pendulum migrants from the satellite zone.

The total number of jobs in the agglomeration is 4.1 million with 6.4 million inhabitants (0.65 jobs per inhabitant). According to the official data, there are about 60% of working-age population in the population of the St. Petersburg agglomeration. The ratio of the number of jobs to the population can vary significantly between municipalities. In most cases, this ratio is not higher than 0.5, but in some municipalities, it exceeds 1 job per capita. In the agglomeration core it is 0.74.

We have divided municipalities within the agglomeration into five groups (fig. 5). Two groups with a value of less than 0.5 jobs per capita (highlighted in shades of red) have been classified as *donors* of pendulum migrants (where residents perform commuting labour migrations to other municipalities). Two groups with a value of the indicator higher than in the core (more than 1 and 0.75-1 jobs per capita) and one with a value approximately equal to the core (0.5-0.75 jobs per capita) have been classified as *recipients* of pendulum migrants. This means that they provide jobs not only for their residents, but also attract labour migrants. These municipalities are highlighted in white and shades of blue on the map.

[12] *Federal Tax Service* (FTS), 2020, available at: https://www.nalog.ru/rn78/ (accessed 25.05.2020)

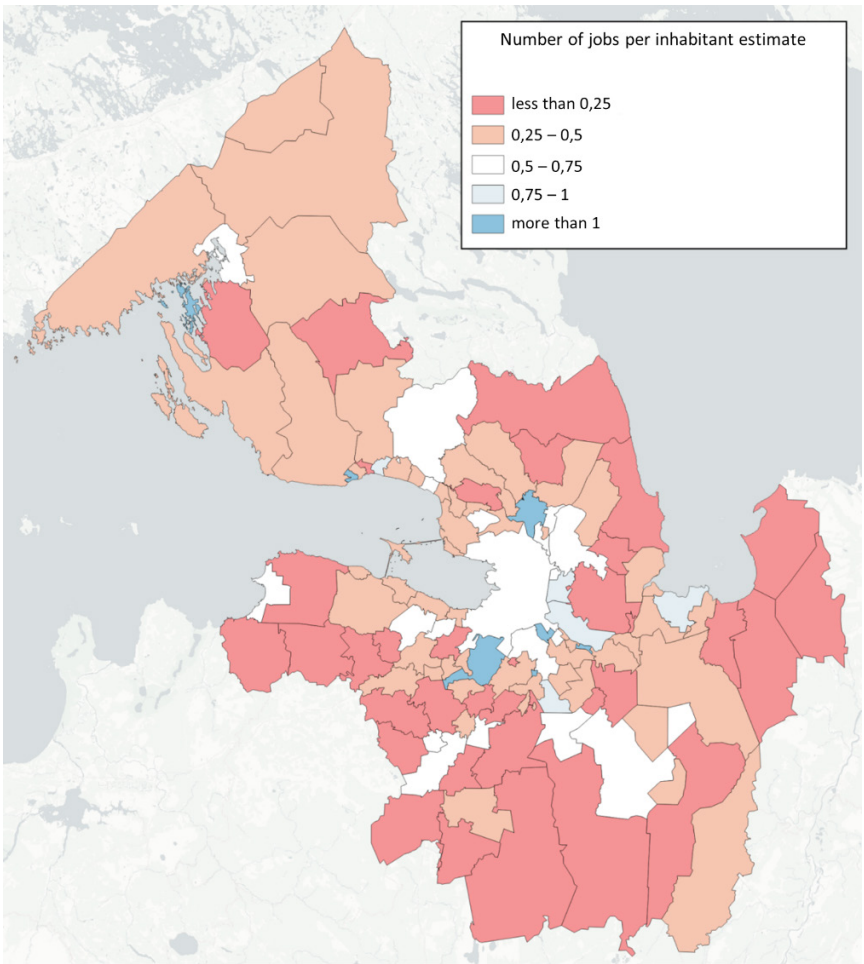

Fig. 5. The ratio of the number of personal income files to the population in the St.Petersburg agglomeration municipalities
(compiled by the author using Federal Tax Service[13] and Municipal statistics database[14])

Thus, in addition to the core of the agglomeration, other municipalities with a total population of about 500 thousand people and 320 thousand jobs are possible recipients of pendulum migrants.

Key centres of the agglomeration

In the satellite zone of the agglomeration, there are several large cities with a number of central functions. They act as local centres for the surrounding areas meeting the needs of residents in workplaces, education, retail, medical services

[13] Federal Tax Service (FTS), 2020, available at: https://www.nalog.ru/rn78/ (accessed 25.05.2020).

[14] Municipal statistics database, 2020,available at: rosstat.gov.ru/storage/mediabank/munst.htm (accessed 25.05.2020).

etc. These cities make it possible to bridge the gap in the level of development between the core and the satellite zone and take the load off the core. They can be considered as the key centres of agglomeration.

Researchers of agglomerations (Lappo, Makhrova, Pertsik and others) believed that the population of the second order centre of agglomerations should exceed 50 thousand inhabitants. To study key centres (potential second order centres of agglomerations), it would also be correct to define the minimum population size.

Making allowances for the smaller population of the St. Petersburg agglomeration in comparison with the Moscow one, as well as for a smaller number of large cities, we suggest that the size of key centres should be at least 40 thousand inhabitants (table 4).

Zanevskoe and Murinskoe settlements, as well as Pargolovo and Shushary deserve special attention. These municipalities are located on the borders of the agglomeration core. They are engaged in large-scale housing construction, mainly for residents of the core, but they do not have a developed economy or social infrastructure. At present, they cannot claim the status of key centres of the agglomeration.

Another group includes the cities of Pushkin, Peterhof, Krasnoe Selo, Sertolovo, Kronstadt and Lomonosov. These can be characterized as comfortable 'sleeping' satellite cities for life. They have well-developed social and service sectors, but a weak economic base, which forces most of the population to pendulum labour migrations. Usually people settle here for 'peace and quiet', ready to make daily commute to the core of the agglomeration for the sake of a comfortable life in a small city.

These cities can be considered key centres of agglomeration as local centres of education, retail and social services, but they do not attract a large number of labour migrants. Probably their 'daytime' population is smaller than the 'nighttime' one.

The next group includes the cities of Kolpino, Gatchina and Sestroretsk. These have a well-developed economic base (2—5 backbone enterprises), they are centres of education, retail and healthcare. They have the potential to attract a large number of pendulum labour migrants. At the same time, the ratio of the number of jobs to the population here does not reach the average level (0.3—0.5). Probably, these are the cities with the mixed type of pendulum migration, being both donors and recipients. They are located close to the core, and local residents regularly commute to the centre. At the same time, pendulum migrants from the surrounding territories can come to the city for labour, educational, medical and retail purposes. Some researchers call this phenomenon "replacement migration". These cities are in close interaction with both the core and surrounding territories and can be considered as key centres of agglomeration.

Table 4

Main characteristics of the largest cities and municipalities in the St. Petersburg agglomeration satellite zone

Area	Population, thousand people (2019)	Ratio of workplaces to population size	Number of backbone enterprises[12]	Number of retail facilities[13]	New housing (objects per capita in 2015—18)
Kolpino	148	0.34	5	3	0.02
Pushkin	111.2	0.45	0	0	0.04
Gatchina	93.7	0.49	5	6	0.03
Vyborg	76.4	0.59	1	6	0.04
Peterhof	85.2	0.35	2	2	0.04
Vsevolozhsk	74.5	0.65	6	4	0.08
Sosnovy Bor	68.3	0.58	2	1	0.06
Shushary	85	0.53	3	1	0.2
Krasnoye Selo	58.1	0.26	0	2	0.02
Sertolovo	55	0.22	0	1	0.1
Murinskoe	49.7	0.51	0	0	2.5
Tosno	42.5	0.51	1	1	0.04
Kronstadt	44.3	0.36	1	0	0.01
Zanevskoe	43.1	0.90	1	4	2.1
Pargolovo	67.5	0.36	2	2	0.3
Lomonosov	43	0.29	1	1	0.01
Sestroretsk	42.2	0.48	2	1	0.07

The last group is formed by the cities of Vyborg, Vsevolozhsk, Sosnovy Bor, Tosno. They have a well-developed economic base, are centres of retail, education and healthcare. The ratio of jobs to population is at the average level or exceeds it (0.5—0.7). Vyborg, Sosnovy Bor and Tosno are located at a fairly large distance from the agglomeration core. So they can serve as a local core for the neighboring residents, for whom the road to St. Petersburg takes too much time. These cities can be considered as full-fledged key centres of the agglomeration, providing "central" functions to residents of the surrounding territories, being local centres of industry, trade, healthcare and education.

Thus, the key centres of agglomeration can be divided into three groups (fig. 6):

— **Key centres of the first type.** Comfortable livable cities near the core of agglomeration. These cities have close ties with the core, relatively low number of jobs and active pendulum labour migration. At the same time, they have well-developed social and service sectors and potentially can serve as local cores for the surrounding territories as centres of retail, education and healthcare.

— **Key centres of the second type.** Cities with relatively large number of enterprises and jobs, well-developed service, social and commercial spheres. These

cities have close ties to the core. Residents are engaged in pendulum labour migration to the core while replaced by commuters from the neighboring areas. Potentially, these can serve as local cores for the surrounding territories — as business centres (commuting for labour purposes), centres of retail, education and medical services.

— **Key centres of the third type.** Mature local agglomeration cores. These cities have lower intensity of connections with the main core compared to the previous two types. They have a large number of jobs, where both local residents and pendulum migrants from the neighboring areas work. Retail, service and social sectors are well-developed. Potentially they can serve as important business centres, centres of retail, education and medical services for the surrounding areas.

Spatial structure of the agglomeration

Based on all of the above, several spatial structure elements of the St. Petersburg agglomeration can be distinguished (fig. 6).

1. The core and the satellite zone. The all-round dominance of the core has been revealed. Its share in the population is about 70%, in the number of jobs — 80%, in the income of individuals — 83%, in the revenue of organisations — more than 90%.

2. Population 'growth belt'. Despite the dominance of the core at present time (in the 2010s) we have detected outpacing population growth in the territories of satellite zone bordering the agglomeration core. The share of the satellite zone in the population is constantly increasing mostly due to these core-adjacent areas.

3. Donors and recipients of pendulum labour migration. Various authors and public authorities (e.g., the Labour Committee) have repeatedly announced the large volumes of pendulum labour migration to St. Petersburg from the satellite zone of the agglomeration. This study has not only proven that the core is a recipient of pendulum migrants, but also identified donor municipalities for pendulum migration.

4. Key centres of agglomeration. Potentially, they can be local second-order cores for the surrounding territories. They provide a greater degree of core-functions accessibility for residents and more even development of the agglomeration.

It should be especially noted that in order to confirm or deny the status of key centres and the reliability of our dividing municipalities into donors and recipients of pendulum migrants, it is necessary to conduct additional research on migration flows.

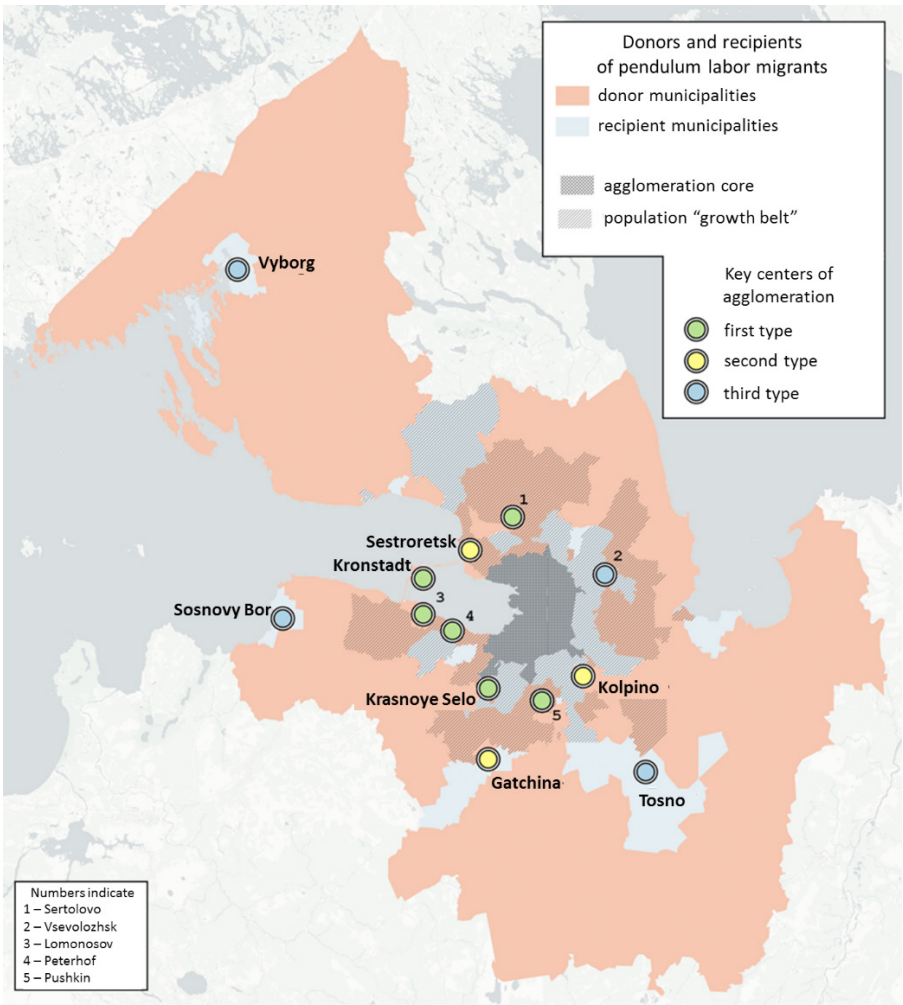

Fig. 6. Spatial structure of the St. Petersburg agglomeration

Results and conclusions

New approaches to studying spatial structure of the St. Petersburg agglomeration have been developed and tested for the purposes of this research. As a result, strong imbalances in the development of the agglomeration core and the satellite zone have been revealed, as well as the peculiarities of the satellite zone spatial development. The main elements of the agglomeration spatial structure have been highlighted: the core and the satellite zone, the conditional population "growth belt", donor and recipient territories of pendulum labour migrants. Since we used only publicly available data in our research, we believe our approach can be replicated to study any other metropolitan area in Russia.

At present, the development of St. Petersburg agglomeration is uneven. The congested agglomeration centre cannot accommodate new residents, which leads to a rapid population growth in the contact zone of the core and the satellite area

of the agglomeration. Large-scale construction is underway on this territory, but it predominantly retains a residential function. In the nearest future, these territories may become an integral part of St. Petersburg 'sleeping areas', but only in case of rapid transport and social infrastructure development. There are also mainly "sleeping" key centres of agglomeration of the first and second types. At the same time, most developed key centres of the third type are located at a relatively large distance from the core and, with the exception of Vsevolozhsk, retain their own path of development.

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The authors

Dr Stanislav Lachininsky, Acting Head of the Department of Regional Policy and Political Geography, Saint Petersburg State University, Russia; Senior Research Fellow, the Institute for Regional Economies Russian Academy of Sciences, Russia.

E-mail: st004020@spbu.ru

https://orcid.org/0000-0002-0885-6992

Ivan Sorokin, Junior Research Fellow, the Council of the Study of Production Forces, the Russian Academy for International Trade, the Ministry of Economic Development of the Russian Federation, Russia; a Doctoral Student, the Department of Economic and Social Geography, Saint Petersburg State University, Russia.

E-mail: IvannSPb@yandex.ru

https://orcid.org/0000-0002-9555-3294

RESPONSE OF THE LITHUANIAN MUNICIPALITIES TO THE FIRST WAVE OF COVID-19

J. Dvorak

Klaipėda University
84 Herkaus Manto, Klaipėda, 92294, Lithuania

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This article analyses the response of Lithuanian local authorities to the first wave of COVID-19 with a special focus on the economic support measures they took. The main goal of this in-depth study is to compare the economic response measures included in the action plans of Riga and Tallinn, two large Lithuanian municipal administrations, as well as to analyse the narrative developed in the two cities. The methodology of this research is based on the review of literature, the analysis of action plans, and a case study. The Vilnius and Klaipėda city municipalities adopted action plans to support residents and businesses. Although there are many measures the plans have in common, they differ in the context and scope of application. Municipalities are willing to grant exemptions from various fees and taxes. They have used innovative measures: Vilnius allowed the opening of outdoor cafes, the practice, which was observed by global media. According to the research findings, the actions of municipal authorities can be successful, as municipalities are closer to the residents and can respond to their needs and those of entrepreneurs more quickly and flexibly. The approval of COVID-19 management action plans by municipalities has contributed to the narrative of recovery and hope.

Keywords:
local authorities, action plan, COVID-19, economic policy measures, quarantine

On 16 March 2020, Lithuania introduced a quarantine in an attempt to curb the COVID-19 pandemic. At the end of February 2020, the government decided to declare a state of emergency and gave the health minister a mandate to administer the anti-Covid measures. The quarantine measures were implemented in a centralized way. This approach was criticized by the mayors of large municipalities and scientists [1,2] for being slow in response, for being non-cooperative since departments and public bodies were not ready to cope with the pandemic. The administrative capacity of the national government has been criticized by the current and former heads of the state and leaders of opposition parties. Hospitals in large municipalities became COVID-19 hotspots due to the lack of supply of protective equipment by the government, which resulted in the spread of the virus among hospital staff and patients. All these factors

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have led to distrust to municipal authorities, which are the closest institutions to the population and are responsible for the implementation of many COVID-19 response measures introduced by the central government. This is confirmed by the OECD analysis[1].

From 15 April 2020, the government gradually began to ease the quarantine and local authorities faced the dilemma of bringing cities back to normal life while still remaining safe from COVID-19. Therefore, city response planning can be seen as a rational action in which policy is presented as an outcome without politicization. Action planning takes place in a new environment where previous plans are not a starting point and politicians are not key actors in planning actions, and plans are based on the expert opinion of civil servants. Such a plan helps them identify basic needs in a simplified form [3, p. 8]. Poister saw the future of strategic planning ten years ago, "*strategic planning will need to play a more critical role in 2020 than it does at present if public managers are to anticipate and manage change adroitly and address new issues that seem to emerge with increasing rapidity*" [4, p. S248]. The author appears to have been right, although he surely did not foresee the situation when public sector managers would have to deal with challenges posed by COVID-19. In addition, an action plan is always a message to residents and municipalities; namely, as it provides an opportunity to control the narrative of the city, create a new history, promote and support its development [5, p.1132; 6, p. 276—278]. On the other hand, it is important to characterize the way residents and businesses respond to the measures proposed by the government during the crisis period [7].

The main goal of this study is to compare the economic policy measures of the response to the first wave of COVID-19 mentioned in the action plans of two large Lithuanian municipal administrations and to describe the narrative developed by both cities. To fulfil the main goal, several tasks were formulated: (i) to define the role of municipalities in the Lithuanian public administration system; (ii) to identify the difference in support measures to be applied by municipalities across the Baltic States to residents and businesses in response to the first wave of the COVID-19 pandemic. The study presented in this article contributes to the issue raised by researchers at Oxford University [8]: as governments continue to respond to COVID-19, it is necessary to examine which measures are effective and which are not. This article may not yet answer this question, but it examines the tools and context of the application of measures that may be useful to other cities in finding a way to improve the quality of life and business in the post-COVID-19 era. In a broader perspective, the issue of an effective benchmarking tool is highlighted by another group of public administration scholars [9, p. 696].

[1] Cities Policy Responses, 2020, *OECD,* available at: http://www.oecd.org/coronavirus/policy-responses/cities-policy-responses-fd1053ff/#p-d1e11740 (access 14 September 2020).

The following research methods are used in the article: *analysis and synthesis, literature review, action plans review, legal acts and several short structural interviews review*. These methods were used for defining concepts, describing the model of Lithuanian self-government, as well as distinguishing the principles of entrepreneurship and public management and linking them to the economic policy measures. The aim of the literature review is not only to conceptualize the researched phenomenon, but also to consolidate empirical data.

Case study. The aim of the case studies is to discern the peculiarities of approaches applied by Lithuanian municipalities. It should be noted that this research method is quite often used in the field of public administration research, as it allows for a better understanding of the subject of study. This method is employed to single out causal factors, which may explain the phenomenon under study. Several one-question interviews were used to further explain some of the choices.

Limitations. The current study does not differentiate Lithuania from other EU states or neighbouring countries regarding their culture, mentality, economy, social welfare system, etc. It also can be noted that Lithuania is classified as a small country in terms of population, territorial size and economics.

Description of municipalities in Lithuania

What is a municipality in Lithuania? This section gives a brief explanation of the main legal aspects of the functioning of municipal governments in Lithuania. According to the Law of the Republic of Lithuania on Local Self-Government, a municipality means "*an administrative unit of the territory of the State, defined by law, the community of which has the right to self-governance guaranteed by the Constitution and implemented through a municipal council elected by the permanent residents of that administrative unit of the territory of the State, where such council establishes executive and other institutions and establishments accountable to it with the aim of implementing directly laws and decisions of the Government of the Republic of Lithuania (hereinafter: 'the Government') and the municipal council. A municipality shall be a public legal entity*"[2]. The municipality concept stipulates that Lithuania is considered to be a highly centralized administrative system with relatively low fiscal autonomy of local government, which restricts opportunities for the financial autonomy of municipalities [10, p. 528; 11, p. 409—410].

Municipalities are established to perform certain functions provided by law. According to the abovementioned Republic of Lithuania Law on Local Self-Government, the functions of municipalities are "*functions related to local govern-*

[2] Republic of Lithuania Law on Local Self-Government No. I-533, 1994, *Seimas of the Republic of Lithuania,* Vilnius.

ment, public administration and provision of public services defined by the Constitution and attributed to municipalities by this and other laws" (Article 3, Paragraph 8)[3].

Article 5 of the Law states that the functions of local government, public administration and the provision of public services are categorized according to the type of the activity. For the performance of each of these functions, the relevant local authority is given the appropriate competence. The competence to provide public services (according to Paragraph 2 of Article 5) is assigned to service providers established by municipalities or other publicly selected natural and legal entities (according to concluded agreements). It is also provided (according to Paragraphs 3—4 of Article 5) that joint activity agreements may be concluded with other state institutions or other municipalities for the provision of public services, and public services may be provided by another municipality on the basis of agreements.

Apparently, municipalities are established not only as an element of representative democracy, but also as a very important entity, an element of public services provided to the population. The latter aspect is undoubtedly driven by the introduction of the principle of subsidiarity promoted by the European Union. This principle is enshrined in the Law on Public Administration of the Republic of Lithuania, which states that "*this principle means that decisions of public administration entities must be taken and implemented at the level of the public administration system at which they are most effective*" (according to Paragraph 7 of Article 3)[4].

With the introduction of the first quarantine in Lithuania on 16, March, 2020, amendments to the Law on Local Self-Government related to the organisation of the work of municipal councils were adopted the next day. 13,14,15 articles of the Law on Local Self-Government were supplemented with provisions on remote sessions of municipal councils, committees and commissions in case of emergency or quarantine[5]. These amendments ensured the right of municipal councils to receive information in a timely manner and to express their position. However, teleworking had also created *side effects*, e.g. one of the councillors of the Klaipėda City Municipality attending a public remote session of a committee called the members of the committee "donkeys".

[3] Republic of Lithuania Law on Local Self-Government No. I-533, 1994, *Seimas of the Republic of Lithuania*, Vilnius

[4] Republic of Lithuania Law on Public Administration No. VIII-1234, 1999, *Seimas of the Republic of Lithuania*, Vilnius

[5] Republic of Lithuania Law on Local Self-Government No. I-533, 1994, *Seimas of the Republic of Lithuania*, Vilnius

With the end of the first wave of COVID-19 quarantine, an important amendment was adopted to establish inter-municipal cooperation. According to Paragraph 4, Article 5 of the Law on Local Self-Government of the Republic of Lithuania "*a municipality may transfer the implementation of administrative and public service functions to another municipality by mutual agreement of municipal councils on the basis of agreements. The municipality may also, by a decision of the municipal council, transfer to the regional development council specific powers for the administration of the provision of public services, the implementation of which is detailed in the agreement between the municipality and the regional development council. The transferring municipality is responsible for the implementation of the functions of the municipality transferred to another municipality or regional development council"*[6]. On the one hand, this can bring cost savings for the delivery of municipal services and improve coordination of municipalities in the future. On the other hand, it can become an additional administrative layer that will increase the cost of monitoring services [31, p. 48—49].

In light of different COVID-19 responses, two largest Lithuanian municipalities publicly announced Post-COVID-19 Economic Development and Management Plans in May 2020. On 5 May 2020, the Vilnius city municipality "Vilnius 4x3" plan appeared, and on 18 May 2020, the Economic Development and COVID-19 Crisis Management Plan of Klaipėda city municipality was presented. Kaunas, the second most populous city in Lithuania, has not publicly presented a plan for managing the consequences of COVID-19 (it is unclear whether this is the case). In a one-question interview, an employee of the Kaunas City Administration confirmed that they had not developed a special post-COVID-19 economic promotion plan[7]. The same was confirmed by a public policy analyst during a one-question interview. According to this analyst, such a plan was not publicly available and it is doubtful that it will be because at the beginning of the year Kaunas City Administration was planning to take substantial loans to implement infrastructure projects and did not have free financial resources[8]. The need for financial resources of Kaunas city may be due to the implementation of the European Capital of Culture Project in 2021 [12, p. 71].

Further analysis required a comparison of the economic policy measures applied by the two main Lithuanian cities to residents and businesses. Kaunas was not part of the analysis. To compare COVID-19 local government response actions taken by other Baltic capitals all data was collected via the Google platform.

[6] Law of the Republic of Lithuania on Local Self-Government No. I-533, 1994, *The Seimas of the Republic of Lithuania*, Vilnius, available at: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.5884/asr (accessed 20.03.2020).

[7] Interview with Kaunas city municipality official, 2020, 14 Sept.

[8] Interview with public policy analyst, 2020, 14 Sept.

According to Burkšienė et al., "*common strategies and actions allow cities to learn from each other, to exchange information and innovations, to implement best practices*" [13, p. 322]. Some data on the response actions taken by the Latvian capital Riga and the Estonian capital Tallinn was found on the *Eurocities* network website.

In its plan, Vilnius highlighted four areas (people, business, culture, and opportunities) and three steps for making the city competitive (measures already taken, measures to be taken and measures which the city wants to be taken by the government). Klaipėda submitted a plan focused on five areas: stopping the virus itself, preserving jobs for citizens, supporting business, maintaining the financial stability of the municipality, and a view to the future. For this study, I chose to analyse two economic policy measures for residents and businesses identified taken by both municipalities. It should be noted that the need for such plans is supported by audit consultancy companies, who state that the plans "*ensure immediate security and long-term sustainability in response to the coronavirus crisis "*[9].

Vilnius is the capital of Lithuania. In 2020, 580,000 people lived in Vilnius. The city is a centre of investment attraction: in 2017, two-thirds of foreign direct investment was concentrated in Vilnius[10]. At the beginning of 2020, there were more than 150 fintech companies in Vilnius[11]. Vilnius can offer as many as 121 municipal e-services, which can be delivered via mobile or remotely. Since 2016, Vilnius has consistently reduced its debt from 383 million euros (2016) to 236 million euros[12]. According to the Lithuanian Free Market Institute, the real estate tax rate and fees for business licenses were the highest among large Lithuanian municipalities[13]. The 2019 municipal welfare index provided by the Vilnius Institute for Policy Analysis revealed that Vilnius ranked first among urban municipalities[14].

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[9] COVID-19: Local Government Response Plan, 2020, *KPMG*, available at: https://home.kpmg/au/en/home/insights/2020/03/covid-19-coronavirus-local-government-response-plan.html (accessed 22 May 2020).

[10] Lietuvos savivaldybių indeksas 2018, 2018, *Lithuanian Free Market Institute*, available at: http://www.lkti.lt/Files/LLRI/Lietuvos.savivaldybiu.indeksas.2018.pdf (accessed 22 May 2020).

[11] Rodikliai, 2020, *Vilnius City Municipality*, available at: https://vilnius.lt/lt/savivaldybe/rodikliai/ (accessed 22 May 2020).

[12] Rodikliai, 2020, Vilnius City Municipality, available at: https://vilnius.lt/lt/savivaldybe/rodikliai/ (accessed 22 May 2020).

[13] Lietuvos savivaldybių indeksas 2018, 2018, *Lithuanian Free Market Institute*, available at: http://www.lkti.lt/Files/LLRI/Lietuvos.savivaldybiu.indeksas.2018.pdf (accessed 22 May 2020).

[14] Savivaldybių gerovės indeksas 2019, 2019, *Vilnius Institute for Policy Analysis,* p. 1—15, available at: https://vilniusinstitute.lt/wp-content/uploads/2019/12/SGI-2019.pdf (accessed 22 May 2020).

Klaipėda is the third most populous city in Lithuania and the only port city. At the beginning of 2020, the Klaipėda city municipality had a population of 166,000. In 2016, the city of Klaipėda attracted 828 million EUR in foreign direct investment[15]. In Klaipėda, utilities services are partly provided by the private sector. In 2016, the debt of Klaipėda city was the lowest among the largest municipalities and amounted to 10.4% of the approved budget. In 2017, the average land tax rate, the basic real estate tax rate and fees for business licenses were among the lowest. The low average price of business licenses contributed to the fact that in 2017 the number of people who acquired and extended business licenses showed the largest increase in Klaipėda — 5.8 business licenses were issued per 1000 inhabitants[16]. According to the municipal welfare index 2019 presented by the Vilnius Institute for Policy Analysis, Klaipėda was in second place among urban municipalities[17].

In the 2019 municipal council and mayoral elections, the electoral committees led by the current mayors won in both municipalities, and the mayors seceded from the Liberal Movement party as the party's popularity had plummeted due to a corruption case against the former party chairman. Modern studies on local government believe that local government, governed by influential mayors, can function effectively. Residents, in particular, associate their expectations of the mayor with the role of an administrator and manager [14, p. 282].

Description of municipal economic policy support measures mitigating the effects of the first wave of the COVID-19 pandemic

Support measures for residents. Economic policy measures cover a wide range of activities. Like regulations, economic policy measures are characterized by a dualism of positive and negative dimensions. More specifically, economic instruments are a dichotomy of payment in cash or in kind [15, p. 44]. Thus, municipalities can choose between payments in cash and in kind. Grants, subsidies, allowances, credit guarantees, and interest subsidies are an economic instrument

[15] Klaipėda 2030: ekonominės plėtros strategija ir įgyvendinimo planas, 2018, *Ernst & Young*, available at: https://www.klaipeda.lt/data/public/uploads/2020/03/proverzis-veiksmu-planas_lt_2018.pdf (accessed 22 May 2020).

[16] Lietuvos savivaldybių indeksas 2018, 2018, *Lithuanian Free Market Institute*, available at http://www.lkti.lt/Files/LLRI/Lietuvos.savivaldybiu.indeksas.2018.pdf (accessed 22 May 2020).

[17] Savivaldybių gerovės indeksas 2019,2019, *Vilnius Institute for Policy Analysis*, p. 1—15, available at https://vilniusinstitute.lt/wp-content/uploads/2019/12/SGI-2019.pdf (accessed 22 May 2020).

of cash payments, while free health care, dental services, free food for students, and public universities are instruments of payment in kind. The possibilities of applying these measures are constantly being discussed by researchers and practitioners. Some argue that providing cash benefits ensures political stability, accelerating change and the well-being of society, as citizens make their own choices on spending the money they receive [16]. Others argue that such payments are inefficient and cause social problems because recipients fail to manage the economies of their households and spend money on insignificant things instead of using them to satisfy the needs of their children [17].

Of course, this study will not provide an answer to the question of the effectiveness of the economic measures discussed. During the COVID-19 pandemic, it soon became obvious that local authorities have the best knowledge and understanding of the needs, characteristics and problems of the local community and are able to make the most appropriate decisions in accordance with local circumstances. The effectiveness of state policy implementation is also promoted. It should be emphasised that the plans of both municipalities indicating what has to be done and whom by, at what times and by means of which resources are not detailed. It can be assumed that all the envisaged measures will support the city councils, because residents prefer councils that solve problems, think strategically, and administer according to the principles of citizenship and fairness [18, p. 492—493].

Table 1

Vilnius, Klaipėda, Riga and Tallinn city municipalities – support measures for residents

City	Exemption from tuition fees/other support	Preserving jobs	Cash benefits	Utility services	Bonuses for those fighting with COVID-19	Cancellation of default interest	Aid package for medical staff
Vilnius	+	+	+	A separate decision of the utility company	–	+	+
Klaipėda	+	+	+	Recommendation of the municipality	+	–	–
Riga	+	No data	+	Lowered the tariff for water management services and heat energy	No data	No data	No data
Tallinn	+	No data	No data	No data	No data	No data	No data

An analysis of the measures for residents listed in the action plans of Vilnius and Klaipėda City Administrations (see table 1) revealed that both municipalities undertook to exempt the residents from the tuition fees. Such actions are in stark contrast to the actions of the U.S. municipalities, where a study [19, p. 646] shows it is planned to raise the fees. A crisis forces Klaipėda City Municipality exempted municipal non-formal education institutions, extended day groups in municipal primary schools, municipal sports schools, and municipal kindergartens from the fee. According to the administration, the city budget will lose 0.55 million EUR in revenue as a result[18]. In its plan, the Vilnius City Municipality Administration declared an exemption from fees for kindergartens. In Estonia, the parents of children attending kindergartens run by the Tallinn City Administration were exempt from the fees[19]. However, Riga provided a slightly different approach and targeted poor and low-income families by providing them with store cards[20].

Measures to preserve jobs are provided in the plans of both cities. This is natural because, according to Rose, cities can always offer better paid and more diverse jobs than rural communities [20, p.374]. At the end of March 2020, the registered unemployment rate in Lithuania was 9.8%, and at the end of April, 11.2% of people were unemployed.[21] Klaipėda City Municipality Administration emphasises the preservation of jobs in private kindergartens, sports clubs, and non-formal education institutions. According to the plan, 527 children attend private preschools, while 2,900 children attend private sports clubs[22]. In 2020, the administration has undertaken to allocate 2.9 million euros for the co-financing of NGO projects and events. It seems that municipal measures alone can only partially alleviate the unemployment situation, as in July 2020, 209 thousand people were registered as unemployed in Lithuania. That is 12% of the total working-age population, or about one in eight [21]. On the other hand, the Tallinn City Administration decided that if NGOs incurred costs due to the quaran-

[18] Klaipėdos miesto ekonomikos skatinimo ir COVID-19 krizės suvaldymo planas, 2020, *Klaipėda City Municipality,* p. 1—17, available at: https://www.klaipeda.lt/data/public/uploads/2020/05/klaipeda-klaipeda-2020.pdf (accessed 20 May 2020).

[19] Measures by City of Tallinn to Cope with COVID-19 crisis, 2020, *Eurocities*, available at: https://covidnews.eurocities.eu/wp-content/uploads/2020/04/Overview-of-COVID-19-Measures-in Tallinn_30April2020.pdf (accessed 3 September 2020).

[20] What kind of support can inhabitants of Riga receive during the emergency? 2020, *Eurocities*, available at: https://covidnews.eurocities.eu/wp-content/uploads/2020/04/Riga-measures-during-COVID-crisis.pdf (accessed 14 September 2020).

[21] Statistiniai rodikliai, 2021, *Employment Service*, available at: https://uzt.lt/darbo-rinka/statistiniai-rodikliai/ (accessed 10.03. 2021).

[22] Klaipėdos miesto ekonomikos skatinimo ir COVID-19 krizės suvaldymo planas, 2020, *Klaipėda City Municipality,* p. 1—17, available at: https://www.klaipeda.lt/data/public/uploads/2020/05/klaipeda-klaipeda-2020.pdf (accessed 20 May 2020).

tine because conferences or sports events could not have been held, these should be reimbursed[23]. Vilnius City Municipality has promised not to reduce jobs and salaries in areas which it can control i.e. in institutions under the auspices of the municipality.

COVID-19 management plans respond to challenges caused by the loss of income, which vary in nature. Both municipalities provided cash benefits to residents. Klaipėda City Municipality has planned to allocate 100% of the minimum consumption needs, i.e. 257 euros, for the first member of the family, 206 euros for the second, and 180 euros for the others. Vilnius residents can receive two types of financial assistance: targeted benefits up to 975 euros, when the average monthly income of one resident does not exceed 437.50 euros, cohabiting people 375 euros, and periodic benefits of up to 117 euros for Vilnius residents of working age who have no income source or have an average monthly income of less than 156.25 euros. This contradicts other researchers [22, p. 829] who state that "*local governments will be even more reliant on policies that do not require cash outlays today*". Various cash benefits were offered to residents of Riga. Those residents who could not meet basic needs expect to get 128 euros per person. At the same time, the city administration has developed a positive image in the eyes of foreign students by giving them the same opportunity to get cash benefit if they face financial difficulties.

Regarding utility services, Klaipėda city municipality has submitted a recommendation to defer payments to its companies or to arrange payments in instalments. Vilnius city municipality entrusted the solutions to the municipal companies themselves. Comparatively, Riga city municipality offered residents lower tariffs for water and heat supply[24].

Different attention is paid by both cities to the provision of financial incentives for social workers. Social workers were those front-line workers who among the first faced the pandemic along with doctors. They lacked information and sometimes resources, their work was often delivered over the phone, and they had a constant fear of getting the virus or transmitting it to customers. Moreover, the measures taken by the central government did not always comply with the real situation. Apparently, the provision of social services to people with disabilities is not possible without it being rendered in person — changing diapers via phone or Internet is impossible. The Klaipėda City Municipality Plan envisages bonuses

[23] Measures by City of Tallinn to Cope with COVID-19 crisis, 2020, Eurocities, available at: https://covidnews.eurocities.eu/wp-content/uploads/2020/04/Overview-of-COVID-19-Measures-in Tallinn_30April2020.pdf (accessed 3 September 2020).

[24] What kind of support can inhabitants of Riga receive during the emergency? 2020, Eurocities, available at: https://covidnews.eurocities.eu/wp-content/uploads/2020/04/Riga-measures-during-COVID-crisis.pdf (accessed 14 September 2020).

awarded to social workers for performing life-essential work when combating COVID-19. However, the financing of the implementation of this measure depends on the central government, as money is allocated from the state budget and subsequently distributed by the municipality. According to a civil servant who participated in the preparation of the plan, it had been thought that the money for this measure would have been allocated by the municipality, but it turned out that the state was responsible for it. It is probable that Vilnius city municipality did not mention such incentives.

According to Schuster et al., the pandemic has changed the daily work routine of public sector employees [23, p. 792]. Many of them were assigned new responsibilities, although in certain areas of work their responsibilities have been decreased. For those who got new responsibilities, the municipalities tried to pay additional allowances. In Klaipėda, there are also benefits for employees of the Public Health Bureau and the Public Order Department, who worked as part of teams at the mobile testing point and met residents returning by ferry. When the quarantine was introduced, the only possibility of returning to the country was that by ferry from Germany. Vilnius City Municipality? In its turn, plans to offer exemptions from default interest payments and for utility payments missed during the quarantine period and has provided a separate package of measures for doctors. Assistance offered to doctors of the Vilnius Municipality can be compared to the assistance for business, as the number of COVID cases in Lithuania was one of the highest, reaching almost 20% of all the infected by the coronavirus in one year.

Support measures for businesses. As mentioned above, the quarantine began on 16 March 2020. Innovative decisions were made taking into account the experience of other countries, however learning opportunities at the level of running the political, administrative, and managerial apparatus were limited [24, p. 336—337; 25, p. 772] The decisions on banning various activities and restricting travels were made reactively, i.e. depending on the country of arrival of incoming infected people, etc. Lithuania chose the strictest model of business restriction compared to other Baltic countries (see table 2). It is argued that European countries which responded stricter to COVID-19 have suffered more in economic terms [26]. Since May 2020, the situation with COVID-19 in Lithuania and Latvia has deteriorated again at the end of August, and continued to worsen and now compared to other EU members leaves much to be desired. Clearly, the increase in COVID-19 cases is often explained by public relaxation. The situation in Estonia is the most optimistic one (see 14-day cumulative number of COVID-19 cases per 100,000 in Table 2). According to Raudla, the Estonian government not only applied centralised measures, but allowed municipalities to decide for themselves where more strict measures were needed [27, p. 8].

Table 2

Business restrictions in the Baltic States during the COVID-19 pandemic quarantine period

Countries	Business							14-day cumulative number of COVID-19 cases per 100 000 (12 November 2020)[14]
	Shopping centres	Stations, roads	Drug-stores	Bazaars	Grocery stores	Airports	Catering, bars, pubs	
Lithuania	Closed	Open	Open	Open	Open	Closed	Closed	577,1
Latvia	Open	Open	Open	Open	Open	Closed	Closed	192,9
Estonia	Open	Restricted	Open	Open	Open	Open	Open	144,8

Source: Prepared according to [28]

These restrictive measures have definitely had a significant impact on residents and businesses occupied in catering, entertainment, sports and leisure segments. The Ministry of Economy and Innovation is responsible for a new business support package. The measures of the Ministry of Economy and Innovation are divided into COVID-19 support ones and measures of promoting business. COVID-19 support measures include: (i) guarantees of up to 80% for investments and loans; (ii) loans from 25,000 euros up to 1 million euros; (iii) 100% reimbursement of interest paid. The guarantee institution JSC „Investicijų ir verslo garantijos“ (INVEGA) is responsible for the implementation of these measures. The functions of the founder and supervisor of the company were assigned to the Ministry of Economy and Innovation. In April 2020, with the start of the quarantine ease and the announcement of the introduction of the COVID-19 business support package, there have been immediate public complaints about the slow pace of support. Apparently, the slowness of the support institutions encouraged the municipal administration to look for alternative means of supporting businesses on their territory. According to UAB Invega data, they rejected about 18—19% of companies' applications for soft loans, and rejected more than 50% of those applying for interest compensation [29]. It is important to note that one of the main criteria for support is related to the company's performance at the end of 2019.

This section characterizes measures taken by the municipal government to support business in response to the first wave COVID-19 pandemic. It will study the grounds of the business support measures taken by municipalities to mitigate the effects of the first wave of the COVID-19 pandemic. The measures in question can be divided into: (i) fiscal; (ii) initiative supporting. According to the Of-

ficial Statistics Portal of Lithuania, 14,169 business organisations were affected by the pandemic in Vilnius City Municipality and 2,826 business organisations in Klaipėda City Municipality[25].

The fiscal business support packages of the cities are very similar, but differ in their content and scope (see table 3). Moreover, several non-standard solutions were taken. The municipalities have decided to exempt owners of the municipal from rent throughout the quarantine period, and Klaipėda city municipality will continue to render this support within one month after the end of the quarantine. The administration of Tallinn, the capital of Estonian, did the same by exempting or reducing the rent price for entrepreneurs[26].

Table 3

Vilnius, Klaipėda, Riga and Tallinn City Municipalities — fiscal support measures for businesses

City	Measures					
	Rent fee	Real estate tax	Fee for activities affected by the quarantine	Fee for street blocking due to works in progress	Utility services	Fee for outdoor cafes
Vilnius	+	+	+	+	On an individual decision by the utility company	+
Klaipėda	+	+	+	+	Preferential terms are offered	+
Riga	No data	+	No data	No data	Lower tariff for water and heat energy services	No data
Tallinn	+	No data	No data	No data	No data	No data

The city of Vilnius has waived real estate tax in full for the year of the quarantine, while the city of Klaipėda is offering a 10% reduction in real estate tax. It is estimated that it will cost the municipal budget 300,000—400,000 euros[27]. The application of this measure was debatable. By the beginning of September

[25] Companies affected by COVID-19, 2020, *Official Statistics Portal of Lithuania*, available at: https://osp.maps.arcgis.com/apps/webappviewer/index.html?id=0d489e0bb68243728f646ed038338c59 (accessed 11 November 2020).

[26] Measures by City of Tallinn to Cope with COVID-19 crisis, 2020, *Eurocities,* available at: https://covidnews.eurocities.eu/wp-content/uploads/2020/04/Overview-of-COVID-19-Measures-in Tallinn_30April2020.pdf (accessed 3 September 2020).

[27] Klaipėdos miesto ekonomikos skatinimo ir COVID-19 krizės suvaldymo planas, 2020, *Klaipėda City Municipality*, p. 1—17, available at: https://www.klaipeda.lt/data/public/uploads/2020/05/klaipeda-klaipeda-2020.pdf (accessed 20 May 2020).

2020, Klaipėda City Municipality announced that it had not been able to collect 3.7 million euros in revenue. To date, the worst performer is personal income and real estate taxes collection. Moreover, the state failed to cover all costs related to COVID-19 response in March-May 2020, which it had planned. Klaipėda municipality has submitted an application to receive about 1.3 million from the budget. The government approved only about 630 thousand euros as eligible expenses. Apparently, the measure of preserving jobs for the residents has not worked. The exemption from real estate tax has so far only benefited the owners of this property.

Riga City Administration postponed the term or real estate tax payment from March 31 to May 15[28]. Both municipalities plan to exempt businesses from various fees in the quarantine period. Klaipėda city municipality plans exemptions from fees in certain spheres from 16 March until 31 December 2020. It is important to note that there are businesses that have not been affected by the quarantine but were included in the list of enterprises eligible to planned exemptions, for instance, it is planned to tax exempt Christmas tree sellers. The municipality is also planning to tax exempt the entrepreneurs who trade at the Sea Festival in late July 2020.

Regarding the utility services, Vilnius City Municipality has left the decision to the companies managed by the municipality, and Klaipėda City Municipality has declared that it is giving preferential conditions for business. Riga decided to lower the tariff for the utility services.

An exceptional supporting initiative was applied by Vilnius City Municipality, which was aimed at easing the quarantine: outdoor café were allowed to open. This message quickly spread around the world, and was widely covered in the media (CNN, The Guardian, Euronews, LonelyPlanet). According to the mayor of Vilnius: *"Plazas, squares, and streets — nearby cafés will be able to set up outdoor tables free of charge this season and thus conduct their activities during quarantine. Just open up, work, retain jobs and keep Vilnius alive"*[29]. This measure is not just a beneficial municipal gesture for local entrepreneurs, but it shows again that cities are competing externally with each other in an effort to attract potential businesses, visitors, or future residents [6, p. 277].

[28] What Kind of support can inhabitants of Riga receive during the emergency? 2020, *Eurocities,* available at: https://covidnews.eurocities.eu/wp-content/uploads/2020/04/Riga-measures-during-COVID-crisis.pdf (accessed 14 September 2020).

[29] Vilnius Set to Become One Giant Outdoor Café: Municipality Shares Public Spaces with Restaurants, 2020, *Vilnius City Municipality,* available at: https://vilnius.lt/en/2020/04/27/vilnius-set-to-become-one-giant-outdoor-cafe-municipality-shares-public-spaces-with-restaurants/ (accessed 22 May 2020).

Table 4

Vilnius, Klaipėda, Riga and Tallinn City Municipalities — supporting initiative measures for businesses

City	Measures				
	Freedom for outdoor cafes	Freedom for food trucks	Food coupons	Support for medical staff	Symbolic support
Vilnius	+	+	+	+	—
Klaipėda	—	+	—	—	+
Riga	No data	No data	+	No data	Not applicable
Tallinn	No data	No data	No data	No data	Not applicable

The quarantine has also paved the way for the liberalization of food trucks. Both municipalities allowed the commencement of activities without any special permit. Vilnius City Municipality indicated that this activity could be realized anywhere except the city's old town. The old town of Vilnius has been listed as a UNESCO world heritage site since 1994. Vilnius City Municipality has become a patron of the project Talonai.lt, which is being realized on behalf of the municipality's resources. This project encourages the purchase of restaurant services for future consumption with special coupons.[30] Riga city municipality provided an opportunity of getting warm meals.[31] Vilnius City Municipality has also allocated 400,000 EUR for medical staff, which they will be able to spend only in cultural institutions or restaurants of the city.[32] The Klaipėda City Municipality rendered *symbolic* (the term was used in the Klaipėda City Promotion and Management Plan) support for business allowing the opening of outdoor cafés. Each cafe will be provided with free disinfectant fluid to ensure safe environment.[33]

The current analysis shows that municipalities have tried to help businesses through various incentives. However, it was difficult for them to identify which enterprises and to what extent had difficulties in coping with the consequences of the first wave of COVID-19. Some evidence suggests that businesses succeeded in coping with the aftermath of the first wave of the COVID-19 pandemic differently. Some businesses spent the money they had previously earned to support their operations, while others merely put it into bank deposits. Al-

[30] Vilniaus planas 4x3, available, 2020, *Vilnius City Municipality,* available at: https://vilnius.lt/en/2020/05/05/its-official-vilnius-introduced-its-plan-for-combating-after-effects-of-the-pandemic/ (accessed 20 May 2020).

[31] What kind of support can inhabitants of Riga receive during the emergency? 2020, *Eurocities*, available at: https://covidnews.eurocities.eu/wp-content/uploads/2020/04/Riga-measures-during-COVID-crisis.pdf (accessed 14 September 2020).

[32] Vilniaus planas 4x3, 2020, *Vilnius City Municipality*, available at: https://vilnius.lt/en/2020/05/05/its-official-vilnius-introduced-its-plan-for-combating-after-effects-of-the-pandemic/ (accessed 20 May 2020).

[33] Klaipėdos miesto ekonomikos skatinimo ir COVID-19 krizės suvaldymo planas, 2020, *Klaipėda City Municipality*, p. 1—17, available at: https://www.klaipeda.lt/data/public/uploads/2020/05/klaipeda-klaipeda-2020.pdf (accessed 20 May 2020).

though corporate deposits totaled 6.67 billion euros in January 2020, this figure rocketed to 8.05 billion euros in August and rose further to 8.09 billion euros in September [30].

Conclusions

The study showed that though strict quarantine measures have contributed to the effective management of the epidemic, the economic problems caused by the pandemic are likely to have an impact on the well-being of the population. Naturally, a decentralized approach to managing the economic crisis is beneficial in this context. Previous research has shown that national government can disrupt urban administration, but cities are able to benefit from public support and democratic leadership. As Chan notes, "the national government speaks, cities act", thus centralized action does not necessarily reflect the interests of all residents and entrepreneurs [31, p. 157]. In this context, the actions of municipal administrations can be successful, as municipalities are closer to the residents and can respond to the needs of residents and entrepreneurs more quickly and flexibly. Apparently, the approval of COVID-19 management action plans by municipalities has formed something of a saviour narrative, giving hope to a happy ending. However, for local authorities it is not still clear which measures should be over, and which should be prolonged, and when they should end. They chose different first wave of COVID-19 management models, regimes, approaches and tools. These policy tools refer not only to public health policies, but also to personal health, economic promotion, education, and more.

Vilnius and Klaipėda City Municipalities presented economic policy measures for residents and businesses to promote employment, productivity, economic development, and ensure biosecurity. However, along with the implementation of the measures, the indicators of their effectiveness for residents and business support are of the utmost importance and must be monitored by the municipalities. Thus, having taken the decisive step forward in managing the consequences of the COVID-19 pandemic on their own, they cannot expect help from the central government. Moreover, the audition of the financial resources accumulated by the residents and businesses must be carries out by the municipalities in the perspective in order to detect waste of resources. At the same time, people expect the support measures to be provided in a flexible and non-bureaucratic way, as poor urban residents need individualized help and support with social isolation deepening the social gap.

Finally, it is clear that still it is too early to evaluate the results of the economic measures taken by municipalities; however, the adopted plans show the proactivity of municipalities' aspirations. Moreover, the COVID-19 municipal response measures discussed in this article may be useful for municipal officials tackling with pandemic in other countries, thus the study may become a guidance for municipal officials in meeting basic needs of vulnerable population [32, p. 789—790].

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About author

Prof. Jaroslav Dvorak, Head of Department of Public Administration and Political Sciences, Klaipėda University, Lithuania.

E-mail: Jaroslav.dvorak@ku.lt

https://orcid.org/0000-0003-1052-8741

CULTURAL TYPES AND THE PERCEPTION OF CURRENT ENVIRONMENTAL RISKS BY LOCAL COMMUNITIES OF THE BALTIC SEA REGION

E. S. Fidrya

Immanuel Kant Baltic Federal University
14, A. Nevski St., Kaliningrad, 236016, Russia

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This work presents findings from research into the relationship between the structural organisation and cultural attitudes of local communities in the Baltic Sea region and the way they perceive environmental risks. The response of the Kaliningrad community to the development of a local potassium and magnesium salt mine is used as an illustration. The article deals with how local communities perceive the image of risks formed and reproduced via various communication channels. The structural context and the context of communication are taken into account. Another focus is on how this perception is affected by the type of community members' cultural attitudes (according to Mary Douglas's grid/group model). The space of categorical variables obtained through multiple correspondence analysis (MCA) aids in clustering the cases (respondents) as well as in testing theoretical assumptions for compliance with the findings. The communicative practices characteristic of all the clusters (classes of cases) are examined; the relationship between the structural organisation of groups, their cultural attitudes, their perception of environmental risks, and the performance of environmental agencies are explored. An evaluation of the comparative efficiency of different ways and means of risk communication with the identified groups is made. It is concluded that the proposed model is methodologically promising and there is a need for differentiated risk-communication strategies.

Keywords:
cultural approach, local community, environmental risk, grid/group model, Baltic region

Studies of environmental risk perception in Baltic region states

The geographical and political context lends urgency to the environmental agenda in Baltic region states, which have become associated with legal and institutional environmental control, environmental initiatives of intergovernmen-

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tal non-profit organisations, and green public sentiment. The latter requires not only regular monitoring but also in-depth research into the public perception of current environmental risks, as well as of factors behind this perception.

Since the 1990s, environmental sections have been featured in questionnaires of regular opinion monitoring services, such as ISSP (International Social Survey Programme), Eurobarometer, and Gallup World Poll. An interesting case of an in-depth study of local Arctic communities is the CAVIAR project, which focuses on the impact of environmental challenges on the formulation of adaptive strategies and policies [1].

A recent Eurobarometer survey (November 2017) shows that 57% of respondents thought that protecting the environment was 'very important'; another 38% considered it 'fairly important'; only 5% said that it was 'unimportant' to them. There are striking differences between countries. In Sweden, protecting the environment was 'very important' to 87% of respondents; in Lithuania, to 42%; in Poland, to a mere 40%.[1]

The structure of environmental risks Europeans speak of is also diverse. Climate change ranks first (51% of respondents mentioned it), followed by air pollution (46%) and the growing amount of waste (40%).[2] These results vary by country, as well. The Nordic states of the Baltic region are most concerned about climate change (70% in Denmark, 68% in Sweden, 63% in Germany and Finland); Poles are worried about air pollution; the growing amount of waste is the number one issue in Lithuania (65%), Latvia (61%), and Estonia (54%).[3]

In another survey[4], respondents noted industrial air pollution (3.97 on a five-point scale), pesticides (3.88), and water pollution (3.85).

A posthoc analysis of survey data is a common technique. While allowing macroregional combinations, it can also take into account sociodemographic factors and other variables covered by questionnaires. An example of such analysis is a study of the perception and assessment of climate risks in Baltic Sea states [4]. An additional dimension explored in the research is residents' attitude towards institutions responsible for managing these risks.

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[1] Attitudes of European citizens towards the environment, *Special Eurobarometer 468,* available at: http://data.europa.eu/88u/dataset/S2156_88_1_468_ENG (accessed 21.04.2020).

[2] Ibid.

[3] Ibid.

[4] International Social Survey Programme: Environment III–ISSP 2010. GESIS Data Archive, Cologne. ZA5500 Data file Version 3.0.0, *Gesis*, available at: https://search.gesis.org/research_data/ZA5500 (accessed 21.04.2020).

Naturally, the range of possible variables and, therefore, the depth of analysis of interdependencies between risk perception, on the one hand, and social, cultural, and political conditions, on the other, are limited. But other factors also affect the situation. Firstly, there are intranational differences in the susceptibility of concrete local communities to certain risks. Secondly, an analysis should allow for the effect of supranational social and economic conditions. It has been shown that both socio-structural factors (see, for example, [3]) and beliefs influence attitudes to risk.

It has been argued that investigating adaptive responses of local communities to environmental challenges requires examining technological innovations and the institutional aspects that make it possible to use its economic resources for the common good (such as sustainable management) [4, p. 590; 5].

A comparative study of two Norwegian communities highlights the role of two other local components — social capital and economic conditions [6]. Social capital (stable ties with politicians and people outside the community responsible for making decisions; a network of trust) enables communities to give and sustain adaptive responses to natural risk on a day-to-day basis, whereas the economic situation determines the capacity for long-term adaptation and survival of communities.

A study by Finnish colleagues has established that social solidarity may reduce anxiety in local communities about current risks (the authors focus on social risks), create a sense of security, and lower the level of fear. However, if the incidents repeat or spread, this sense of security is eroded while the protective effect of solidarity becomes limited [7].

A pragmatic point of view has been proposed by a group of Danish researchers led by Jacob Taarup-Esbensen. They have demonstrated in a series of works how mining companies while creating risks for local communities interact with them to bring a dramatic change to the local infrastructure and economy [8, p. 229—233]. In providing the community with economic goods, companies legitimize their activities and create a situation where environmental risks are counterbalanced by an equally important economic one — that of the company going out of business.

The institutionalisation of such a symbiosis between companies and local communities calls for drawing up conventional regulations. There is also a need for techniques for potential damage assessment, environmental monitoring, and response measures. As a rule, all this is done with participation from expert organisations and authorities — a good example is the SCORE methodology de-

vised in southern Sweden [9]. Persistent ethical issues and a lack of agreement in the community lead to mistrust. They also increase the perceived seriousness of the risk and create a sense of unfairness, which grows in the community with time. The case of two Finnish settlements that became storage sites for nuclear waste indicates as much [10].

An analysis of international data on the perception of environmental and technological risks [3, p. 31—55] shows the dynamics of socio-economic systems to be a major factor: the level of perceived risks is lower in individuals whose social status is better protected and who live in a stable socio-economic environment.

In a different work, the authors point to persistent differences in protest behaviour determined by the perception of environmental threats. When explaining why protest activity in Western and Nordic Europe is more intense than in Central and Eastern Europe, they stress the influence of age and gender [11].

A lot depends on how social agents and local communities interpret the nature of risks, the imminence and potential scope of threats, and possible causes of unwanted events. Another central factor is whom they consider responsible for preventing risks. The infrastructure, the economy, and the dynamics of social development also have a pivotal role here.

Comparative studies of the perception of risks, including international and cross-cultural ones, often employ psychometric and cultural approaches [12, p. 236]. There are numerous detailed analyses of how risk perception can be explored using these approaches and what strengths and weaknesses they have [13—21]. Here it suffices to note that the psychometric paradigm brings to the fore individual perception of risks and attempts to describe universal patterns of perception (sometimes allowing for cultural factors). The cultural approach emphasises social structures. It highlights changing and stable cultural patterns that affect how big groups, rather than individuals, perceive risk. Despite differences in these approaches, the literature acknowledges that both are poorly applicable empirically (they lack explanatory power; their theoretically devised classification cannot be reproduced; direct cross-country comparisons are problematic) [16; 18; 22; 19, p. 4—13]. The cultural approach is relevant for studying risk perception by local communities, which share a common culture, a communication system, and networks of social ties and group influence. At least, it seems to be better suited to the task than an approach that determines the universal features of individual perception, particularly by employing statistical methods

(for a successful case of utilising the cultural approach, see [23—27]; for a comprehensive review, [28]). Nevertheless, the cultural approach gives plenty of opportunities for comparisons if the communities are classified according to their cultural type.

Nevertheless, works on the perception of environmental risk images created in the communicative environment of Baltic communities devote almost undivided attention to the structure and content of media images while paying little attention to the cultural characteristics of communities [29; 30]. Moreover, the methodological views of the authors are rarely explicated. We believe that abstracting media images from the local social, cultural, and political context, in which the beliefs and attitudes of residents are rooted, impoverishes the understanding of what affects the perceived and reconstructed images of risk.

Problem setting and approaches to research

As previously stated, risk perception is a complex object that not only deals with threats and agents perceiving them, but also concerns itself with communication channels, created risk images, local cultural, economic, and political contexts, and the social ties and relationships of risk-perceiving agents. In this sense, local communities are the perfect research subject because they enable one to track connections between all these elements through appealing to a concrete case.

This study investigates how the local Kaliningrad community perceives the risks of developing a potassium and magnesium salt deposit in the village of Nivenskoe. This issue was brought to public attention as early as 2014 at the start of development works. It immediately sparked off heated debates. Public hearings were held that brought together residents, environmental non-profits, researchers, and officials. The first publications in the local media date back to that year. Potential risks of deposit development were discussed from day one, albeit the project promised considerable investment in regional and municipal economies, an overhaul of the transport and social infrastructure, new jobs, and other benefits.

Among the top concerns were soil, water, and air pollution, potential damage to the ecosystem and human health, the small distance between the mine and the village, noise, vibrations, and the possible opening of a sinkhole at the mining site. The potential economic benefits of the project were questioned. Residents

feared that the company would hire only outside the village. Another concern was that the environmental risks would devalue property in Nivenskoe so that the owners would no longer be able to sell it and move house.

The mining company provided rebuttals supported by expert reports. Yet, despite its attempts to keep the project open to public scrutiny, the tension was rising. Activists set up a group, which launched a website, created pages on social media, and mounted a protest campaign. The group held rallies, spread awareness of its cause, and finally attracted sufficient attention from the regional media. Company representatives, in their turn, suspected some leaders of the group of pursuing financial and political interests.

An uneasy attitude to the project and the complexity of risk communication about possible threats make the situation in Nivenskoe a fascinating research subject. I studied the images of deposit development risks created by the local media and measured attitudes to the project. This work presents my findings concerning the socio-structural and cultural models of local communities and the identification of stable groups within communities. Distinct cultural preferences shape the communicative practices and environmental risk perception of these groups.

This work relies on the cultural approach and uses the premises and cultural types described by Mary Douglas [31; 32] within her theoretical grid/group model. Among other things, her findings cast light on the connection between risk perception and one of the four possible ways of the social organisation of communities. The study also draws on cultural cognition theory [37], which deals with cultural types from a different perspective.

The group and grid dimensions resemble axes in a coordinate system. They represent the 'ideal types' of risk perception logic and social organisation. The group dimension measures the authority of a group's ethos (the height of the barrier a group builds between itself and the outer world), whereas the grid dimension gives a measure of power and control over the behaviour of community members. This control concerns not only community membership, but also other structural factors, such as class, ethnicity, and gender.

Based on these two dimensions, Douglas and her colleagues identify four ideal types of cultures and four approaches to risk:

1) hierarchists (high group/high grid) respect authority and group norms, share the group's expectations about the risk and trust institutions;

2) egalitarians (high group/low grid) identify themselves with the group, tend to blame outsiders for the risks and not to trust norms coming from without, approve of social equality and shared responsibility for risks;

3) individualists (low group/low grid) are independent and enterprising; they advocate self-regulation when it comes to risks, trust individuals more than organisations, renounce external restrictions, believe in the market forces, and view risks as not only threats but also opportunities;

4) fatalists (low group/high grid) stand out for cohesiveness; they consider themselves subject to external constraints and tend to resign themselves to fate when it comes to risk; they believe that they have little control over it.

As mentioned above, this model and the measurement tools proposed in the original variant [32—34] are not always applicable to concrete empirical material. When measuring preferences along each axis individually, respondents may express contradictory opinions. One may be an hierarchist and individualist or an individualist and egalitarian at the same time [17; 35; 36]. Thus, in developing survey tools for this study, I drew on an alternative experience of measuring cultural preferences for risk management, namely, cultural cognition theory [37]. It differs from earlier proposed measurement techniques in that the grid and group axes are operationalised as continuum scales with two poles. Respondents select a point on the scale corresponding to their position while answering how much they agree with a series of statements [38]. This way, respondents have to give their opinion about variables on two scales: hierarchism/egalitarianism and individualism/communitarianism, being unable to express mutually exclusive positions when dealing with one statement. This method was successfully tested during the US census [39—41]. To estimate how much respondents agree with a given statement, I used five-point Likert scales, which provide greater consistency than four-point ones [42]. The questionnaire also contains a series of questions about respondents' socio-demographic background; their perceptions of the current environmental situation; their perception of environmental risks in general; their beliefs concerning authorities, businesses, and non-profits; their views on different communication forms and channels; their attitudes towards mine development.

The survey was carried out door-to-door. One permanent resident aged 18+ was interviewed in each household. The quota sample was representative with respect to age and gender. Random route sampling was used. One thousand respondents were surveyed in Kaliningrad; 300, in Nivenskoe (Bagrationovsk district, Kaliningrad region). The confidence level was 95%; the confidence interval ±5%.

Result analysis and interpretation

Multiple correspondence analysis (MCA) was used to construct the space of cultural beliefs and explore how they are connected with communicative strategies and practices. MCA is a geometrical data analysis method meant for the statistical treatment of categorical variables [43]. This method is effective in considering connections between several nominative variables at once. It is a useful tool for risk perception studies which often require analysing attitudes to risks, categories of risk, trust in public institutions, and personal qualities of respondents [44]. Despite these benefits, MCA is rarely used in research on risk. I did not come across a single work utilising this method within the cultural approach.

The essence of this method lies in transforming elements of a two-way table into points of a geometric space. The two-point clouds obtained this way are a cloud of individuals (or, in our case, respondents) and a cloud of categorical variables (attitudes toward risks, cultural beliefs, and information practices).

The categories and individuals that contribute to clouds are called active. Auxiliary categories are not used to determine distances between individuals. However, if one knows how they are linked to respondents, one can locate their position on the same plane. Thus, auxiliary categories are a valuable interpretative tool. The categorical (active) variables are answers to categorical questions relating to cultural beliefs and features of the community's structure (cultural cognition scale). The dependent (auxiliary) variables are attitudes to environmental risks, characteristics of communicative practices, and respondents' strategies.

MCA employed 18 variables — statements corresponding to varying degrees of agreement on a Likert scale (statements identified as culturally irrelevant during preliminary testing were eliminated). Zero-value, or neutral categories, and categories with a selection frequency of below 5% were not included in the analysis. There were 70 categories chosen as a result.

The modified values [45] of the first two axes are $\lambda_1 = 0.615$ and $\lambda_2 = 0.188$, whereas their modified cumulative values are 0.803 (i.e. they account for 80% of the dispersion). Since the third axis adds only 5% to that figure, I will use only the first two.

Table contains an entire list of variables (categories) that made a considerable contribution to the axis, along with the coordinates of these categories in the constructed space. The first two letters in the category code stand for the scale to which the statement belongs: HE is hierarchism/egalitarianism; IC is

individualism/communitarianism. The average contribution of one category to an axis is 1.4%. Therefore, the analysis used only variables with an above-average contribution.

Coordinates and contributions of active categories

Category label	Coordinate		Contribution	
	Axis 1	Axis 2	Axis 1	Axis 2
HE1. We have gone too far in advancing equality in our country				
HE1.EQRights+	– 0.486	0.786	–	1.431
HE1.EQRights –	– 0.917	0.614	2.826	1.982
HE1.EQRights++	0.876	0.727	1.970	2.125
HE1.EQRights––	0.131	– 0.430	–	3.426
HE2. Society would benefit from a more equal distribution of material wealth				
HE2.EQGoods+	– 0.822	– 0.031	3.402	-
HE2.EQGoods++	0.364	0.164	1.561	-
HE2.EQGoods––	0.381	– 0.996	–	2.297
HE3. Most problems in society come from abandoning the traditional family model: a breadwinning husband and a stay-at-home wife				
HE3.TradFam–	-1.167	0.916	3.365	3.238
HE3.TradFam++	0.665	0.651	1.483	2.225
HE3.TradFam––	0.031	– 0.483	–	4.068
HE4. It seems that criminals and con artists always get away with it, and it's honest citizens who are paying the bills				
HE4.Injustice+	– 0.700	– 0.044	2.369	–
HE4.Injustice++	0.468	0.287	2.231	–
HE4.Injustice––	– 0.021	– 1.196	–	6.405
HE5. Society in general has gone soft and overly feminine				
HE5.FemSoc-	– 0.491	0.699	–	2.639
HE5.FemSoc++	1.277	0.677	3.703	1.626
HE5.FemSoc––	0.017	-0.520	–	4.510
HE6. We live in a society based on discrimination and oppression of women				
HE6.GendDisc+	-0.037	0.868	–	1.747
HE6.GendDisc–	– 0.772	0.618	1.943	1.945
HE6.GendDisc++	1.404	0.872	2.919	1.762
HE6.GendDisc––	0.038	– 0.352	–	2.529
HE7. Parents should teach boys to be more sensitive and less rough and aggressive				
HE7.BoysSoft+	– 0.595	0.278	1.711	–
HE7.BoysSoft–	– 0.718	0.237	1.835	–
HE7.BoysSoft++	0.803	0.307	3.437	–
HE7.BoysSoft––	0.208	– 0.691	–	4.133
HE8. Discrimination against minorities is a major problem in our society				
HE8.Minority–	– 0.683	0.469	1.751	–
HE8.Minority++	1.130	0.695	3.782	2.238
HE8.Minority––	– 0.015	– 0.420	–	2.921

The end of table

Category label	Coordinate		Contribution	
	Axis 1	Axis 2	Axis 1	Axis 2
HE9. We need to close the gap between the rich and the poor, as well as between people of different national backgrounds and sexes				
HE9.MakeEqual+	– 0.763	– 0.215	3.221	–
HE9.MakeEqual++	0.440	0.336	2.010	1.827
HE9.MakeEqual––	0.288	– 0.874	–	2.597
IC1. The government has to limit the choices people can make in the fight for a common cause				
IC1.RestrChoice++	0.979	0.297	2.933	–
IC1.RestrChoice––	0.063	– 0.319	–	1.693
IC2. Individual income is the strongest motivation for hard work				
IC2.IndIncome+	– 0.655	– 0.061	2.286	–
IC2.IndIncome––	0.395	– 0.775	–	1.576
IC3. Free markets, rather than governmental programmes, are the best way to provide people with everything they need				
IC3.FreeMark–	– 0.808	0.093	2.645	–
IC3.FreeMark++	0.654	0.382	2.492	–
IC3.FreeMark––	0.184	– 0.440	–	1.915
IC4. People should be able to count on state benefits when in need				
IC4.StSupport+	– 1.486	0.138	3.051	–
IC5. The state is trying to too much for too many people				
IC5.TooMuch+	– 0.514	0.883	–	3.130
IC5.TooMuch-	– 0.975	0.193	3.003	–
IC5.TooMuch++	0.695	0.828	–	1.905
IC5.TooMuch––	0.269	– 0.370	–	2.516
IC6. We should let people take care of themselves				
IC6.LetPeople-	– 0.838	0.029	2.359	–
IC6.LetPeople++	0.690	0.023	2.911	–
IC6.LetPeople––	0.159	– 0.563	–	2.004
IC7. Government regulations are almost always a waste of time and money				
IC7.GovWaste+	– 0.847	0.413	2.123	–
IC7.GovWaste++	0.693	0.353	3.555	1.441
IC7.GovWaste––	– 0.022	– 0.615	–	2.457
IC8. Society has to satisfy the basic needs of all its citizens				
IC8.SatisfAll+	– 0.748	0.126	2.434	–
IC8.SatisfAll++	0.591	0.196	3.209	–
IC8.SatisfAll--	– 0.010	– 1.147	–	4.677
IC9. The state has to stop dictating to people				
IC9.StopDict+	– 0.673	– 0.014	2.103	–

The space of cultural beliefs formed by two axes creates two major oppositions — moderate/categorical along the horizontal axis and anti-regulationism/etatism along the vertical one (fig. 1). The left part of the space contains

variables associated with moderate agreement and disagreement with cultural beliefs; the right one, variables describing extreme agreement or disagreement. The top part of the space is occupied by variables associated with strong support for egalitarian and individualist attitudes and, to a much lesser degree, communitarian and hierarchist beliefs. This pole signifies disapproval of vertical structures and primarily anti-regulationist attitudes. The bottom part of the space contains variables divorced from egalitarian and individualist attitudes. If some other auxiliary variables are taken into account, this pole can be called statist.

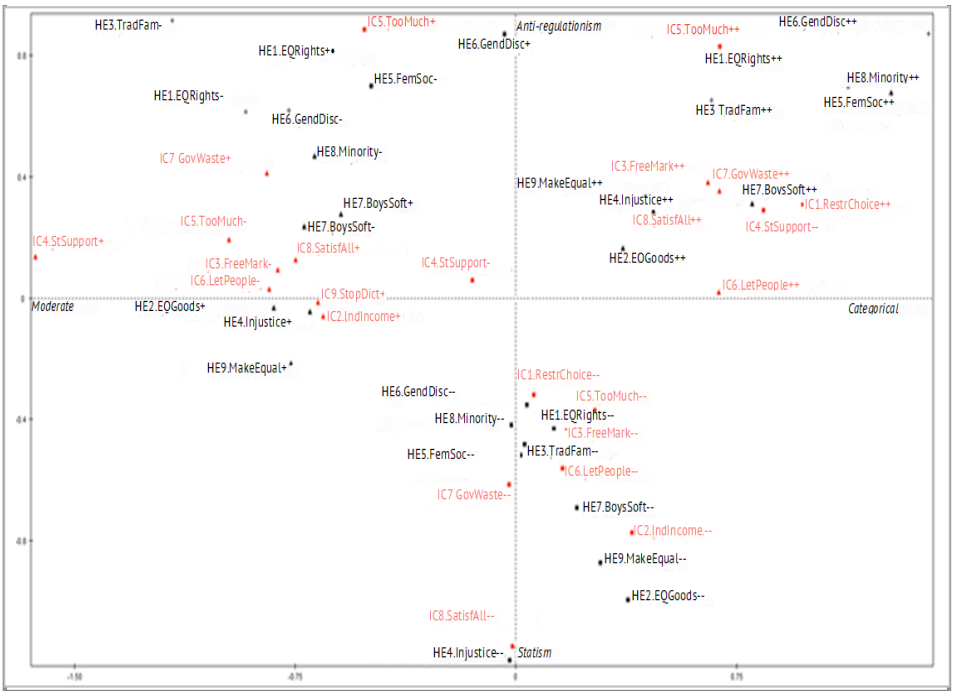

Fig. 1. The space of active variables (cultural belief) distribution

Analysis of auxiliary variables and their connection to categorical variables shows the following.

1. The categorical anti-regulationism quadrant (top right) is associated with distrust of official institutions and confidence in weak horizontal ties (friendship), sceptical attitudes to the media (including private ones), and reliance on information from friends and private companies. The most effective measures to inform this group about environmental risks are recruiting expert ecologists, raising awareness of production processes, and holding roundtables with com-

munity leaders. The group is well informed about the risk of mine development. Despite distrusting the 'system', beliefs found in this quadrant correlate with the previous experience of civic engagement and communication with authorities. The quadrant has the gravest concerns over the environmental risks of mine development — growing social unrest, a reduction in the inbound tourist flow, and houses collapsing into sinkholes. Beliefs in this quadrant are connected with a negative outlook on the environmental situation in the region and the conviction that the environmental risks are very high. At the same time, the top-right quadrant group shares the individualist belief that economic gains are sometimes worth damage to the environment.

2. The categorical etatism quadrant (bottom right) is associated with distrust of the activists and the mining company, on the one hand, and reliance on family and fellow members of the organisation. These people believe information from human rights groups or the Ministry of Emergency Situations while being suspicious of information from activists, friends, and acquaintances. The most effective measures to stop rumours in this quadrant is stricter state control over the company. Information is considered reliable when it comes from colleagues, the media, or (less often) news portals. The activists and TV fail to win trust in the quadrant. People in this group score the highest on self-evaluation of awareness of the mine development. Yet, they do not estimate any of the risks as serious. Having a negative outlook on the environmental situation in the region, they think that the environmental risks of mine development are rather low. This quadrant is connected with hierarchical beliefs that the state is responsible for dealing with environmental issues. If the situation deteriorates, this group will expect action from the authorities.

3. The moderate etatism quadrant (bottom left) has great trust in the authorities, environmental non-profits, the mining company, and social networks. But it is sceptical about the media and information coming from relatives. The most reliable information is that from the state media; less reliable, from the authorities and the private media. This quadrant is very unlikely to take part in rallies now or in the future. They trust information about the mine in Nivenskoe and the related risks as long as it comes from the company, social media, environmental non-profits, or the authorities and do not trust news coming from relatives. This quadrant estimates overall environmental risks as moderately high but does not see the mine development in Nivenskoe as a potential threat.

4. Finally, the moderate anti-regulationism quadrant (top left) is associated with great trust in relatives, colleagues, social media, and environmental non-profits. People in this group disapprove of stricter state control over the company as a means to defuse tensions and believe in mining site tours and per-

sonal experience. They do not view environmental risks as serious, call the current situation 'favourable', and consider protest ineffective. They think that their awareness of mine development risks is limited, tend to blame potential risks on the company, and, unlike the categorical quadrant, do not deem it possible to sacrifice nature for economic gains. Overall, their beliefs are communitarian rather than individualistic.

To determine groups of respondents sharing similar characteristics, I carried out cluster analysis to place each respondent relative to active categories. Five clusters were identified (fig. 2) that have a unique combination of cultural beliefs and attitudes to risk.

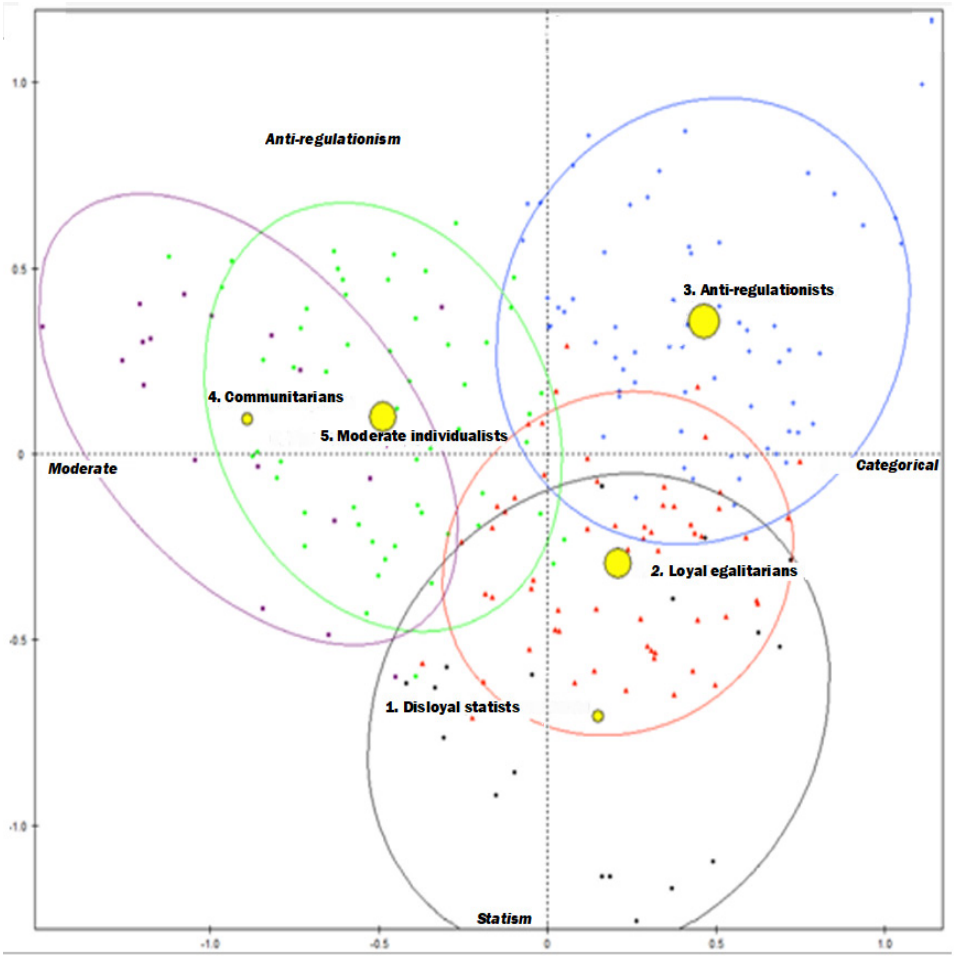

Fig. 2. Clustering of respondents according to cultural beliefs

Cluster 1 (8.5%). Disloyal statists. This cluster is located in the bottom right corner. It is associated with negative attitudes to egalitarianism. Members of this group are strongly against the idea that the state must meet the needs of everyone

and evenly distribute wealth. They do not believe that the state is unfair or that there is a need to fight economic and gender inequality. The statement that the strongest motivation for work is individual profit is shared with some reservations. Yet, people in this group think that governmental programmes, rather than markets, are the key to public prosperity. This cluster has counter-egalitarian and counter-communitarian rather than hierarchist attitudes. Its beliefs can be defined as individualised etatism — while acknowledging the dominant role of the state and considering the current order of things as legitimate, they are not completely loyal to the group. Remarkably, this cluster prefers to learn about environmental threats from the state media and see strict state control over production as the most effective mechanism to regulate risk-related tensions.

Cluster 2 (26.9%). Loyal egalitarians. Although located in the bottom right quadrant, it is closer to the centre than Cluster 1. The most prominent beliefs in this cluster relate to group cohesiveness and moderate support for vertical structures. Although members of the group are not willing to vest in the state the right to restrict personal choices in the fight for a common cause, they approve of current support for various social groups and oppose the 'social Darwinist' that people should take care of themselves. This group pays little attention to the anti-discrimination agenda. Its members neither believe that society has grown soft and feminine nor blame all perils on the abandonment of the traditional family model. Still, they do not think that boys should be taught to be more sensitive or that women are unfairly discriminated against in society.

Cluster 2 approves of the idea that everyone has the right to state benefits when in need and that society would profit from an even distribution of wealth. Members of this cluster value the group over vertical structures — this attitude is characteristic of moderate paternalism. Well informed about the mine development, this group tends to trust environmental non-profits rather than the media. Its essential feature is a genuine unwillingness to sacrifice the environment for higher living standards. This attitude is typical of the egalitarian culture.

Cluster 3 (29.5%). Anti-regulationists. This group has egalitarian and individualist attitudes: antipathy to vertical structures and social prescriptions, including those by the state. Members of this group acknowledge the problem of discrimination towards minorities and the need to fight economic and gender inequality. They support the idea of teaching boys to be more sensitive and believe in markets more than state programmes, which they consider 'a waste of time and money'. Although this group is neither 'right' nor 'left', its anti-regulationist attitude is obvious. This attitude is reflected in civic engagement, full awareness of mine development, distrust of all the media (both state and private), and estimating regional environmental risks as high. The greatest concern in Cluster 3 is houses collapsing into a sinkhole.

Cluster 4 (8.6%). Communitarians. This cluster is associated with communitarian attitudes: approval of state support for various groups at risk, favouring state programmes over markets as a tool to achieve public prosperity, and the rejection of financial gain as personal motivation. The attitudes of this group have a major egalitarian element which corresponds to the demand for social justice. Thus, members of cluster 4 combine paternalistic beliefs with group cohesiveness. Other important features are distrust of the activists and a high proportion of younger people. This group has little interest in the risk agenda.

Cluster 5 (27%). Moderate individualists. Although members of this group do not problematise discrimination towards minorities, they think that the state must ensure greater equality (primarily, as regards the distribution of wealth). At the same time, the state should let citizens take care of themselves rather than exert pressure on them. Partly sharing individualistic attitudes, this group acknowledges the central role of the state in ensuring order and attaining social justice.

This group does not stand out for its civic engagement, but it is not willing to sacrifice the environment for the economic benefits of the project. This group trusts the authorities most of all, but also pays attention to what human rights organisations and the company have to say. It is likely to look for information in the state media, whereas it does not consider friends as a reliable source of information.

Conclusions

The findings of this study are of both methodological and practical nature.

Methodologically, the obtained space of categorical variables does not completely coincide with the grid/group model either in its classical version or in the form of cultural cognition theory. This inconsistency may be explained by deficiencies of the Russian translation of the scales, the need for their further adaptation and validation, or the specific features of local communities.

Still, this experience should not be considered as a failure: the use of scales in combination with multiple correspondence analysis made it possible to build a well-structured space based on the obtained categories, establish connections between active and auxiliary categorical variables, and identify in the local community clusters that have stable distinctive properties of different cultural types. This leads one to conclude that the tests methodology (particularly, the scales employed in this study) enable reliable categorisation of respondents' cultural beliefs. Yet their correspondence to the types of structural organisation of local communities was beyond the scope of this study.

An important practical implication is the differentiation between cultural types along the categorical/moderate and anti-regulationism/etatism scales. The

second scale combines grid (vertical organisation) and group (horizontal organisation) components found in the original model. These cultural attitudes are not random statements or basic beliefs. They are linked to risk perception and the treatment of social institutions (state, private, and non-profit), communication channels, and the social environment of community members. As I demonstrated in an earlier work, cultural beliefs remain unchanged in group communication [46]. Therefore, the observed risk perception patterns are of crucial importance for devising differentiated risk communication strategies towards different groups within local communities in the context of their economic, institutional, and social situation.

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The author

Dr Efim S. Fidrya, Associate Professor, Immanuel Kant Baltic Federal University, Russia.

E-mail: EFidrya@kantiana.ru

https://orcid.org/0000-0003-4330-8251

TOURISM IN THE BALTIC SEA REGION

GEOGRAPHY OF INBOUND TOURISM AND TRANSBOUNDARY TOURISM-AND-RECREATION REGION BUILDING IN SWEDEN

A. G. Manakov
I. N. Krasilnikova
I. A. Ivanov

Pskov State University,
2 Lenin Sq., Pskov, 180000, Russia

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Sweden's tourism industry stands out for its large contribution to the development of the national economy. The vast size of the country makes it possible to trace differences in incoming tourist flows from neighbouring countries. This circumstance accounts for the novelty of this study, which lies in viewing national tourism geography from the perspective of the theory of transboundary tourism-and-recreation region building. Interregional differences in the structure of incoming tourist flows help identify the country's cross-border tourism-and-recreation regions and delineate their borders. This research employs statistical and cartographic methods. The incoming tourist flow to Sweden grew steadily until 2020. However, the Covid-19 crisis has led to a drastic reduction in the number of incoming tourists. Based on the 2019 statistics, the findings confirm the existence of a developed transboundary tourism-and-recreation mesoregion that brings together Germany, Denmark, and Sweden. The formation boasts strong tourist links. There are another five cross-border tourism-and-recreation mesoregions: Sweden-Norway-Denmark, Middle Sweden-Norway, Sweden-Norway-Finland, Middle Sweden-Finland, and South Sweden-Finland. The number of tourists visiting cross-border mesoregions indicates the degree of development of the latter.

Keywords:
tourism industry, international tourism, tourist flow, Covid-19, cross-border region

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Introduction

Sweden ranks third in the Baltic region in terms of the contribution of the tourism industry to the country's economy (8.2% of GDP in 2019) behind Estonia and Germany (11.7 and 9.1% respectively)[1]. In turn, the development of the country's tourism sector greatly depends on international tourism. This is also facilitated by the fact that Sweden has a small number of inhabitants compared to other European countries (10.2 million people at the beginning of 2021) while the total population of its main sources of tourists is several times higher.

The relatively large territory of the state (the fourth place in Europe, about 450 thousand square kilometres) leads to the fact that inbound tourism is regionally-specific. A wide variety of cultural and historical heritage and natural landscapes contributes to the development of tourism and recreation in its different regions across the country. Major tourist centres are located both in the southern part of Sweden, which is adjacent to the two main sources of international tourists, Germany and Denmark, and in the northern part, which is no less attractive for foreign visitors due to its picturesque landscapes. In this context, studying the geography of tourist flows in Sweden from the perspective of the theory of cross-border tourist and recreational region-building is of particular interest.

The study aims to determine regional differences in the structure of the international tourist flow to Sweden, which serves as a basis for identifying and assessing the level of development of meso-level cross-border tourist and recreational regions.

Objectives of the study are to review the dynamics and structure of the flows of inbound visitors to Sweden from 2008 to the present; to identify the features of the distribution of the flow of inbound visitors to Sweden, and to identify meso-level cross-border tourist and recreational regions in the territories adjacent to the neighbouring countries; to determine the rate of international tourist exchange within the cross-border tourist and recreational mesoregions to use it as the basis for assessing their development level.

The information base of the study is the publicly available Eurostat data on the number of tourists arriving in Sweden[2], the data of the Statistical Office of Sweden on overnight stays of tourists both for the whole country and for its

[1] Economic Impact Reports, 2020, *WTTC,* available at: https://wttc.org/Research/Economic-Impact (accessed 12.01.2021).

[2] *Statistics Eurostat*, 2020, available at: https://ec.europa.eu/eurostat/databrowser/view/TOUR_OCC_ARNAT__custom_159133/default/table?lang=en (accessed 20.10.2020).

lens (administrative-territorial units of the country of the first level)[3], as well as similar data provided by the statistical services of Norway[4], Finland[5], Germany[6], and Denmark[7].

Literature review

There is a large number of publications on the development of tourism in Sweden. The first large group of international publications on this topic allows assessing the current state and prospects for the development of certain types of tourism in this Scandinavian country. For instance, Carson and D.B. [1], Almsted, Lundmark and Pettersson [2], Rytkönen and Tunón [3] discuss the experience of rural tourism development in Sweden. Demiroglu, Lundmark, Saarinen and Müller [4] examine opportunities for the development of ski tourism in Arctic Sweden; Pashkevich [5] studies mountain and industrial tourism in the area of Bergslagen. There are numerous Swedish studies on the development of eco-tourism and recreation closely related to the issues of environmental protection. These include the works by Lundmark, Fredman and Sandel [6], Fredman, Romild, Yuan, Wolf-Watz [7], Margaryan and Fredman [8], Petersson-Forsberg [9].

One of the popular research topics is the study of the impact of tourism on local communities. The Swedish research on this topic includes publications by Lindström and Larson [10], Farsari [11], Lundberg [12], Hultman and Michael [13], Van Reijnders [14] and others.

Russian researchers, as well as some international ones, pay attention to the development of various types of tourism in Sweden, for example, educational [15], cruise [16], as well as consider general issues and prospects for the development of tourism in Sweden compared with other Nordic countries [17—19]. Particularly noteworthy are the works that focus on the development of tourism in certain areas of Sweden (for example, [20; 21]) as they give an idea of the

[3] Statistics Sweden, 2020, *Statistical database,* available at: http://www.statistikdatabasen.scb.se/pxweb/en/ssd/ (accessed 20.10.2020).

[4] Accommodation establishments total. Guest nights, by guests' country of residence, 2020, *Statistisk sentralbyrå. Statistics Norway, available at*: https://www.ssb.no/en/statbank/table/08401/ (accessed 15.08.2020).

[5] 116t — Yearly nights spent and arrivals by country of residence, 1995—2020. Visit Finland, 2020, *Statistics Service Rudolf*, available at: http://visitfinland.stat.fi/PXWeb/pxweb/en/VisitFinla (accessed 12.01.2021).

[6] Ankünfte und Übernachtungen in Beherbergungsbetrieben: Bundesländer, Jahre, 2020, Stat*istisches Bundesamt Deutschland GENESIS-Online*, available at: https://www-genesis.destatis.de/genesis/online (accessed 12.01.2021).

[7] Overnight stay by type of overnight accommodations, region, nationality of the guest and period, 2020, *StatBank Denmark*, available at: https://www.statbank.dk/statbank5a/SelectVarVal/Define.asp? Maintable=TURIST&PLanguage=1 (accessed 12.01.2021).

actual geography of tourism in the country. However, in our opinion, it is still not fully studied, the cartographic methods are underused while they allow observing regional differences in the spatial structure of tourist flows.

The processes of cross-border tourism and recreation regionalization in Sweden cannot be considered fully studied either. The only publications on this issue that we can mention are those by Prokkola devoted to the cross-border regionalization in the "Tornio Valley" Council, i.e. on the Swedish-Finnish border [22; 23]. Drawing on the example of the "Arctic Circle Destination", these works consider the influence of tourism on the border regions from different points of view, primarily through the prism of social and cultural international cooperation, as well as from the perspective of the transformation of border landscapes.

Earlier studies by Russian authors on the geography of tourism in the countries of the Baltic region (Estonia [24], Finland [25], and Norway [26]) assess the role of cross-border tourist and recreational regions ([27—31], etc.) in generating and receiving tourist flows. This article presents the results of a similar study conducted at the level of administrative units in Sweden.

Research results and discussion

Sweden publishes only general statistics on overnight stays, thus unfortunately it is not possible to assess the number of overnight stays of tourists by country of origin or len. However, the data on the tourist flow to the country are available from the European Statistics. Figure 1 shows the dynamics of the inbound tourism flows to Sweden in 2008—2019 based on Eurostat data on the number of visitors arriving in the country and using its accommodation facilities.

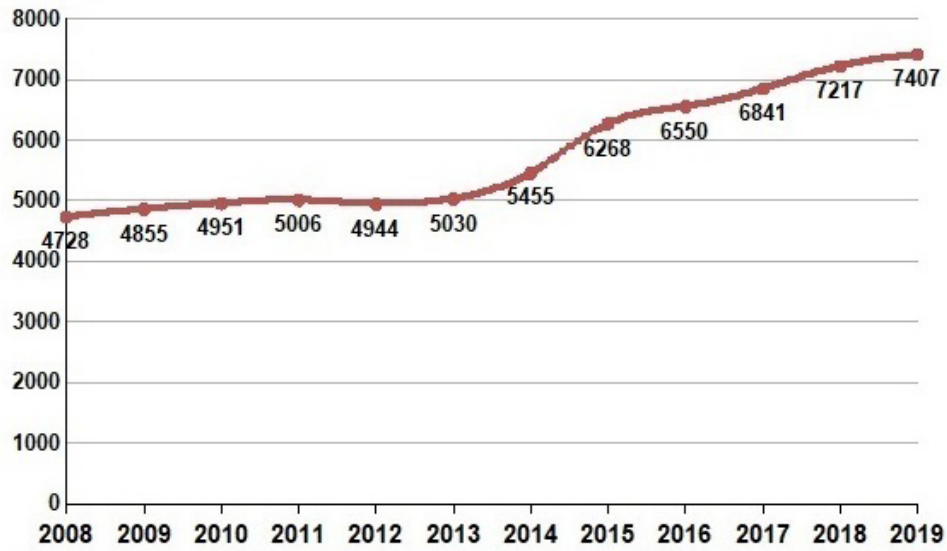

Fig. 1. Dynamics of the flow of inbound visitors to Sweden in 2008—2019, thousand people

During this period, the inbound tourism flow increased more than 1.5-fold. Its slight reduction was observed only in 2012 (–1.3% compared to the previous year). Figure 2 shows the distribution of tourist traffic by country of origin based on overnight stay statistics.

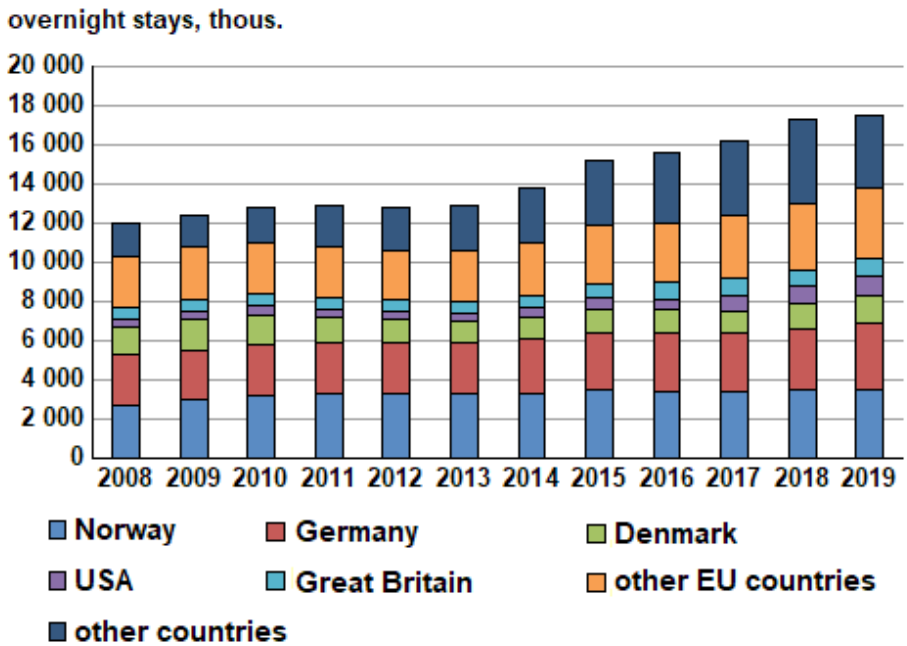

Fig. 2. Dynamics of the number of overnight stays of inbound tourists in Sweden

Throughout the study period, tourists from Norway held the lead in the number of overnight stays in Sweden (3.5 million in 2019). While in absolute terms, this number has slightly increased compared to 2008, the share of tourists from Norway in the overseas visitors has decreased from 25.3 to 19.9% since 2013. There are three main reasons for their: the neighbouring position, cultural and linguistic proximity, and visa-free regime (both countries are part of the Schengen area). One of the incentives for Norwegians to travel to Sweden is the price difference, as in Sweden, goods and services are noticeably cheaper, and cross-border trade is well developed. The method used to count tourists by the number of overnight stays allows excluding same-day visitors.

The second-largest number of overnight stays in Sweden is that of tourists from Germany (3.4 million in 2019), which is also part of the Schengen area.

The tourist flow from Germany, as well as from Norway, grew, but its share in the total flow of overseas visitors decreased by almost 3%. In 2019, it comprised 19.3% of the total inbound visits to Sweden. Such a large number of tourists is attributed to both the developed sea and air communication, and the presence of bridges connecting continental Europe and the Scandinavian Peninsula through the islands of the Danish archipelago, which allows car-owners to get to Sweden without changing to a ferry.

The tourist flow from Denmark ranks third in terms of the number of overnight stays: in 2019, Danish tourists made 1.4 million overnight stays, and this number did not change significantly during the study period. In general, this tourist flow repeats the pattern of tourist flow from Germany.

Other European countries significant in terms of volume and growth of tourist traffic to Sweden include the UK (fourth place until 2018, a 1.5-fold increase, 900 thousand overnight stays in 2019), Switzerland (a twofold increase, 420 thousand overnight stays in 2019) and Poland (a 1.8-fold increase, 323 thousand overnight stays in 2019).

The non-European countries with a fast-growing tourist flow to Sweden include the United States (just over 1 million overnight stays in 2019, over 2.5 times more than in 2008), China (a four-fold increase, 400 thousand overnight stays in 2019) and India (a five-fold increase, almost 250 thousand overnight stays in 2019).

In general, inbound tourism is noticeably dominated by geographically close European countries, although in recent years there has been an increase in inbound tourist traffic from more distant countries (especially from the above-mentioned USA, China and India). There is also a growing flow of tourists from other countries for which Sweden does not keep separate statistical records (about 730 thousand overnight stays in 2019, a threefold increase). These are mainly developing countries.

In 2020, the tourism sector in Sweden, like in other countries around the globe, suffered from the crisis associated with the COVID-19 pandemic. Figure 3 shows the dynamics of inbound tourism in Sweden for some months of 2020 compared to the same period in 2019.

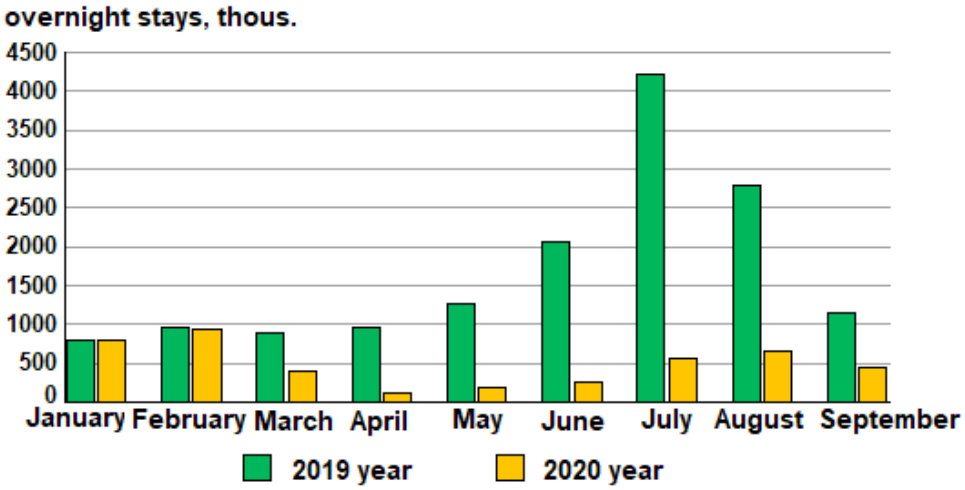

Fig. 3. Dynamics of the number of overnight stays of foreign tourists in Sweden by month in 2020 compared to 2019

In March 2020, a global pandemic was declared and the first serious restrictions on movement (mandatory quarantine, cancellation, or significant reduction of international traffic) were introduced. They had an immediate effect on the tourism business. Sweden is one of the few countries in the world that did not adopt strict restrictive measures in the spring of 2020, but the inbound tourism still plunged as the main sources of tourists to Sweden imposed exit restrictions. The incoming tourist flow in July 2020 was 87% less than the previous year's value for that month, in August 2020—77% less, in September 2020—61% less. Thus, the tourism sector in Sweden in 2020 experienced a deep crisis, even though the country had no tough COVID-19 restrictions.

To analyse regional differences in inbound tourism to Sweden, we use statistics for 2019, the year preceding the crisis and characterized by the largest inbound tourist traffic during the study period. Figure 4 shows the overall scale of inbound tourism in 2019 by Sweden's administrative units (lens) and broken down by the share of overseas visitors in the total number of tourists.

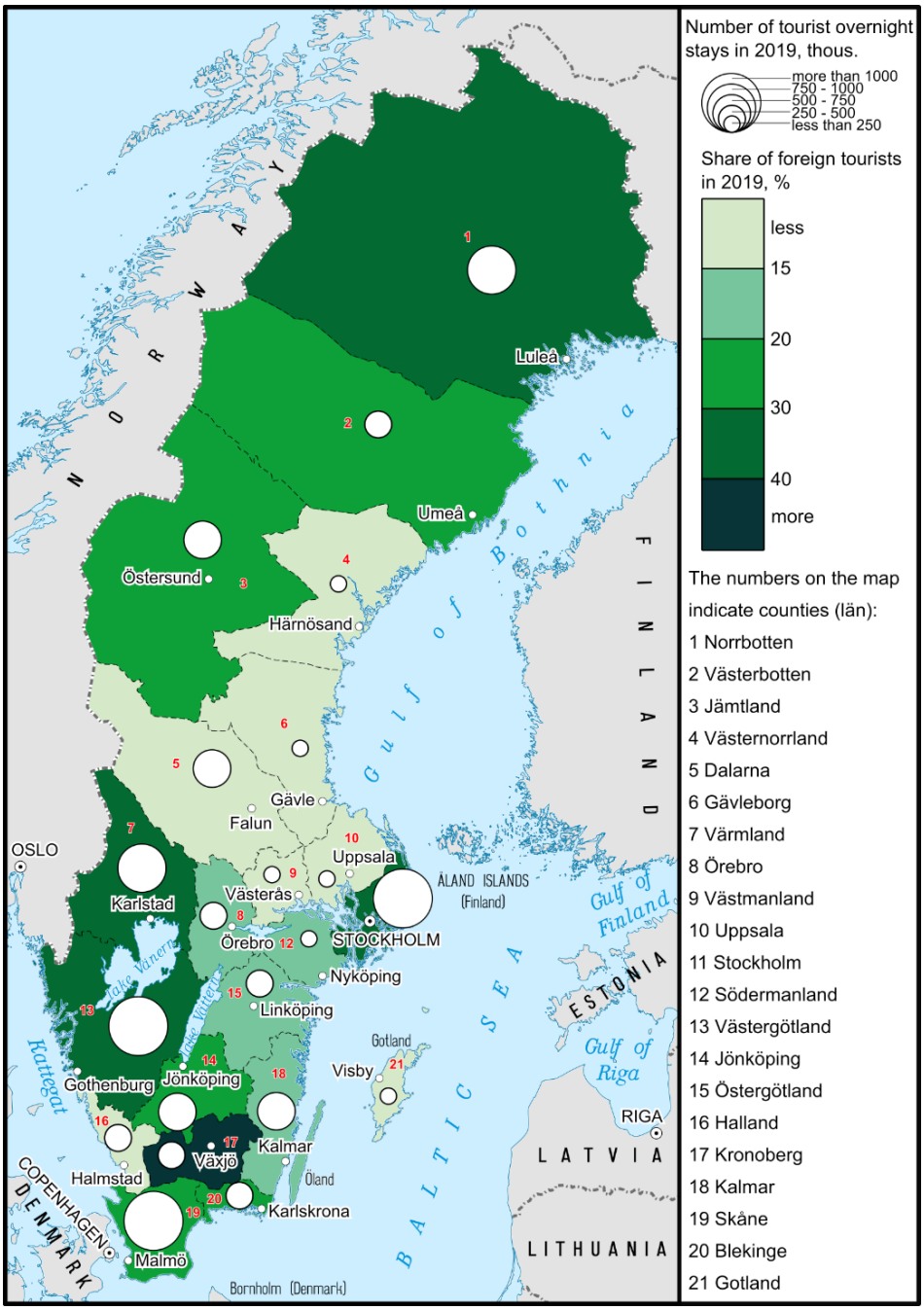

Fig. 4. Incoming tourist flow in 2019 and the share of foreign tourists in the total number of tourists in the lens of Sweden

Half of the total flow of inbound tourists falls on two lens: Stockholm (with the capital located there) and Västra Götaland situated in the south-west of the country. Västra Götaland is home to several castles, the resort village of Smögen,

and other attractions. The largest number of tourists falls on the western lens located along the border with Norway and the southern lens. The central lens located to the northwest and southwest of Stockholm account for the minimum tourist flow.

The share of foreign tourists is highest in the southern len of Krunuberg (43%). The most visited places include the city of Växjö, with the Teleborg Castle and the ruins of the Krunuberg castle, the museum of the glass industry and the cathedral of the XIV century, as well as the village of Almhult, where the museum and the first store of the famous international company IKEA are located. The share of foreign tourists is also high in the lens of Stockholm, Västra Götaland, Värmland, and the northernmost len, Norrbotten, where the ice hotel in Jukkasjärvi is located.

Figure 5 shows the main sources of foreign tourists in 2019 by Swedish lens. The spatial structure of incoming tourist flows in Swedish lens is also of interest from the cross-border region formation point of view.

The map shows the share of tourists from four countries (Norway, Germany, Denmark, and the United States), which provide the majority of the foreign tourist flow. Finland has been added to the list as it is a significant source in several lens. At the same time, the map does not show the countries whose share in the incoming tourist flow is less than 5%.

Tourists from Germany make up the majority of the inbound flow in 13 of the 21 lens, with the largest share in the southern and eastern lens of Sweden.

In the rest of the lens, located mainly along the Norwegian border, most of the tourists come from Norway. The exception is the Dalarna Valley with the highest proportion of Danish tourists.

The share of tourists from the United States is noticeable in Stockholm (it accounts for more than half of the overnight stays of American tourists — 575 thousand) and in regions with a small tourist flow not popular among other overseas visitors, thus it most probably is the low base effect.

It is particularly necessary to pay attention to the increased share of German and Danish tourists in the southern lens of Sweden. This fact confirms the correctness of the inclusion of the southern part of Sweden in the German-Danish-Swedish-Polish cross-border tourist and recreational region (CTRR) by Kropinova. It is also the best-developed one in the entire Baltic region [27, p. 119—120]. In the Swedish part of this CTRR, only the Polish component is not well-pronounced since the flow of tourists from Poland is quite insignificant.

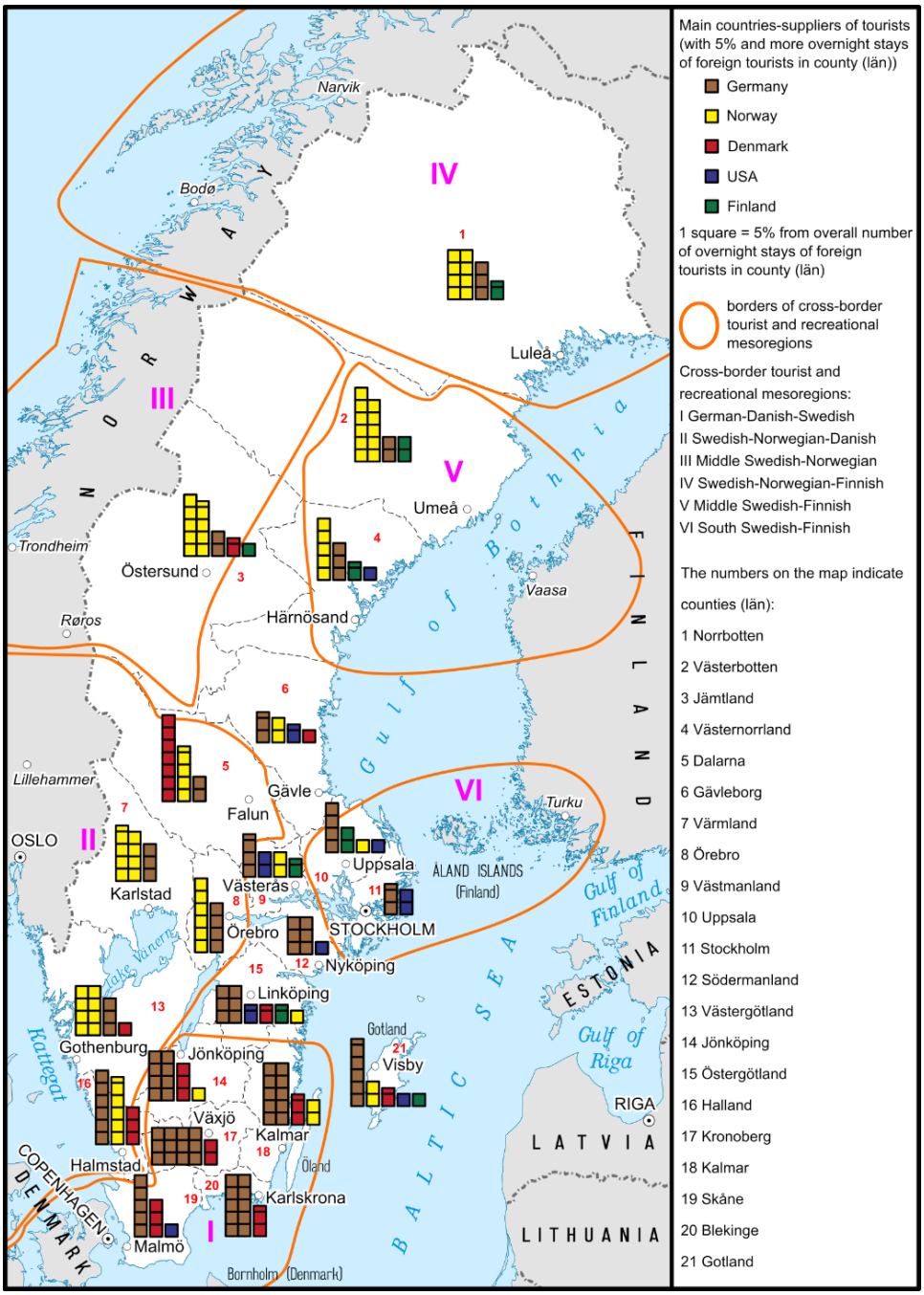

Fig. 5. Structure of the flow of inbound tourists in Swedish lens in 2019 (by major countries of origin) and the boundaries of cross-border tourist and recreational mesoregions

Kropinova [27] identifies cross-border tourist and recreational mesoregions mainly in the eastern part of the Baltic macroregion. These meso-level CTRRs

are clearly linked to the Euroregions created on the borders with Russia. Similarly, we can identify the meso-level CTRRs in the western part of the Baltic region, in particular, on the borders of Sweden with Finland and Norway. Here, cross-border regions similar to the Euroregions are institutionalized and identified as "new spatial forms of international economic integration" (NSFIEI) [32]. They usually have all six main features of cross-border tourist and recreational regions (continuity of the territory; the complementarity of natural and cultural tourist resources; common transport infrastructure, cross-border tourist routes, close ties between tourism entities, management structures that organise and coordinate tourist flows [27, p. 89]). However, many new spatial forms of international economic integration are small and some of them are integrated into larger ones. The latter may well claim the status of cross-border mesoregions. Allocating the meso-level CTRR, we also have taken into account the rate of cross-border tourist exchange as it is the most important quantitative indicator of the level of development of a CTRR [24].

In previous studies of the geography of international tourist flows in Finland, we noted a high proportion of Swedish tourists in the Aland Islands and the southwest of the country. We proposed to assign the status of a mesoregion to this CTRR [25]. In Sweden, the share of tourists from Finland is increased on the entire western coast of the Gulf of Bothnia. In total, there are six NSFIEIs on the Swedish-Finnish border [32]. They either overlap or even fit into one another, but there are clear gaps between three pairs of them: to the north of the Gulf of Bothnia (Nordkalotten Committee and Tornio Valley Council), in its middle part (Kvarken Council and Mittnorden Committee) and on its southern border (Archipelago Co-operation and the Baltic Sea Islands B7). According to the theory of cross-border tourism and recreation region development, these three pairs of NSFIEIs can be considered mesoregions identified as northern, middle and southern Swedish-Finnish meso-level CTRRs.

We can assume that there are several Swedish-Norwegian meso-level CTRRs that cover a significant part of the territory of these states. A similar assumption was made in our study of the structure and geography of the distribution of the flow of inbound tourists in Norway [26]. In total, there are eight NSFIEIs on the Swedish-Norwegian border [32]. In most cases, they are parts of larger areas, and therefore it is possible to clearly distinguish three arrays of them. The first two NSFIEIs (Nordkallotten Committee and Tornio Valley Council) cover the northern section of the Swedish-Norwegian border. Moreover, they both adjoin Finland, and therefore we can identify a trilateral meso-level CTRR — Swedish-Norwegian-Finnish. The second meso-level CTRR is in the middle section of the Swedish-Norwegian border, which corresponds to two NSFIEIs, Mittnorden Committee and Mittskandia Committee. In the southern part of the Swedish-Norwegian border, there are four NSFIEIs — Co-operation Arco, Committee Est-

fall-Bohus, Kattegat-Skagerrak and Vermland-Hedmark-Akershus-Etfall, forming a single array (including the north of Denmark), which can also be considered as one meso-level CTRR.

Thus, on the Swedish-Norwegian border, we can identify three meso-level CTRRs: Norwegian-Finnish, Middle Swedish-Norwegian, and Swedish-Norwegian-Danish. These CTRRs differ both quantitatively and in their composition from the cross-border mesoregions in the Baltic macroregion identified by Korneevets [32, p. 19].

In total, there are six meso-level CTRRs identified in the adjacent territories of Sweden, Norway, Finland, and Denmark (see Figure 5). We delineated their boundaries both in Sweden and in the territories of neighbouring states. Further, using the national statistics of these countries for 2019, we calculated the number of overnight stays of tourists in the lowest administrative units that are part of the meso-level CTRRs (table).

Number of overnight stays of tourists (including from neighbouring countries) in 2019 within the meso-level CTRRs in the adjacent territories of Sweden, Denmark, Norway and Finland

CTRR	Total overnight stays, thousand	Overnight stays of tourists from neighbouring countries, thousand	Share of adjacent countries, %
German-Danish-Swedish	82,938.3	6,373.7	7.7
Swedish-Norwegian-Danish	18,922.1	3,111.7	16.4
Middle Swedish-Norwegian	1,119.6	376.1	33.6
Swedish-Norwegian -Finnish	4,118.4	786.5	19.1
Middle Swedish-Finnish	748.7	93.5	12.5
Southern Swedish-Finnish	6,126.2	454.8	7.4

Kropinova proposes a simple scale for assessing the development of a CTRR, which includes three levels: high, intermediate and low (at the initial stages of development) [27, p. 119]. The reference CTRR of the meso-level with a high level of development is the German-Danish-Swedish-Polish one. An example of a meso-level CTRR with an intermediate level of devlopment is the Russian-Estonian-Latvian one [28]. Earlier, we proposed to use the rate of tourist exchange between the national parts of a CTRR as a quantitative indicator of the level of its development, [24] and to add one more level of development — "higher than intermediate". The study of cross-border exchange in meso-level CTRRs located on the border of Russia with Estonia and Finland [24; 25] allowed introducing quantitative criteria for distinguishing between these levels of development: over 500 thousand border crossings within the CTRR per year — "high", from 100 to 500 thousand — "higher than intermediate", from 20 to 100 thousand — "intermediate" (less than 20 thousand is found only in the micro-level CTRRs).

As noted above, Sweden and the adjacent countries publish statistics on the number of overnight stays of tourists. But knowing that in Sweden and its neighbouring countries, the duration of trips is on average 3—5 days (with 2—4 overnight stays), we can give the following assessment of the level of development of the six meso-level CTRRs identified (see Table 1). In addition to the German-Danish-Swedish mesoregion, the Swedish-Norwegian-Danish mesoregion is also characterized by a high level of development. The level of development of the three mesoregions (Middle Swedish-Norwegian, Swedish-Norwegian-Finnish, and Southern Swedish-Finnish) is higher than intermediate, the Middle Swedish-Finnish CTRR receiving significantly fewer tourists from adjacent countries shows an "intermediate" level of development.

Conclusions

The flow of inbound tourists to Sweden demonstrated steady growth until 2020. In 2008—2019 it increased more than 1.5-fold. However, the crisis caused by the COVID-19 pandemic led to a sharp decline in the number of overseas visitors in 2020. For example, in July 2020, it was only 13% of the same month's value in the previous year, and in August — 23%.

The study of the geography of the flows of inbound tourists to Sweden, which allowed us to assess some parameters of cross-border tourist and recreational regions, was based on 2019 statistics. The study confirmed the existence of the highly-developed German-Danish-Swedish meso-level CTRR (which includes the southern part of Sweden, mainly the Gothland region) showing a significant rate of interstate tourist exchange.

There are also five other meso-level CTRRs identified on the border of Sweden with neighbouring countries: Swedish-Norwegian-Danish, Middle Swedish-Norwegian, Swedish-Norwegian-Finnish, Middle Swedish-Finnish, and Southern Swedish-Finnish. One of them (Swedish-Norwegian-Danish) can be considered a highly-developed CTRR. Only one mesoregion (the middle Swedish-Finnish) is found to be the CTRR with an intermediate level of development, the other three are the CTRRs with the "higher than intermediate" level of development.

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The authors

Prof. Andrei G. Manakov, the Department of Geography, Pskov State University, Russia.

E-mail: region-psk@yandex.ru

https://orcid.org/0000-0002-3223-2688

Dr Irina N. Krasilnikova, the Department of Geography, Pskov State University, Russia.

E-mail: mulia777@mail.ru

https://orcid.org/0000-0002-0351-0327

Ivan A. Ivanov, PhD Student, Pskov State University, Russia.

E-mail: ii60@bk.ru

https://orcid.org/0000-0003-4453-2052

PROJECT APPROACH TO TRANSBOUNDARY TOURISM-AND-RECREATION REGION BUILDING: THE CASE OF KARELIA

S. V. Kondrateva

Institute of Economics Karelian Research Centre
Russian Academy of Sciences
50 A. Nevskogo Ave., Petrozavodsk,
Republic of Karelia, 185030, Russia

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This article considers international projects as a factor in building and developing transboundary tourism-and-recreation regions. The Karelian part of the Russian-Finnish border and the adjoining areas of Russia and Finland were the model site for the study. The research aims to measure the contribution of international projects run in 1990—2020 to transboundary region building in the Karelian borderlands. The analysis of 80 international municipal projects shows that they gave a boost to region building and development in the study area. Common trends and specific features of international projects carried out in Karelian municipalities have been identified in the context of transboundary tourism-and-recreation region building. The findings add to a comprehensive picture of how international tourism projects may forward the building and development of transboundary tourism-and-recreation regions. The results of the study can be used in research into international cooperation and tourism. The proposed approach may serve as a tool of a regional economic policy on tourism and thus broaden the scope of possible managerial decisions.

Keywords:
municipality, Republic of Karelia, tourism projects, Karelian borderlands, Finland, transboundary tourism-and-recreation region

Introduction

Since the 1990s, new opportunities for transboundary cooperation and the involvement of Russia's northwestern regions in integration processes have paved the way for transboundary region building, including that driven by tourism. Several transboundary tourism-and-recreation regions (TTRR) of different levels and orders have emerged along the western border of the country. Tourism projects are seen as an effective tool to speed up integration and region building in the Baltic, and this work aims to quantify the contribution that international tourism projects run in 1990—2020 made to tourism-and-recreation region building in the Karelian borderlands.

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Tourism projects and TTRRs: theoretical aspects

Considerable research groundwork has been laid for the investigation of TTRR development in the Baltic Sea region. The literature has drawn particular attention to the TTRRs that bring together Russia, Poland, and Lithuania [1], Russia, Estonia, and Latvia [2; 3], and Russia and Finland [5; 6].

Despite a growing research interest in the effect of transboundary cooperation and international projects on tourism development [7—13], the influence of tourism projects on TTRR building remains poorly studied. Most studies focus on the results of individual international projects, particularly those seeking to create and develop transboundary tourist roots both as a tool to improve the competitiveness of adjoining international territories and as a stage in the formation of transboundary tourism-and-recreation spaces [14—17]. The literature considers the development of individual types of tourism [18] and the role of tourism in transboundary region building [19]. Works examining multilevel cooperation management as well as the specific features, opportunities, and limitations of tourism projects in the light of destination development [27; 28] have considerably advanced knowledge in the field.

In the context of this research, of importance are studies of international tourism projects as a tool to promote TTRR building in the Baltic Sea region [20—25]. Several works analyse Baltic non-tourism projects through the lens of constructivism (see [26], for example).

Nevertheless, earlier studies do not do international tourism projects enough justice, especially when accelerating the development of TTRRs is concerned. Firstly, these works are highly fragmented (they concentrate on individual projects). Secondly, they are geographically dispersed (they explore different border regions of North-West Russia). Thirdly, they tend to limit themselves to the time frame of cross-border cooperation projects (from 2007 onwards) and do not take into account the impact of earlier project activities. Finally, the literature does not examine TTRR building in the Karelian borderlands. The current contribution seeks to fill this gap in research, being the first study to place international tourism projects run in the Baltic region in 1990—2020 in the context of municipal-level TTRR building in the Karelian borderlands.

Methodology

The Karelian borderlands with their existing and emerging tourism-and-recreation regions of different hierarchical levels and orders have served as the model site for the study. Geographically, this site covers the Karelian section of the Russian-Finish border and the adjacent territories of Russia (Republic of Karelia) and Finland.

This work describes an approach to considering international tourism projects run in the Karelian borderland in 1990—2020 as a tool to facilitate TTRR

building. To this end, 80 international tourism projects supported by various Programmes (TACIS, INTERREG, Karelia ENPI CBC, Karelia ENI CBC, and others) have been analysed with a focus on:

— the border position of Karelian municipalities;

— their contribution to TTRR building in the Karelian borderlands.

Seven of 18 municipalities of the Republic of Karelia lie at the national border (fig. 1).

Fig. 1. Administrative division of the Republic of Karelia [29]

Today, the Karelian borderlands have several fully developed and emerging TTRRs of different levels and orders (for more detail, see [5]). Within the study area, 11 Russian municipalities have been involved in TTRR building. These are the *Sortavala, Lahdenpohja, Suoyarvi*, Pitkjaranta, Priäžä, *Kalevala*,

Petrozavodsk, *Kostomuksha* city districts and parts of the *Loukhi*, Prionezhsky, and Olonets municipalities. Five municipalities participate on the Finnish side — *North Karelia,* some areas of North and South Savo, Kainuu, and the north-easternmost part of *Northern Ostrobothnia* (here and below the names of border municipalities are given in italics). I focus, however, on the Russian part of the area.

This study uses data from open web resources of cross-border cooperation programmes, the official website of the Republic of Karelia, strategies of the Republic of Karelia for the development of international and cross-border cooperation, relevant Russian and international studies, and official websites of international projects in tourism. I do not investigate municipal activity during calls for application; instead, I concentrate on projects that have been selected to receive support. The study does not take into account current projects launched within the European Neighbourhood Instrument and scheduled for 2020—2022.

The research utilises analysis of terminology and employs the methods of comparison, analogy, and time series analysis. Median values are calculated.

The border position of Karelia municipalities and tourism projects: an advantage or a circumstance of little importance

Since transboundary tourism-and-recreation region building is the domain of border municipalities of neighbouring countries, this section will view international tourism projects run in the Republic of Karelia from the perspective of its border position. While examining the border position of Karelian municipalities in terms of its positive and negative effects on tourism and recreation, researcher S. Stepanova [29] has overlooked the project approach. This section seeks to fill this lacuna by addressing the question of how the border location of a municipality affects its participation in international projects, as compared to inland areas of the same region.

For this purpose, I have analysed a vast array of data on the practical implementation of international tourism projects in 1990—2020 at a municipal level. Analysis of the median values of quantitative measures shows that the seven border municipalities significantly outperform the 11 inland regions when it comes to tourism projects (table 1). A major regional tourist destination, the Petrozavodsk city district is the leader by far: it participates in 60.5% of all local projects. That is why data for the regional capital is not included in the calculation.

Table 1

Qualitative measures of participation in projects by Karelian municipalities in 1990—2020

Municipality	measures, medians		
	total project number	project beneficiaries*	project engagement**
all municipalities	10	1	4
border municipalities	10	2	5
inland municipalities	8	0	4

Comment: * the number of times the municipality was the only Russian partner in a project; ** the number of times the municipality participated in the Programmes (TACIS, Interreg, other Programmes, Karelia ENPI CBC, Karelia ENI CBC — five in total)

Ranking all municipalities in the region using the measures above makes it possible to single out seven that have been most active in tourism projects: the Petrozavodsk city district, the *Sortavala*, Olonets, *Loukhi*, Pitkjaranta, *Suoyarvi*, and Muyezersky municipalities. Four territories are classified as moderately engaged: Priäžä, Medvezhegorsk, and Pudozh municipalities and the *Kostomuksha* city district. Regional capital excluded, 67% of the most engaged municipalities lie at the national border.

Dividing project implementation into two periods — funded exclusively by the EU (1990—2006) and co-funded by the Russian Federation (Karelia CBC, 2007—2020) — helps rank border territories (table 2). The considerable engagement of Petrozavodsk in international tourism projects is accounted for by the 'metropolitan' status of the municipality and a high concentration of research excellence and potential applicants.

Table 2

Tourism project run in the Republic of Karelia, municipal level,%

Municipalities	proportion, %	
	1990—2006	2007—2020
Petrozavodsk	16.3	21.9
without participation of border municipalities	20.4	21.9
with participation of border municipalities	63.3	56.3*
including: - Petrozavodsk only - border municipalities + Petrozavodsk - border municipalities + other municipalities	 30.6 18.4 14.3	 9.4 12.5 34.4
with participation from other municipalities**	34.7	56.3

Comments: * the 0.1% difference is explained by rounding off the numbers; ** an aggregate measure (without participation from border municipalities + border municipalities + other municipalities)

The data analysis shows that border municipalities (BM) account for a significant proportion of international tourism projects (over 56.3%) run during the period of this study (1990—2020). At the same time, engagement of the region's inland municipalities is growing. On average (median values), in 1990—2006, BMs were involved in seven tourism projects, whereas inland municipalities only in three. In 2007—2020, each group of municipalities took part in five projects.

Period-specific examination at the municipal level helps identify trends in the engagement of territories in international projects in tourism. Project involvement increased in 2007—2020 in the *Kostomuksha* city district (from three to eleven projects against the median value of five), just as it did in the *Kalevala* municipality (from three to six). As to the inland municipalities, project engagement became more prominent in the Belomorsk, Kem, Prionezhsky (an increase from one to five projects) and Priäžä (four and seven) municipalities. The *Sortavala* municipality remained steadily active in international tourism project throughout the period, whereas engagement of the other four BMs decreased. Projects carried out within the ENI Cross-border Cooperation Programme (2014—2020) open avenues for the involvement of all regional municipalities in project activities, as evidenced by KA1020 Business and information cooperation in the area of booking of small accommodation online (WilDacha) or KA4007 Kalitka — the development of cross-border gastronomic tourism. Note that the number of projects carried out in the two periods was not the same, and even though this measure should be used with some reservations, it gives a clear picture of project engagement trends at the municipal level.

Overall, in the study's time frame of 1990—2020, the border municipalities of the Republic of Karelia had a more visible role in international projects than the region's inland territories. Still, from 2007, there was a trend towards greater involvement of inland municipalities in international tourism projects and lesser engagement of the region's border municipalities. The values that were characteristic of BMs in 1990—2006 were achieved by inland municipalities in 2007—2020. Active involvement of BMs in project activities in 1990—2006 can be explained by the novelty value of integration processes for Russia's northwestern border regions. Municipal-level analysis shows that seven territories, including the regional capital, were the most active in international tourism projects. Four of them are border municipalities. Within the period studied, the *Sortavala* municipality retained its position of the most active participant of international tourism projects. The *Kostomuksha* and *Kalevala* municipalities increased their activity as tourism project partners, whereas other municipalities reduced their participation in international projects. The leadership of the Sortavala municipality is a result of its developed economy and advantageous geographical position. Firstly, the municipality's Vyartsilya-Niirala road crossing point, which reached its full capacity in 1995, has enjoyed a simplified crossing procedure since 1992. Today, it accounts for 70% of the cross-border traffic at the Karelian stretch of the Russian-Finnish border. Secondly, the distance between the centre of the Sortav-

ala municipality and the centre of North Karelia, Joensuu, is about 120 km. An additional benefit is the history of the North Ladoga region [30], which is a strong factor in local cross-border ties.

International projects and TTRR building in the Karelian borderlands: the municipal level

The Karelian borderlands have three fully developed and emerging TTRRs of different hierarchical levels and orders. They bring together municipalities on both sides of the Russian-Finnish border (fig. 2).

Fig. 2. Transboundary tourism-and-recreation regions spanning bordering areas of Finland and the Republic of Karelia (prepared by Manakov) [5]

Borders: (1) national, (2) between Russian regions; International road border-crossing points: (3) large, (4) medium, (5) small; (6) simplified procedure checkpoints; (7) centres of regions in Finland and administrative districts in Russia; (8) other cities; (9) cultural and historic landmarks; (10) natural landmarks; (11) national parks and reserves; transboundary tourism routes: (12) Blue Road, (13) Kantele Tour Route; (14) transboundary tourism and recreation regions: (I) South Karelian (mid-Russian-Finnish) mesoregion, (II) Mid-Karelian second-order microregion, (III) North Karelian third-order microregion

Transboundary tourism-and-recreation regions of the Karelian borderlands [5]:

(I) South Karelian (mid-Russian-Finnish) mesoregion: *Sortavala, Lahnpohja, Suoyarvi*, Pitkjaranta, Priäžä, parts of Prionezhsky and Olonets, and the Petrozavodsk city district (Russia); *North Karelia*, North Savo, and most of South Savo (Finland);

(II) Mid-Karelian second-order microregion: the *Kostomuksha* city district and the *Kalevala* municipality (Russia); *Kainuu* (Finland);

(III) North Karelian third-order microregion: the border territories of the *Loukhi* municipality (Russia) and *North Ostrobothnia* (Finland).

Thus, 11 of 18 municipalities of the Republic of Karelia take part in TTRR-building; most of them are border territories. On the Finnish side, the process has participation from five territories, most of which lie at the national border. Out of seven border municipalities of the Republic of Karelia, only the *Muyezersky* municipality is not involved in TTRR building.

Comparing the rankings of the region's municipalities by participation in international tourism projects and the engagement of municipalities in TTRR building reveals several patterns. The Petrozavodsk city district, the *Sortavala, Suoyarvi, Loukhi*, Pitkjaranta, and Olonets municipalities top the list. The *Kostomuksha* and Priäžä municipalities, which increased their participation in international tourism projects in the second period (2007—2020) are approaching the top, too.

The study of the effect of international tourism projects run in the Republic of Karelia on TTRR building assumes that projects in the following areas contributed the most to the process: the creation and development of transboundary tourist routes; the formation of common areas and tourism spaces (for example, nature reserves); the expansion of development corridors; the development of contact network and a shared online platform.

Since almost all international tourism projects are aimed, directly or indirectly, at forging contacts, expanding cooperation networks, and promoting tourism and recreation, these areas are taken into account only when they constitute the main or complex goal/objective of a project.

TTRR building is the domain of border municipalities. Thus, this section considers only those projects that attracted at least one BM (52 projects, or 65% of the total). The findings indicate that, in 1990—2020, most of the projects (75%) contributed to TTRR building. A stronger effect on TTRR building is associated with projects carried out within the Karelia CBC programmes (table 3).

Table 3

Projects with participation from the BMs of the Republic of Karelia (1990—2020) and TTRR building

Project goal (main or complex)	period, %*		
	1990—2020	1990—2006	2007—2020
creation and development transboundary tourist routes	19.2	15.2	26.3
formation of common zones and tourism spaces	23.1	18.2	31.6
development corridors	5.8	9.1	0
contact network development	19.2	15.2	26.3
creation of a common online space	7.8	3.0	15.8
other goals/objectives of the project	24.9	45.4	0
TOTAL	100	100	100

Comment: * the proportion of projects with BM participation

It seems that the greatest contribution to TTRR development is made by the first two project areas: transboundary tourist routes (a dozen routes was created in the study's time frame) and common zones/space, whose proportion increased from 33.4% in 1990—2006 to 57.9% in 2007—2020. Below, I refer to these areas as *TTRR-building components*. These facts point to a trend towards greater cohesion at the Karelian stretch of the Russian-Finnish border. At the same time, expansion of development corridors is associated with larger investment projects aimed at the improvement of transboundary transport corridors and border crossing infrastructure. Projects carried out in the first period focused primarily on transboundary cohesion between the neighbouring states in terms of transport and logistics. In the second period, with infrastructure significantly enhanced, this aspect receded from the foreground of cooperation.

Municipal-level analysis indicates a connection between the proportion of the TTRR-building component in a municipality's projects and inclusion of this municipality in TTRR (table 4). Over half of tourism projects run by Karelian BMs and constituent municipalities of TTRRs concentrated on the two goals in question (51.4 and 54.5%, respectively). Absolute values of the proportions of TTRR-building components in border municipalities range between 42.8% (*Loukhi*) and 60% (*Kalevala*).

Table 4

Goals of tourism projects at a municipal level, 1990—2020

Municipalities	project area (main and/or complex), %, median values				
	transboundary tourist routes	common zones and tourism spaces	contact network development	common online space	other goals/ objectives of the project
BMs	21.4	30	18.2	18.2	12.0
inland municipalities	24	0	17.4	28	26.15
inland municipalities included in TTRRs**(11)	26.5	28	18.2	18.2	21.4
municipalities not included in TTRRs	18.5	0	22.5	41.4	20.8

Comment: * excluding Petrozavodsk city district.

High values of the TTRR-building component in the Pitkjaranta and Priäžä (45.4%) as well as the Olonets and Prionezhsky municipalities (32%) can be explained by the municipalities' proximity to the *Sortavala*, the history of the territory, and location on the Blue Highway international tourist route, which connects the Nordic countries through the Republic of Karelia to Russia's inland regions. At the same time, a considerable share of projects carried out in these municipalities had other goals (27—33%).

Still, in BMs, the average proportion of projects pursuing goals other than facilitating TTRR building is smaller than in the other municipalities. For instance, such projects comprise 7.1% of those carried out in the *Kostomuksha* district in 1990—2020; 9—10% of those run in *Suoyarvi* and *Kalevala*; 12.5%, in *Sortavala*; 15.4%, in *Loukhi*; and a record high of 22.2%, in the *Lahdenpohja* municipality.

The proportion of the TTRR-building component is the lowest in inland municipalities and those that lie farther away from the state border. The explanation here is purely geographical. The percentage of the TTRR-building component is the smallest in the Pudozh municipality (10%) where projects pursuing other goals account for the unprecedented 60%.

Remarkably, inland municipalities of the region and districts that are not included in any TTRRs, which have so far not had an opportunity to create a proper transboundary space, show strong interest in the development of shared online platforms (28 and 41.4% respectively).

As long as fully developed and emerging TTRRs in the Karelian borderlands are considered, most projects cover the South Karelian (mid-Russian-Finnish) mesoregion (43.6% of the total number of projects aimed at TTRR building and 32.7% of the number of projects with BM participation). The next large group comprises projects carried out with participation from municipalities from different TTRRs (35.9% and 26.9%). Projects carried out in the second-order Mid-Karelian microregion and the *Muyezersky* municipality account for comparable small proportions (7.7% and 5.8%). The third-order North Karelian microregion attracted only 5.1% and 3.8% of the projects.

Conclusion

The findings clearly indicate that international tourism projects carried out in the study's time frame (1990—2020) have played an important role in the development of TTRRs in the Karelian borderlands. Exploring the phenomenon at the municipal level made it possible to identify several common trends in the context of TTRR building, along with specific features of international tourism projects run in Karelia (the results are ranked by relevance to the aim of the study):

1) there is a connection between the proportion of the TTRR-building component in a municipality's projects and municipal engagement in a TTRR in 1990—2020;

2) there is a trend towards stronger cohesion between territories of the neighbouring states in the Karelian borderlands; it is clearly a product of tourism project activities;

3) five areas (main and/or complex goals of the projects) have been selected as criteria for identifying a project as facilitating TTRR building in the Karelian borderlands;

4) the Petrozavodsk city district and the Sortavala municipality outperformed other regional territories in the studied period;

5) border position has a major effect on the engagement of municipalities in project activities.

The findings provide a full picture of the contribution of international tourism projects to the emergence and development of transboundary tourism-and-recreation regions in the Karelian borderlands. The proposed approach has a practical application, since it can be used as a tool of regional economic policy on tourism, helping increase the scope of possible managerial decisions.

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The author

Dr Svetlana V. Kondrateva, Researcher, the Department of Regional Economic Policy, the Institute of Economics Karelian Research Centre of the Russian Academy of Sciences, Russia.

E-mail: svkorka@mail.ru

https://orcid.org/0000-0001-8832-9182

SOCIAL AND ECONOMIC PROCESSES IN THE EU MEMBER STATES

THE EUROPEAN UNION STRATEGY FOR THE BALTIC SEA REGION AND ACCOMPLISHMENTS

T. Palmowski

Gdańsk University
4 Bażyńskiego st., Gdańsk, 80—952, Poland

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The sea and inland hinterland of Baltic Europe form a unique macro-regional unit. Strong collaboration links, and competition in the Baltic Sea region, are an inherent feature of the region from the beginning of its civilization development. Since 2004, the Baltic Sea has become an internal sea of the European Union. This fact no doubt strengthened the cooperation of the countries in the region. In many spheres, these ties take the form of networking. The EU Strategy for the Baltic Sea Region is an important stimulus for further integrations. The objective of the article is to identify changing trends and the structural transformation in the Baltic integration process instigated by the implementation of this strategy. The document contains common goals, which strengthen cooperation and draw on the Baltic Sea potential. Three main pillars are outlined in the Strategy: marine protection, better interconnection of the region and growing prosperity. The essence of cooperation involves joint development plans on various levels: governmental, regional and local with the participation of research institutions, regional cooperation infrastructure, operational programmes, as well as the private sector. Political stabilisation and economic development may transform, in a longer time span, the emerging transnational Baltic Europe into a new economic and cultural European centre. The choice of research methodology applied in the study derives from the nature of collected data, i.e. literature regarding scientific accomplishments in the Baltic cooperation, analysis of working documents and reports drawn up by public institutions, the European Commission, and EU national and regional strategic documents.

Keywords:
European integrations, macro-region, European Union Strategy for the Baltic Sea Region (EUSBSR)

Introduction

Political, economic, social and territorial changes at the end of the 1980s and the beginning of the 1990s brought about the renaissance of regional thinking in Europe. Areas that had previously been remaining on the outskirts of European political and economic life now became animated European cooperation actors.

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This peripheral role had been characteristic of the Baltic Sea countries, which had been limited in their search for partners by their affiliation to conflicting groupings. Yet as soon as one such grouping disintegrated, a new order for international Baltic cooperation began to flourish in the last decade of the twentieth century. In the years that followed, the countries around the Baltic Sea developed a dense network of national, institutional and governmental programmes and created a number of nongovernmental organisations, whose activity contributes to closer ties of communities of the Baltic Europe [1].

The article analyses EUSBSR implementation mechanisms by studying the extent of its correspondence to the current phase of Baltic integration. The study is comprised of four parts. The first part summarises theoretical studies of the region, macro-region and macro-regional strategies. The second part illustrates the Baltic integration genesis, and the third analyses the aims and results of the *EU Strategy for the Baltic Sea Region* (EUSBSR). The final part discusses selected projects in the area of the southern Baltic and presents potential scenarios for the EUSBSR after 2020. Conclusions are drawn in the end of the article.

The choice of research methodology applied in the study is dictated by the nature of collected data, i.e., literature devoted to the presentation of scientific accomplishments in Baltic cooperation, analysis of working documents and reports drawn up by public institutions, particularly the European Commission, and the study of EU strategic documents at the national and regional levels.

The region, the macro-region and macro-regional strategies

As the Baltic region falls under major categories in geographic studies, the literature dedicated to it is abundant. Yet while many scientific disciplines describe various phenomena and processes in the region, they rarely attempt to explain the phenomenon of the region and the intensity of factors affecting its structure, development, and resultant functions [2]. Still, the region is studied within a number of fields, including geography, economy, sociology, political science, law, demography, biology and others. In geographical studies, the regional paradigm saw an especially dynamic development in the 1950s and 1960s. Then, geography gained new theoretical and methodological solutions. A new research trend, the so-called 'regional science', developed, represented by, for example, Isard [3]. At the same time, attempts to construe an overall paradigm were tainted with individualism, whereas field specialists in the same or related areas conducted team research about the region. This led to isolating particular issues in the regional framework, but the studies within the confines of particular disciplines explained only field-specific problems of the region.

Political, social, economic and cultural transformations of the late 1980s and the beginning of the 1990s in Central Europe stimulated the revival of studies on the region. Attempts to interpret the nature and the role of the region were reflected in such philosophical trends as structuralism and realism, which strongly affected the fundamentals of geography [4; 5]. Clear trends also appeared towards

studying regions within social science theories and their applications. Dziewoński [6] identified three concepts of a region: region as a research tool (analysis), as a subject of cognition and a vehicle for action.

In international relations, we often use the term region with reference to natural premises such as the catchment areas of big rivers, seas and locations facilitating transport. Such a geographical basis for identifying a region is used, among others, to define the Baltic Sea, the North Sea and the Mediterranean regions. The seas have always linked and unified countries along their coastlines. The functionality of marine regions results from common maritime laws setting standards to the entire region in question.

Contemporary coastal regions need not be national outskirts but can be locations of permanent and direct contacts of a state and local society with partners inhabiting regions located on the opposite coast of the sea. In the life of nations and countries, sea access has always played an important role. Coastal regions usually featured enhanced economic activity and faster civilisational development [7].

The development process of European regions is of twofold nature: a top-down initiative of central authorities aimed at establishing politically defined regions, and bottom-up initiatives resulting from regional actions where benefits from economic co-operation do not mean the loss of autonomy and cultural identity [8]. The unquestionable asset of regions at their various levels is their stabilising function. Regionalisation provides an opportunity to strengthen a common local, regional and national identity, and develop interaction between particular societies [9].

Though Baltic integration is part of regional research within the field of economic geography, its studies are also of interdisciplinary nature. The wide pool of knowledge about the region provides a source, which, if properly used, can optimise further regional development and functioning.

'The idea of a region (or macro-region) is both a conceptual understanding of what a region is and views on its collective role. The idea need not refer to the real components of the region but may also include an image of the character of the region and its history. It does not draw the full picture of the region, nor does it usually delimitate its territorial character.' [4].

'The significance of the Baltic Region as a European macro-region has been appreciated, as well as the opportunity for it to serve as a bridge linking the old West and East' [10].

The concept of macro-regional strategy is founded on a shared sense of regional identity, which affects social, economic and cultural development, and may serve as a vehicle for building action plans and strategies beyond the solutions of today, thus triggering the development of particular regions covered by these strategies. Nonetheless, this concept is also a part of the political plan to restructure European territory and strengthen transnational regional identity. It is also embedded in the concept of multilayer governance, where the European Commission is to act as a moderator and a driver for development [11].

The necessity to see EU development in terms of transnational regions opens the option of interpreting such terms as space, territory and governance anew. The regional approach is also an area in international relations that requires in-depth analytical reflection as the dynamics of regional collabourations go beyond the traditional views on international relations and the functioning of such players as the European Union.

Macro-regional strategies are one element of the vision for long-term development of the European Union published in 2010 in the new EU development strategy, *Europe 2020: A strategy for smart, sustainable and inclusive growth*. The document refers to the role of European regions as full-fledged participants of political processes, equal to EU Member States and institutions.

The funds for implementing macro-regional strategies[1] are part of strategic planning under cohesion policy programmes in EU regions and Member States. The States also guarantee that in locations where macro-regional strategies and strategies for marine basins are introduced, all funds under the common strategic framework, in relevant cases, can support their implementation.

Macro-regional strategies are EU-adopted integrated programmes for a specified geographical region. Measures undertaken and implemented under these strategies may draw on European Structural and Investment Funds. Macro-regional strategies aim to jointly tackle challenges of a given geographical area embracing Member States and third countries in the area, which can benefit from sound social and economic cooperation, as well as from territorial cohesion.

Up to date, the European Union has introduced four macro-regional strategies covering several areas spanning 19 EU Member States and 8 non-member countries. The first document of this nature, the *EU Strategy for the Baltic Sea Region*, was adopted in 2009. Later initiatives of this nature included the *EU Strategy for the Danube Region* (*EUSDR*) in 2010, the *EU Strategy for the Adriatic-Ionian Region* (EUSDR) in 2014, and the *EU-Strategy for the Alpine Region* (*EUSALP*) in 2015.

Baltic integration genesis

In the post-war history, integration of the Baltic Region first concerned the marine environment, an area relatively untouched by political rift that inhibited the development of multilateral relations.

Joint work towards the protection of waters and Baltic Sea bioresources of all countries in the region (Denmark, Finland, Sweden, GFR, GDR, Poland and the USSR) started in 1973 with the signing of *The Gdańsk Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts* (the Gdańsk Convention), followed by the Helsinki conventions on the protection of the natural marine environment of the Baltic Sea in 1974 and 1992 (Two Helsin-

[1] Regulation EU of 22.04.2013.

ki Conventions).[2] These were pioneer actions, now seen as model solutions for other European regions. In 1991, the existing geopolitical system disintegrated bringing forth major changes, and new conditions appeared to finally bridge the artificial isolation of Baltic neighbours. The transformed geopolitical situation generated new opportunities and options for dynamic economic and cultural co-operation in this part of Europe. The need to stimulate the development of existing relations was noted, picked up and revived in various forms. Fresh ideas sprang up in the multinational territories around the Baltic Sea, and there was a surge to seek original solutions, deferring from measures developed earlier, that were to define the future of the region [12]. The process of developing the Baltic region started, providing grounds for the emergence of a regional network of economic and social relations.

The 1990s experienced an 'explosion' of various initiatives and forms of co-operation. Their precise number is not known. Because of their multiplicity and number of links, they are collectively described as the 'Baltic co-operation phenomenon' [7]. For that period, we can identify four key areas and forms of co-operation: political, economic, environmental and cultural.

Political collabouration of Baltic countries included the creation of such fundamental institutional structures as: the Baltic Sea Parliamentary Conference, the Council of the Baltic Sea States, Conference of Prime Ministers, Baltic Sea States Subregional Cooperation (BSSSC), Nordic Council.

Cooperation in protecting the natural environment resulted in the emergence of legal provisions and resultant executive structures as well as organisations, including non-governmental organisations, with the Helsinki Commission (HELCOM) as a flagship measure. The following years showed the growing activity of societies in all Baltic countries, and many joint integrating projects launched as a result of this activity.

The European Union plays an important role in initiating such endeavours. Following the accession of Sweden and Finland to the European Union in 1995, the expansion of EU to cover Poland, Estonia, Latvia and Lithuania in 2004, as well as the conclusion of agreements with Russia on partnership and co-operation, the Baltic Sea became almost an internal sea of the European Union.

The importance of relations between the Baltic Europe and the European Union grew after the accession of Sweden and Finland in 1995. The Northern Dimension initiative of the European Union, suggested in 1997 by Finland, was to improve political coordination of the European Union in northern Europe, to mitigate economic development gaps, particularly between EU countries and Russia and the Eastern bloc countries. After the accession of Poland, Latvia, Lithuania and Estonia to the European Union, the Northern Dimension has served as a co-operation platform for the EU and the Russian Federation.

[2] The Conventions provided a cooperation plane for protection of the marine environment of countries of two contrary ideological, political, and economic orientations, which was a unique solution worldwide.

The adoption of the *EU Strategy for the Baltic Sea Region* (EUSBSR) in 2009 marked the beginning of a new EU approach to regionalisation and governance. This was not only an analytical tool and normative postulate but a practical application of multi-tier governance[3].

EUSBSR objectives and implementation

The main goal of the *EU Strategy for the Baltic Sea Region* (EUSBSR) is to strengthen cooperation in the region and have the region benefit from the potential generated by EU expansion. The European Parliament initiated the Strategy and in 2006 adopted a resolution postulating the development of EUSBSR. In December 2007, the European Council in line with the proposal of states in the region, and in particular Sweden, postulated to the European Commission (EC) the development of EUSBSR. In June 2009, the EC accepted the Communication about the Strategy, and in October 2009 the European Council approved it.

The document rests on four pillars of regional vision: environmentally sustainable region, a region of prosperity, an accessible, attractive and safe region. The core of the Strategy lies in multilevel cooperation: on the national, regional and local level with the participation research centres, academics, regional structures, institutions managing operational programmes, as well as the private sector. The Strategy facilitates wide-ranging contacts with macro-region partners, initiates new projects and promotes projects in progress on the international forum. EUSBSR has been named the first macro-regional internal EU strategy. It is a model solution providing the basis for three consecutive macro-regional EU strategies developed up to 2016, including one for a marine macro-region.

EUSBSR gave a new dimension to the development concept of the region and induced political stakeholders to adapt their actions to successive spatial, institutional and normative frameworks [11]. The Strategy is an example of enhancing cooperation in the Baltic Europe and in European politics. It is a successful attempt to stabilise the geopolitical situation in the region in terms of security of the area closest to Scandinavian countries. Regional cooperation is both an example of partnership and interdependence, and the development of influence zones. It also binds superpowers in regional cooperation [13].

Up until the end of 2016, the strategy stimulated the development of new networks and contributed to better efficiency of the existing networks (e.g. BALTFISH, SUBMARINER forums). The consolidation of multilevel governance in the region created a common framework for dialogue of entities operating in the Baltic Sea Region (BSR). Closer cooperation and better coordination on all levels, nationally and between EU States and non EU countries, as well as between regional organisations, produced a synergy effect.

[3] Communication from The Commission to the European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions concerning the European Union Strategy for the Baltic Sea Region, 2009, *COM*, 248 final, Brussels.

EUSBSR demonstrates a level of understanding among EU Member States and the EC. It provides a cooperation platform for the Commission and EU BSR Member States, where the latter play a key role in substantiating and implementing the Strategy. EUSBSR is the first macro-regional internal EU strategy. Its implementation draws on funds of existing EU financial instruments, national funds and those of international financial institutions. The implementation of the Strategy relied on the Action Plan including Project Areas and Horizontal Actions. The Action Plan sets 3 main objectives: Save the Sea, Connect the Region and Increase Prosperity.

Starting June 2015, the Strategy covers 13 Policy Areas (PA) and 4 Horizontal Actions (HA) realising 170 Flagship Projects. The key objectives of the EU strategy for BSR are:

1. Save the Sea

1.1. Clear water in the sea

1.2. Rich and healthy wildlife

1.3. Clean and safe shipping

1.4. Better cooperation

2. Connect the Region

2.1. Good transport conditions

2.2. Reliable energy markets

2.3. Connecting people in the region

2.4. Better cooperation in fighting cross-border crime

3. Increase Prosperity

3.1 The Baltic Sea Region as a frontrunner for deepening and fulfilling the single market

3.2. EUSBSR contributing to the implementation of EU 2020 strategy

3.3. Improved global competitiveness of Baltic Sea Region

3.4. Climate change adaptation, risk prevention and management

The Strategy is supplemented by an Action Plan presenting a reference to priority areas under every pillar. The Plan is an evolving document, amended more than a dozen times, most recently in 2017[4]. The Action Plan refers to 13 Policy Areas (PA) and 4 Horizontal Actions (HA). Policy Areas (PA) comprise:

1. Bioeconomy — agriculture, forestry and fishery

2. Culture — culture and creative sectors

3. Education — education, research and employment capacity

4. Energy — action plan to synchronise the Baltic States' electricity grid (BEMIP Action Plan) for competitive, secure and sustainable energy

5. Hazards — restrictions in use and impact of hazardous substances

6. Health — improvement and promotion of human health taking into account social issues

[4] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions concerning the European Union Strategy for the Baltic Sea Region, 2009, *COM,* 248 Final, Brussels.

7. Innovation — use of the full potential in studies and research and SMEs, exploitation of the uniform digital market as a source of talents and investments

8. Nutri — reduction to an acceptable level of biomass waste disposal to the sea

9. Safety –leadership of the region in safety and security issues and marine protection

10. Secure — resilience against crisis and casualties on land and cross-border crime

11. Ship — developing model conditions for environmentally friendly shipping in the region

12. Tourism — enhancing cohesiveness in macro-regions through tourism

13. Transport — Improving internal and external transport connections

Horizontal Actions cover:

1. Spatial planning — encouraging spatial planning of coastal areas in all member States of the Baltic Sea and developing a common approach to cross-border cooperation

2. Neighbours — generating added value in the Baltic Sea Region by enhancing cooperation of regions and neighbouring countries

3. Capacity — building capacity and involvement

4. Climate[5]

PAs and HAs are run and coordinated by one or two Member States or non-governmental organisations. At the national level, there are contact points encouraging national organisations to actively participate in EUSBSR. Key implementations involve Flagship projects under PA and HA. These projects are usually bottom-up projects though some are initiated by PA or HA coordinators. In many cases they are initiated by stakeholders interested in their implementation, are agreed with the relevant PA or HA coordinators and presented to international or national financial institutions to ensure resources for their implementation [14].

Poland is the coordinator of three EUSBSR Policy Areas:

1. PA Nutri — abatement measures for an acceptable level of nutrient inputs to the sea

2. PA Innovation –tapping the region's scientific, innovative, and SMEs business potential

3. PA Culture — culture and creative sectors.

The EUSBSR is based on 'the three No's' principle meaning no new EU budget, no new EU institutions and no new EU regulations. Instead of creating new budgetary lines, the EUSBSR and all macro-regional strategies rely on the alignment of funding sources already in place in the macro-region.

Three major INTERREG territorial cooperation programmes support EUSBSR projects. By 1990, the European Commission had instigated the first INTERREG programme, which at the time focused solely on cross-border cooperation. With time, it evolved in terms of scope, priorities and funding resources.

[5] Commission Staff Working Document European Union Strategy for the Baltic Sea Ree gion, 2017, *SWD*, 118 final.

The fifth edition INTERREG (2014—2020) budget was 10 times bigger than the 1990 budget. The development of INTERREG is viewed as an evolutionary preparation of border regions to open particular markets to accelerate growth and development of various geographical areas and to drive towards cooperation beyond country borders [15].

In 1994, INTERREG was extended and divided into three components covering cross-border cooperation, international cooperation and transnational power grids. INTERREG III comprises three strands embracing: cross-border cooperation (Strand A), transnational cooperation (Strand B) and interregional cooperation (Strand C). In 2007, INTERREG became part of the mainstream EU cohesion policy and the three strands were united under the European territorial cooperation goal.

Strand B involves several countries in 15 transnational cooperation programmes. It stretches over macro-regions defined as neighbouring areas on the territory of several countries or regions facing common goals and challenges. [16]. The BSR macro-region is referred to as 'an area covering a number of administrative regions but with sufficient issues in common to justify a single strategic approach'[6].

INTERREG B is best suited to foster macro-regional actions. In terms of funding sources, Baltic INTERREG holds a crucial position among Strand B programmes. The programme involves Denmark, Estonia, Finland, Latvia, Poland Sweden and the northern part of Germany as well as partner countries: Norway, Belarus and north west regions of Russia. The programme has been operating under different titles since 1997.

The Baltic INTERREG programme fosters institutional efforts of EUSBSR. The transnational cooperation INTERREG Baltic Sea Region Programme 2014—2020 explicitly supports the implementation of the Strategy. Priority 4 is devoted to 'institutional capacity for macro-regional cooperation', to upholding EUSBSR implementation and priorities common for EUSBSR and regional strategies of partner countries. Two specific objectives deserve emphasising:

Specific Objective 4.1. 'Seed Money' — aimed at increasing capacity for transnational cooperation in implementing EUSBSR and working on common priorities with the partner countries. The Programme provides co-financing in developing Project strategic for one of EUSBSR PA or HA actions. Projects prepared under the Seed Money objective may be later implemented and funded by any funding available in the region. Funding eligibility requires written support of the relevant PA or HA coordinator who validates the project's input to objectives of the particular EUSBSR PA or HA.

Specific Objective 4.2. 'Coordination of macro-regional cooperation' — aimed at increasing capacity of public institutions and pan-Baltic organisations for transnational coordination in implementing EUSBSR and at facilitating the

[6] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions concerning the European Union Strategy for the Baltic Sea Region, 2009, *COM,* 248 Final, Brussels.

implementation of common priorities of the Baltic countries. It supports PA and HA coordinators as well as national coordinators in transnational activities and foster EUSBSR objectives. Additionally, this objective offers funds for general support and communication related to implementing the Strategy.

The European Commission (EC) regularly publishes EUSBSR implementation reports. Strategic guidelines for EUSBSR are secured by the High Level Group (HLG), a consulting body for the European Commission on EUSBSR and its implementation, which reviews updates and changes in EUSBSR and operational plans. Annual forums gather all stakeholders to review achievements and EUSBSR future plans as well as to appraise implementation progress and present recommendations if needed [17]. The first annual EUSBSR forum took place in Tallinn in October 2010, followed by forums in Gdańsk (2011), Copenhagen (2012), Vilnius (2013), Turku (2014), Jurmala (2015), Stockholm (2016), Berlin (2017), Tallinn (2018). The tenth event was held in Gdańsk in June 2019. At the time of writing, the next one is planned for October 2020 in Turku.[7]

The first BSR programme 1997—1999, initiated by Visions and Strategies around the Baltic Sea (VASAB), focused on spatial planning. In the following programme period of 2000—2006, the extended scope of priorities covered economic and environmental development. The current programme focuses on innovation, natural resources, sustainable transport and on fostering EUSBSR. The 2014—2020 programme refers to transnational projects realised jointly by at least 3 partners from different countries.

Macro-regional cooperation is not limited to INTERREG B projects. As Zaucha points out [18], BSR emerges from a dense formal and informal network of varied transnational cooperation initiatives. According to Gänzle [19], there are at least 40 pan-Baltic organisations such as VASAB, Union of Baltic Cities (UBC); Council of the Baltic Sea States (CBSS), Helsinki Commission (HELCOM) and many others. Moreover, yet another 600 organisations remain involved in BSR issues [20].

Translation of the BSR concept into reality found political support in the 1990s. The specific nature of the new Baltic regionalism involves the development of independent sets of objectives and aspirations accompanied by a public discussion on how to achieve them. This bottom-up movement engaged national and local authorities as well as non-governmental organisations. Such integration required primarily networking, as the formal agreements played a secondary role. By the end of the first decade of the 21st century, various independent networks shaped BSR cooperation, financed primarily by national and EU funds, and in part by INTERREG B and other programmes like TACIS or PHARE CBC [21].

EUSBSR Flagships of the South Baltic Programme

The South Baltic Programme is a driver for EUSBSR objectives. The Programme objective is to stimulate blue and green potential of the area in cross-bor-

[7] The 2020 EUSBSR forum in Turku is to be held online due to the pandemic.

der cooperation. The concept projects support of the marine sector (blue sector) and ideas augmenting the sustainable use of natural resources (green sector). The programme embraces regions demonstrating significant disproportions in social and economic development; thus, the aid focuses on closing the gap.

The key Flagships of the South Baltic Programme comprise seven endeavours. The InnoAquaTech project is among these Flagships. Partners from Poland, Denmark, Germany and Lithuania develop technologies increasing protein production from aquatic life. Innovative methods are tested in four pilot farming sites. Investors interested in implementing the technology may benefit from support and tools for the development of production.

Two other investments contribute to balancing tourist traffic in the area covered by the programme. The Baltic Sea Tourism Centre project associates key tourist business partners and promotes sustainable and international tourism in the region. The project website is a helpful guide to the region's attractions. The aim of the Attractive Hardwoods project is to increase the popularity of visiting the forests in-the coastal area of the Southern Baltic and to develop existing tourism products by the Swedish, Polish and Lithuanian partners sharing experience.

Flagships also feature investments fostering green technologies. The Morpheus project developed a technology for eliminating the inflow of pharmaceutical and micro pollutants to the Baltic Sea with discharge of sewage treatment plants. In the case of BioBIGG, partners of the project are seeking to optimise the use of unutilised biomass of the agricultural and industrial sectors

Improvement of transport is one of the key EUSBSR objectives in the Baltic Sea Region. The Interconnect project will implement a common system for collecting payment for public transport and uniform information for passengers covering all carriers and transport organisers. The project is to provide integrated ticketing for various transport means.

The BBVET project is co-financed from labour market aid funds. International vocational training sessions have been developed for students in Edtech and Mechatronics and modern technologies. The educational programme is adjusted to the specific needs of businesses in the Southern Baltic area seeking new employees.

Scenarios of the future role of EUSBSR

Eleven years the Strategy implementation clearly show that it remains dynamic and evolves with time. In June 2020, a decision was passed for the Action Plan to embrace solely PAs. HA Spatial Planning will be transformed into a PA, other PAs will account for the objectives of HA Climate and Neighbours (the newly established Baltic Sea Strategy Point will coordinate the process). HA Capacity and the Let's Communicate project will in future be merged under Baltic Sea Strategy Point (BSP), which is to take on the role of the Strategy's quasi secretariat.

The new concept of multi-level governance in EU is an ambitious reaction to the needs of BSR. In line with EU regional policy the Strategy engages institutional and non-institutional entities. In the future, EUSBSR may accomplish the role of a platform bringing together various entities interested in cooperation.

The future role of the Strategy and its effectiveness rely on the political readiness of Member States to become involved in transnational collabouration, on the one hand, and actions undertaken by EU institutions, on the other. The discourse about this macro-regional initiative encompasses a wide range of issues, from potentially redefining of objectives and ways of implementing to governance and funding sources. Minor alterations in strategy governance point to a steady evolution towards centralisation of the process. The debates of BSR stakeholders and experts confirm the growing readiness to strengthen key entities implementing the Strategy in order to enhance its cohesiveness and streamline governance.

The experience of over eleven years of collabouration indicates two possible Strategy scenarios. The first scenario assumes maintenance, even the strengthening of the existing practice, and consistent adherence to the 'three No's' principle. This scenario also projects keeping the umbrella role for EU policies in the region and the wide scope of actions. Various policies would be subject to merely minimal alterations. In practice, this may mean consolidation of present actions. Possible effectiveness progression may result from the experience of entities engaged in implementing the Strategy. This refers not only to EU institutions but also to regional organisations, local governments and research centres [22].

The second scenario may bring about a radical change to the Strategy, which may mean specifying new objectives and limiting PAs. This in turn may revert the focus back to the main priorities of the region and to restoring the initial themes of the Strategy (environment, marine issues). It may strengthen EUSBSR as a tool in EU regional and cohesion policies and allow it to become a more engaged instrument of European Territorial Cooperation (ETC), and thus underlie an EU cohesion policy adapted to the budget and financial framework for the years 2021—2027. More emphasis on regional development may provide a favourable perspective for macro-regions covering big geographical regions and several cohesion policy programmes.

The Baltic Sea, a pivot point of the area covered by the Strategy, is a unifying factor for the entire region, which provides a common environmental and economic resource. At the same time, the Baltic Sea poses transnational challenges in environmental protection, marine transport and sustainable development, among other fields.

The developed *European Strategy for the Baltic Sea Region* opens the option for robust integration of this valuable region and joint tackling of challenges around the Baltic Sea. It streamlines collabouration among Member States along the Baltic coastline and partner countries [23].

Conclusions

The sea and inland hinterland of Baltic Europe form a unique macro-regional unit. The fate of the common water basin leaves a stronger footprint than elsewhere on interrelations of its coastal countries and their development. The concept of Baltic integration, preceded by agreements on protection of the sea and the Baltic Sea bioresources, showed accelerated development as late as the 1990s. The dynamic development of networks today encompasses politics, economy, culture and environmental protection. Integration processes continue to spread and cover more areas of life. After the enlargement of EU in 2004, the Baltic Europe stepped into a new development phase. The Baltic became an almost internal EU sea. The next stage of the EU strategy for the Baltic Sea Region contributing to closer co-operation of countries lying around the Baltic Sea is the EUSBSR.

EUSBSR establishes an integrated framework, which facilitates coordination of relevant political actions by the European Union and Member States and offers the Baltic Sea Region the use of a sustainable environment and optimal social and economic development.

EUSBSR is the first macro-regional EU strategy representing a population of 80 million (16% of the entire EU population). In cooperation with eight Member States (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden), the EC launched the Strategy in 2009 with the initial goal of strengthening regional collabouration and integration with third neighbouring countries (Belarus, Iceland, Norway and Russia).

Over 170 flagship projects in 13 PAs and four HAs were completed focusing on the following objectives: Save the Sea, Connect the Region and Increase Prosperity. The Strategy modelled a new form of regional cooperation; it showed how we can understand and implement in practice transnational cooperation in EU and neighbouring countries.

Assessments made 11 years after instigating EUSBSR indicate that the Strategy is the most advanced macro-regional project in EU. This situation is related to the fact that prior to implementing EUSBSR, BSR enjoyed a long tradition of effective sub-regional cooperation on several platforms joining primarily wealthier states, which featured advanced governing structures[8].

EUSBSR harmonises transnational and international regional cooperation and is an example of a new, innovative EU governance mechanism. Furthermore, BSR collabouration is generally of an intergovernmental nature as national governments remain responsible for realisation of EUSBSR objectives. The general success of the Strategy depends, to a large extent, on Member States. The actions up to date and joint Baltic initiatives in the European Union in the second decade of the 21st century have helped to mitigate existing disproportions [21].

[8] EUSBSR Flagship what does mean for the project? 2019, *EUSBSR*, available at: https://www.balticsea-region-strategy.eu/news-room/highlights-blog/item/73-eusbsr-flagship-status-what-does-it-mean-for-a-project (accessed 15.05.2020).

The emerging macro-region called the Baltic Europe is no longer just an idea. Regional awareness is clearly developing, regional institutions grow in number and in activity, and the drive for regional stability is progressing. Cooperation in protecting the natural marine Baltic environment, the cornerstone of the agreement, quickly became one of many crucial areas of co-actions additional to national and local initiatives. The natural environment and cultural heritage shall remain important collabouration premises, developing environmental and civilisation awareness of the region.

The Baltic Europe contributed to the strategic thinking in EU, to social, economic and territorial cohesion of the Union. Integrated planning for land and sea areas can be a model for transforming spatial planning in face of climate change and other challenges. The European Union, on the other hand, stimulated further integration of the Baltic Europe.

So long as stable conditions for political and economic development in Europe prevail with Russia-related political events and EU internal problems ending up to be only temporary disruptions, the Baltic Europe evolution shall progress towards becoming a functional complex, which in the long-term perspective will help the integrating Baltic Europe evolve into a new transnational economic and cultural centre of Europe.

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The author

Prof Tadeusz Palmowski, Gdansk University, Poland.

E-mail: tadeusz.palmowski@ug.edu.pl

https://orcid.org/0000-0002-1644-7945

THE TRANSITION PROCESS AND INSTITUTIONS: ON THE ISSUE OF THE STANDARD OF LIVING IN THE COUNTRIES OF CENTRAL AND EASTERN EUROPE — MEMBERS OF THE EUROPEAN UNION

I. V. Pilipenko

Institute for Competitiveness and Integration
PO Box 25, Moscow, 115035, Russia

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The aim of this article is to adjust the technique of comparing the standard of living in 11 countries of Central and Eastern Europe that became members of the European Union (EU) during 2004-2013 (EU-11) and 15 countries of Western, Northern and Southern Europe – member states of the EU by 1995 (EU-15). We reveal that outright home ownership in the EU-11 countries exceeds on average 75%, while almost two-thirds of households in the EU-15 countries have a mortgage or pay rent spending on housing on average up to one quarter of their income. Despite 30 years of transition to a market economy, the EU-11 countries largely inherited such home ownership structure from the centrally planned economy institutions, i.e. individually-owned and cooperative housing, as well as subsidized state-owned housing stock that became the private property of tenants at the start of market reforms. We propose a technique of taking into account households' income and housing costs (mortgage and rent) in one indicator given the current home ownership structure in an economy. After the purchasing power parity (PPP) adjustment, our calculations reveal that the standard of living disparities between the EU-11 and EU-15 states are less significant than when compared at nominal prices or PPP alone. Moreover, the disparity in average living standards between these two groups of countries turns out to be narrower than cross-regional differences within seven EU member states at the Eurostat's NUTS 2 level.

Keywords:
Central and Eastern Europe, European Union, transition process, institutions, standard of living, housing, tenancy, mortgage

Introduction

Three decades have passed since the change of the political system in the countries of Central and Eastern Europe (CEE) and the beginning of their transition to a market economy in 1989—1991. While most of the Western scholars [1; 2] believe that the transition to the democratic form of government through the adaptation of institutions of the European Union (the EU)

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member states was successful, opinions about the results of social and economic development of the CEE countries during the transition process were not so unambiguous[1] [3—5].

Specialists focusing on the EU studies are particularly concerned with the fact that the CEE countries have been consistently lagging behind the Western and Northern European nations in terms of the standard of living, whereas closing this gap was precisely the primary goal of the reforms launched three decades ago [6; 7]. However, the main priority during the CEE countries' transition process was *de facto* to sustain macroeconomic stability.

Nevertheless, most studies on living standards usually do not pay enough attention to such a factor as outright home ownership in the CEE countries. This state of affairs was largely inherited from the planned economy institutions when providing people with housing or enabling them to obtain dwellings was an obligation of the state. At the start of the market reforms, state housing residents were allowed to privatize their dwellings in addition to a significant share of individually-owned and cooperative housing that had already existed before the transition[2] [8; 9]. Unlike the CEE countries, most of the population in the countries of Western and Northern Europe have a mortgage or pay rent up to now.

We proceed with a brief literature review and then propose how to adjust net disposable income (net earnings) of households to take into account mortgage and rent costs employing the author's technique. This approach allows us to compare more precisely the standard of living in the CEE countries — member states of the EU (EU-11 as of the end of 2013[3]) with 15 countries of Western, Northern

[1] Stuck in Transition. Transition Report 2013. London: European Bank for Reconstruction and Development, available at: https://www.ebrd.com/publications/transition-report-2013-english.pdf (accessed: 23.07.2020).

[2] According to the planned economy principles, three forms of housing property existed in the socialist countries of Central and Eastern Europe, namely state, cooperative (kolkhoz-cooperative property in the USSR) and individually-owned property. In 1975—1985, 88% of new housing construction (by living space) was financed by the state in Romania. In the USSR, the state funding reached 66%, in Bulgaria — 45%, whereas in Czechoslovakia the state financed 30% of new housing construction, in Hungary — 22%, and in Poland — 16%. In the latter four countries, cooperative construction and individually-owned house-building prevailed [the author's calculations according to: Statistical Yearbook of Member States of the Council for Mutual Economic Assistance. Moscow: Finance and Statistics, 1987]. During the 1980s, the population of the USSR used their savings or state loans to finance the construction of 16% of new housing stock, 71% of housing was built by state plants/organisations, while housing construction cooperatives and kolkhozes each put into operation 6% of new buildings. By the year 1990, the USSR citizens owned individually 38% of the total housing stock (21% in urban areas and 70% in rural communities). In the Latvian SSR (the Republic of Latvia) individually-owned housing accounted for 15% of the total urban housing stock, in the Estonian SSR (the Republic of Estonia) — 17.5%, in the Lithuanian SSR in the year 1989—21% [the author's calculations according to: National Economy of the USSR in 1990. State Statistics Committee of the USSR. Moscow: Finance and Statistics, 1991].

[3] In this article, we analyse 11 states of Central and Eastern Europe that joined the European Union during 2004—2013: Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

and Southern Europe (EU-15[4]). Furthermore, we use our calculations to adjust the indicator of net disposable income (net earnings) of households per capita across regions in accordance with the EU's Nomenclature of Territorial Units for Statistics (NUTS) at the NUTS-2 level[5].

A brief literature review

In the Russian academic literature, scholars considered the social and economic development of the CEE countries from the view of their integration model employed in the 1990—2010s [10] and lessons learnt during the transition process [11]. Several publications focused on the political and historical analysis of the CEE countries' transformation [12; 13], the cooperation of the CEE nations and Western European states in the historical perspective [14] and their interactions in trade [15]. Various studies assessed the debt challenges of the CEE states in the aftermath of the 2008 global financial crisis [16], the development of the states after joining the Eurozone [17] and the impact of the Eurozone debt crisis on the social and economic situation in the EU-11 countries [18].

On the country level, the economic growth rates of the Visegrád Group countries (Czechia, Hungary, Poland and Slovakia — V4) were compared with those of the European Union as a whole [19]. Other studies considered investment relations between the V4 states and Russia [20], social and structural shifts, economic assessment problems of the results of the transformation, as well as the formation of a particular social and economic model in the V4 countries [21—23]. Some scholars also analysed the efficiency of the development of the Baltic region states [24], the results of their Euro-Atlantic integration, peculiarities of the economic model and the coalition of the Baltic States (Estonia, Latvia and Lithuania) in the European Union [25—27] along with the middle-income trap challenges in these three countries [28]. Besides this, comparing the results of the CEE countries' transition and that of the Russian Federation attracted the attention of the academic community [29], as well as the cooperation potential between the Russian Federation and the Baltic states in the innovation sphere [30]. The primary indicator to compare the standard of living between the CEE countries and the EU-15 states in the Russian scholarly literature was such a metric as gross domestic product (GDP) per capita at nominal values and at purchasing power parity (PPP) [10; 15; 18; 19; 22; 23; 25; 27—30].

In the English-language literature, detailed studies were published on the characteristics of the transition period in the CEE countries [1; 2; 4; 5; 31] and

[4] We compare the EU-11 figures with those of 15 countries of Western, Northern and Southern Europe — member states of the EU as of the end of 1995: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

[5] By the NUTS-2 subdivision, there are 17 regions in Poland; Czechia, Hungary and Romania are subdivided into eight regions each; Bulgaria — into six regions; Slovakia — into four regions; Croatia, Lithuania and Slovenia — into two regions each. The NUTS-2 subdivisions in Estonia and Latvia correspond to the entire country themselves.

the impact of the 2008 crisis on the EU-11 economies [32] and their population/households[6] [33]. Other works considered the peculiarities of the catch-up development of the CEE states within the EU [6] and social and economic challenges in these countries from the point of view of the middle-income trap approach[7].

Annual publications of the Transition Report of the European Bank for Reconstruction and Development (EBRD) contain cross-country comparisons and reviews of economic development tendencies in the CEE region. With regard to our topic, we should refer to the 2000 Transition Report that focused on employment and labour force skills[8] and the 2007 Transition Report devoted to the people in transition[9]. The interrelation between market reforms, income convergence, inequality and well-being was in the focus of the 2013 and 2016—2017 Transition Reports of the EBRD[10]. The issue we are considering in this article was regularly reviewed in the European Union reports "Living Conditions in Europe"[11]. However, this analysis was carried out without paying particular attention to housing expenditures in the EU-11 and EU-15 states. In 2017 and 2019, the Organisation for Economic Co-operation and Development (OECD) released the Affordable Housing Database (AHD), which we use for our calculations together with the relevant data on households published by the Eurostat. Some other publications were devoted to the inequality in living standards in the region [34], the formation of the middle class in several CEE countries[12] [35] and people's happiness during the transition period [36; 37].

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[6] The Crisis Hits Homes: Stress-Testing Households in Europe and Central Asia. Washington, DC, 2009, *World Bank*, available at: http://documents1.worldbank.org/curated/en/347521468038144075/pdf/522770PUB0REPL101Official0Use0Only1.pdf (accessed 15.05.2020).

[7] Eight Things You Should Know about Middle-Income Transitions. London, 2019, *European Bank for Reconstruction and Development*, available at: https://www.ebrd.com/publications/ebrd-middle-income-transitions.pdf (accessed 30.07.2020).

[8] Employment, Skills and Transition. Transition Report 2000. London, 2020*, European Bank for Reconstruction and Development,* available at: https://www.ebrd.com/publications/transition-report-2000-english.pdf (accessed 20.07.2020).

[9] People in Transition. Transition Report 2007. London,2007, *European Bank for Reconstruction and Development*, available at: https://www.ebrd.com/publications/transition-report-2007-english.pdf (accessed 20.07.2020).

[10] Stuck in Transition. Transition Report 2013. London, 2013*, European Bank for Reconstruction and Development*. available at: https://www.ebrd.com/publications/transition-report-2013-english.pdf (accessed 23.07.2020); Transition for all: Equal opportunities in an unequal world. Transition Report 2016—17, 2017, *European Bank for Reconstruction and Development (EBRD),* available at: https://www.ebrd.com/publications/transition-report-2016—17.pdf (accessed 23.07.2020).

[11] See, for instance: *Living Conditions in Europe*, 2014, Luxembourg, Eurostat, available at: https://ec.europa.eu/eurostat/documents/3217494/6303711/KS-DZ-14-001-EN-N.pdf/d867b24b-da98—427d-bca2-d8bc212ff7a8 (accessed 25.07.2020).

[12] Russia Economic Report No. 31. Washington, DC, 2014, *World Bank*, available at: http://documents1.worldbank.org/curated/en/517491468092081878/pdf/866400WP0P14660RER0No-310FINAL07414.pdf (accessed 29.05.2014).

Besides the standard indicator of GDP per capita at nominal prices and PPP[13], which reflects the level of economic development and determine, *ceteris paribus*, the standard of living [1; 2; 4—6; 33; 38—41], scholars abroad employed several other metrics. Primarily, they understood the standard of living as material well-being measured by the level of income[14] [2; 5; 7; 33; 42] and population and households consumption[15] [2; 7; 38; 42]. Several publications examined the issue of living standards by comparing the dynamics of wage level [3; 7; 33; 43; 44], poverty rates[16] [7; 33; 45; 46] or by calculating synthetic indicators (composed of several parameters) [34].

Quite rarely, scholars pay their attention to high outright home ownership rates in the EU-11 countries in comparison to the EU-15 group [3; 47; 48]. Notably, the OECD experts identified a distinct type of housing market (*housing system* according to their terminology) with less favourable housing conditions and high outright home ownership, which most of the CEE countries belonged to [48]. Nevertheless, there have been no attempts so far to adjust estimations of the standard of living in the CEE region based on this kind of information, and most of the indicators discussed above were presented "as is" for both the EU-11 states and the EU-15 countries.

Another approach provided estimations of the impact of property ownership on the overall population well-being that were needed to undertake cross-country comparisons globally. The works employing such a method are estimations of the real value of assets owned by the population and entrepreneurs in the informal sector of some developing economies made by the Institute for Liberty and Democracy under the leadership of the Peruvian economist H. de Soto [49] and calculations of the national wealth and income inequality (*inter alia* in Russia) using the technique of the French economist T. Piketty [see, for instance: 50; 51]. In

[13] *Employment, Skills and Transition. Transition Report 2000*, 2000, London, European Bank for Reconstruction and Development, available at: https://www.ebrd.com/publications/transition-report-2000-english.pdf (accessed 20.07.2020).

[14] Stuck in Transition. Transition Report 2013, London, *European Bank for Reconstruction and Development*, available at: https://www.ebrd.com/publications/transition-report-2013-english.pdf (accessed 23.07.2020); *Living Conditions in Europe*, 2014, Luxembourg, Eurostat, available at: https://ec.europa.eu/eurostat/documents/3217494/6303711/KS-DZ-14-001-EN-N.pdf/d867b24b-da98-427d-bca2-d8bc212ff7a8 (accessed 25.07.2020); Transition for all: Equal opportunities in an unequal world. Transition Report 2016—17, 2017, *European Bank for Reconstruction and Development (EBRD),* available at: https://www.ebrd.com/publications/transition-report-2016—17.pdf (accessed: 23.07.2020); Eight Things You Should Know about Middle-Income Transitions, London, 2019, *European Bank for Reconstruction and Development*, available at: https://www.ebrd.com/publications/ebrd-middle-income-transitions.pdf (accessed 30.07.2020).

[15] Making Transition Work for Everyone: Poverty and Inequality in Europe and Central Asia, 2000, Washington, DC, the World Bank; The Crisis Hits Homes: Stress-Testing Households in Europe and Central Asia, 2009, Washington, DC, *World Bank*, available at: http://documents1.worldbank.org/curated/en/347521468038144075/pdf/522770PUB0REPL101Official0Use0Only1.pdf (accessed 15.05.2020).

[16] Poverty in Eastern Europe and the CIS, 2004, Economic Survey of Europe. *UNECE*, no. 1, p. 163—176.

addition, the banking group Credit Suisse has published its annual Global Wealth Report[17] with estimations of housing value owned by households since 2010.

The dynamics of basic indicators characterizing the standard of living

The dynamics of the main macroeconomic indicators (GDP and GDP per capita) throughout 1990—2019 illustrates that living standards in the CEE region converged with those of Western Europe. Overall, the GDP of the EU-11 grew 123% whereas the aggregate GDP of the EU-15 increased by 68% only. This was achieved due to a higher economic growth in Poland, the largest country in the EU-11 (36% of the region's GDP), and in Slovakia (6.0%), Slovenia (3.0%), Estonia (1.9%) and Romania (15.1% of the EU-11 aggregate GDP) (see fig.1). At the same time, the GDP growth rate in Czechia, the third-largest country in the region (14.8%), exceeded the growth rate of the EU-28 average by mere 3.0%, and Bulgaria (4.0% of the regional aggregate GDP) had the same GDP growth rate as the European Union average. Hungary (10%), Lithuania (3.2%), Croatia (3.6%) and Latvia (2.0% of the EU-11 GDP) turned out to be on the other side with cumulative GDP growth rates lower than the EU-28 average.

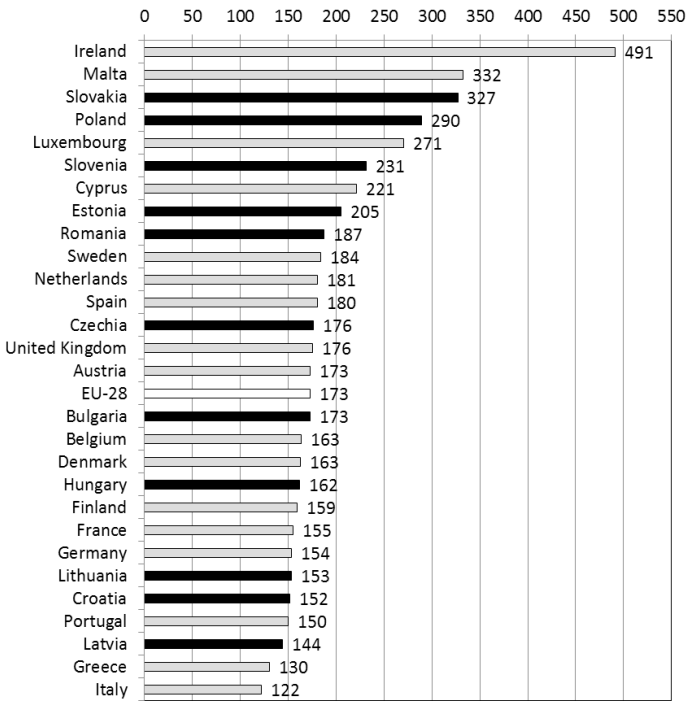

Fig. 1. GDP growth in the EU countries in 1990—2019 indexed to 1990=100.

Source: author's calculations based on the data from: World Development Indicators. Washington, DC, 2020, *World Bank*, available at: https://databank.worldbank.org/source/world-development-indicators# (accessed 27.07.2020).

[17] Global Wealth Report 2019, 2019, *Credit Suisse Research Institute*, October, 64 p., available at: https://www.credit-suisse.com/media/assets/corporate/docs/about-us/research/publications/global-wealth-report-2019-en.pdf (accessed 03.09.2020).

However, during 1990—2019, the population of Latvia simultaneously shrank by 28.0%, in Lithuania — by 24.4%, in Bulgaria — by 20.2%, in Romania — by 16.4%, in Estonia — by 15.6%, in Croatia — by 14.6%, and in Hungary — by 5.8%. As a result, these countries' GDP per capita increased more than the growth rate of GDP. Together with Poland where the population slightly decreased (by 0.2%), Czechia, Slovakia and Slovenia, where, on the contrary, the population grew by 2.8%, 3.0% and 4.2% accordingly, the CEE countries found themselves among the leaders in the European Union in terms of GDP per capita growth throughout 1990—2019 (fig. 2).

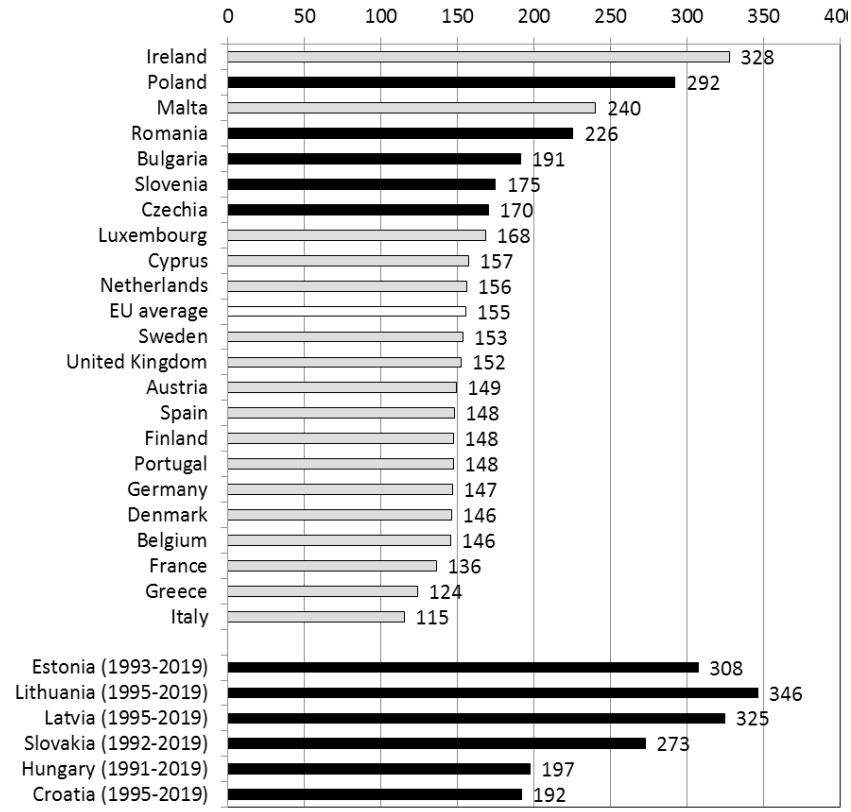

Fig. 2. GDP per capita growth in the EU countries in 1990—2019 at PPP in constant prices indexed to 1990=100

Source: author's calculations based on the data from: World Development Indicators, 2020, Washington, DC, *World Bank*, availalble at: https://databank.worldbank.org/source/world-development-indicators# (accessed 27.07.2020).

At the same time, we should take into account a kind of low base effect because of the distinct price system in the planned economy that differed significantly from the EU-15 countries [52]. In the socialist states, the government kept low prices for transport, housing, electricity, water and gas services and socially important goods. Some services and social benefits were not monetized enough [see: 53]. Even 30 years after the end of the planned economy, the difference in

price levels between the CEE and the EU-15 states is still an issue despite these countries' integration within the Economic and Monetary Union and a high degree of economic openness [54] (fig. 3).

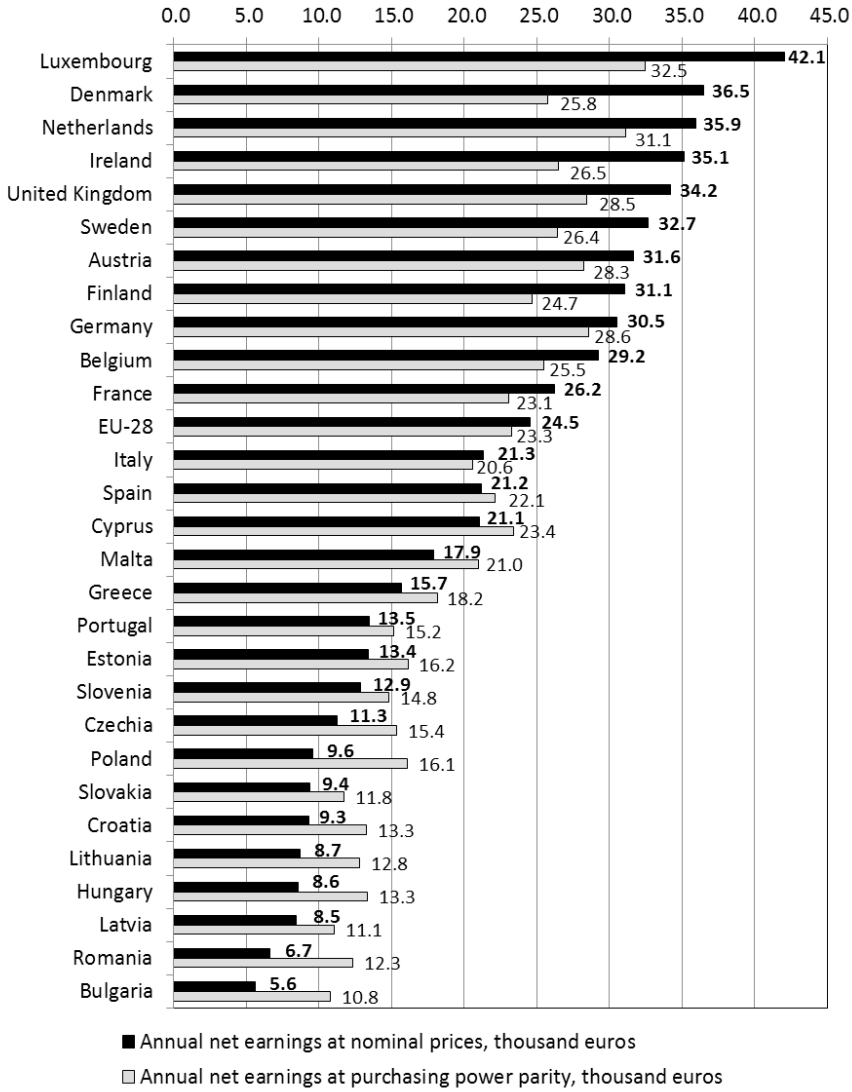

Fig. 3. Single-person households' average net earnings in the EU countries at nominal prices and at purchasing power parity, 2018

Source: Luxembourg: Eurostat, 2020, *Eurostat Database*, available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

If one looks at single-person household's annual net earnings at nominal prices as of 2019, one can see that it reached 27 600 euros in the EU-15 countries and only 8900 euros in the EU-11 region. As a result, all the CEE states considered in this article occupy last 11 places in the EU member states' list by this indicator. When purchasing power parity (PPP) is taken into account, the difference

between two country groups diminishes from 3.1 times to 1.8 times, *i.e.* 25 000 euros in the EU-15 countries and 14 100 euros in the EU-11 region. The income level at PPP in comparison to nominal prices rises by 92% in Bulgaria, 85% in Romania, 68% in Poland, 55% in Hungary, 47% in Lithuania, 43% in Croatia, 36% in Czechia, 31% in Latvia, 25% in Slovakia, 21% in Estonia, and by 15% in Slovenia. Consequently, when accounting for domestic price levels, single-person household's annual net earnings turn out to be higher in Estonia (16 200 euros), Poland (16 100 euros) and Czechia (15 400 euros) than in Portugal (15 200 euros). At the same time, the income differential between the most advanced (Luxembourg) and most lagging (Bulgaria) countries in the European Union decreases from 7.5 times to three-fold only. Similarly, the disposable income gap between the EU-15 and EU-11 countries for households comprised of two-earner couple with two children, one earning 100% and the other 67% of the average earning, diminishes from 3.05 times at nominal prices (50 700 euros vs 16 600 euros) to 1.7 times at PPP (45 900 euros vs 26 400 euros). In the same way, four-people households' disposable income in Luxembourg is 8.5 times higher than in Bulgaria at nominal prices (83 700 euros vs 9 800 euros) and only 3.4 times higher at PPP (64 700 euros vs 18 900 euros).

The distribution of households by tenure type

When we consider the housing distribution by tenure status in the EU states, the standard of living disparities within the European Union country groups happen to be even narrower (fig. 4).

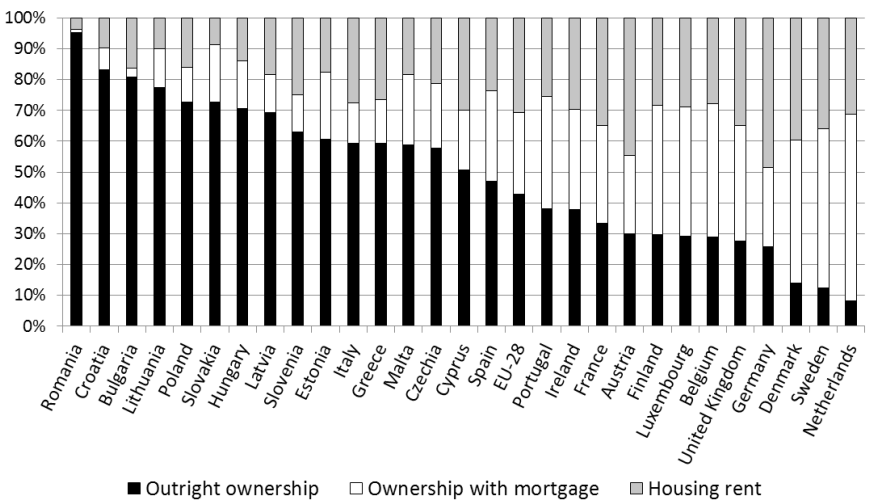

Fig. 4. Distribution of households in the EU countries by housing tenure, 2018

Source: Luxembourg: Eurostat, 2020, *Eurostat Database*, available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

In the EU-11 region, the average outright home ownership rate amounts to 76%, while 11% of households have a mortgage and the remaining 13% pay rent.

At the same time, in the EU-15 countries, only 35% of households are outright homeowners, 30% of households have a mortgage, and the other 35% pay housing rent. The EU-11 countries occupy top 10 places in the European Union in terms of the share of outright homeowners, with Romania ranking first with 95% of households, Croatia ranking second with 83%, and Bulgaria ranking third with 81% of households with outright home ownership. Only Czechia occupies the 14th place (58%) after three Southern European countries, *i.e.* Italy, Greece and Malta (59% each). Conversely, the EU countries with high net earnings are found at the bottom of this list with less than 15% of households owning their homes with no mortgage (8% in the Netherlands, 12% in Sweden and 14% in Denmark).

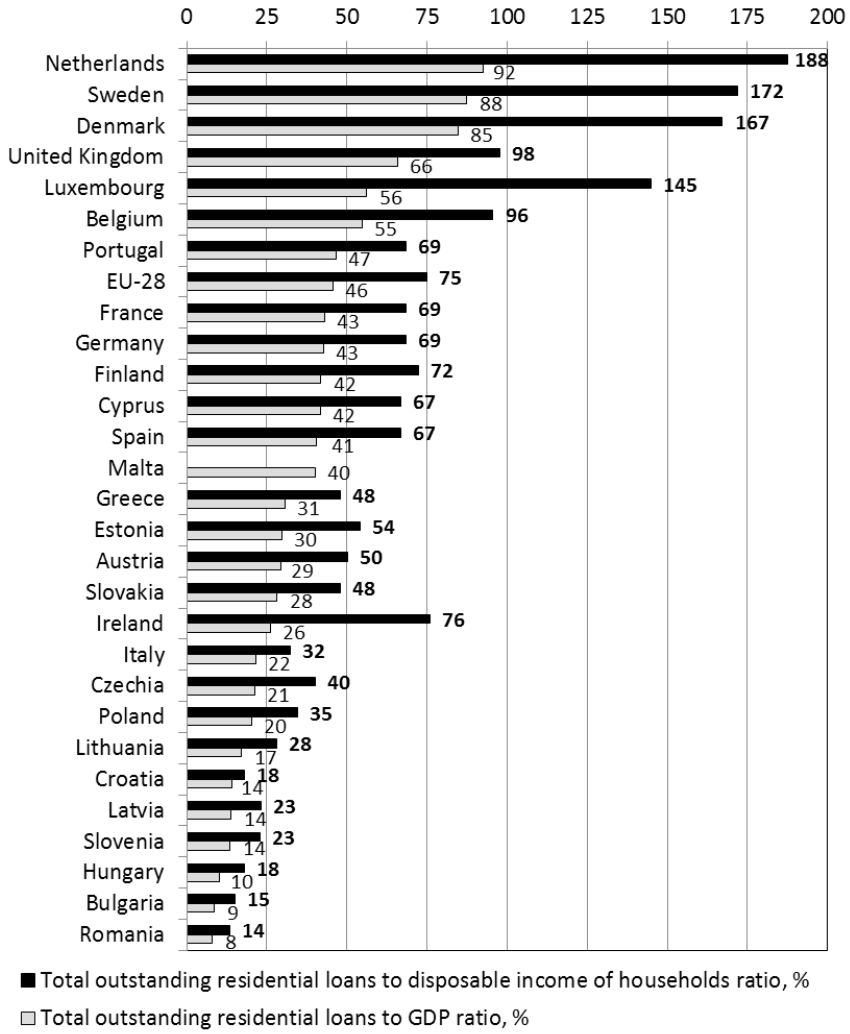

Fig. 5. Total outstanding residential loans to GDP and to disposable income of households ratios*, 2018

Note: * — no data for Malta.

Source: Hypostat 2019: a Review of Europe's Mortgage and Housing Markets, 2019, Brussels, *European Mortgage Federation*, available at: https://hypo.org/app/uploads/sites/3/2019/09/HYPOSTAT-2019_web.pdf (accessed 24.07.2020).

Consequently, on the one hand, mortgage markets are well developed in the countries of Western and Northern Europe (fig. 5) where total outstanding residential loans to GDP ratio in 2018 ranged from 85—92% in the countries mentioned above to 41—43% in Spain, Finland, Germany and France. On the contrary, in the EU-11 region, Estonia and Slovakia had the highest ratio of 30% and 28% respectively, while this indicator in six countries equalled to less than 15% of their GDP. On the other hand, despite high levels of household income in the EU-15 region, mortgage burden exceeded 100% of households' disposable income peaking in Luxembourg at 145%, Denmark (167%), Sweden (172%) and the Netherlands (188%). In 2015, the European Federation of Public Cooperative and Social Housing (Housing Europe) yet identified housing costs burden as one of the major driving forces of the housing sector crisis unfolding in the European Union since the middle of the 2010s[18].

Since on average 65% of households in the EU-15 countries are not outright homeowners, these families need to spend a considerable portion of their income on mortgage and rent payments — 17% and 23% in this region respectively (fig. 6). In the EU-11 countries, households spend on average 15% of their income on mortgage and 19% on housing rent (share of income in respective household groups). However, on average only 24% of households in the EU-11 economy belong to these categories.

Fig. 6. Households' mortgage burden and rent costs as a share of disposable income, 2018

Source: Housing Conditions, 2019, *OECD Affordable Housing Database*, Paris, OECD, available at: http://www.oecd.org/social/affordable-housing-database/housing-conditions/ (accessed 27.07.2020).

[18] The State of Housing in the EU 2015, 2015, *A Housing Europe Review*, available at: https://www.housingeurope.eu/resource-468/the-state-of-housing-in-the-eu-2015 (accessed 03.09.2020).

The method for assessing the standard of living using the income data adjusted for mortgage/rent costs

To compare the standard of living in the EU-11 and EU-15 countries adjusted for mortgage and rent costs, we shall incorporate in one indicator both the income level and households' spending patterns that depend on the home ownership structure in an economy. We shall use the data on net household earnings at PPP and calculate values for each EU member state adjusted for mortgage and rent costs with a share of each household category as a corresponding weight according to the following formula:

$$E_{adj} = S_m \times (E - (E \times B_m)) + S_t \times (E - (E \times B_t)) + S_{ow} \times E, \qquad (1)$$

where E_{adj} denotes net earnings of households adjusted for mortgage and rent spending; E denotes net earnings of households in a country; S_m denotes the share of households with a mortgage; S_t denotes the share of households paying rent; S_{ow} denotes the share of households with outright home ownership (the E, S_m, S_t, S_{ow} numbers are taken from the Eurostat database); B_m denotes the share of mortgage costs in disposable income of households with a mort-mortgage; B_t denotes the share of rent costs in disposable income of households that rent their dwellings (the B_m, B_t numbers are taken from the OECD AHD database[19]). As two main types of households for our analysis, we selected households comprised of a single person without children earning 100% of the national average earning and households comprised of a two-earner couple with two children, one earning 100% and the other 67% of the national average earn-earning, according to the Eurostat classification.

Furthermore, having calculated the disposable income of households at PPP adjusted for mortgage and rent spending in the EU-11 and the EU-15 countries, we shall adjust values for the NUTS-2 regions within the European Union states. We shall compute a correction coefficient for each country in the EU-11 and EU-15 groups as an arithmetic mean of ratios of disposable incomes of single- and four-person households adjusted for mortgage and rent costs to their net earnings at PPP provided by the Eurostat. Consequently, using these correction coefficients for each EU-11 and EU-15 country, we shall adjust the NUTS-2 regional indicator of households' disposable income per capita according to the following formula:

[19] We computed the missing values for Bulgaria, Denmark and Romania using the OECD data on total mortgage and rent costs and the share of rent payments in these countries.

$$E_{reg\_adj} = ((E_{adj}^{h1}/E^{h1} + E_{adj}^{h4}/E^{h4})/2) \times E_{reg}, \quad (2)$$

where E_{reg_adj} denotes disposable income of households in a NUTS-2 re-region of an EU-11 or EU-15 country adjusted for mortgage and rent spending; E_{adj}^{h1} denotes disposable income of households comprised of a single person without children earning 100% of the national average earning at PPP adjusted for mortgage and rent spending (our calculations); E_{adj}^{h4} denotes disposable in-income of households comprised of a two-earner couple with two children, one earning 100% and the other 67% of the national average earning, at PPP adjust-adjusted for mortgage and rent spending (our calculations); E^{h1} denotes net earnings of households comprised of a single person without children earning 100% of the national average earning at PPP (the Eurostat data); E^{h4} denotes net earnings of households comprised of a two-earner couple with two children, one earning 100% and the other 67% of the national average earning, at PPP (the Eurostat data); E_{reg} denotes disposable income of households per capita in a NUTS-2 region of a country (the Eurostat data). For our calculations, we as-assumed that there is a common housing tenure structure across the NUTS-2 regions within the EU-11 and EU-15 countries.

The calculation results and their impact on the standard of living estimations

As presented in Figure 7, our calculations using (1) reveal that the adjusted average net earnings of single-person households in the EU-15 exceed those of the EU-11 countries by 59% only (21 600 euros vs 13 500 euros per year). The gap between Luxembourg and Bulgaria diminishes to a 2.48-times difference accordingly, and this underlines a more even distribution of living standards in the European Union countries in comparison with the usually taken indicators at nominal prices or PPP alone. The EU-28 average annual income of single-person households at PPP and adjusted for mortgage and rent costs decreases from 24 500 euros at nominal prices and 23 300 euros at PPP to 20 000 euros (fig. 3 and fig. 7).

In turn, our estimations evidence that the level of the adjusted average net earnings of four-person households in the EU-15 is 57% higher than in the EU-11 countries (39 700 EUR vs 25 300 EUR) and this indicator in Luxembourg exceeds that of Bulgaria by 2.92 times. The EU-28 adjusted average annual net earnings of four-person households amount to 36 800 euros against 42 800 euros at PPP and 45 100 euros at nominal prices.

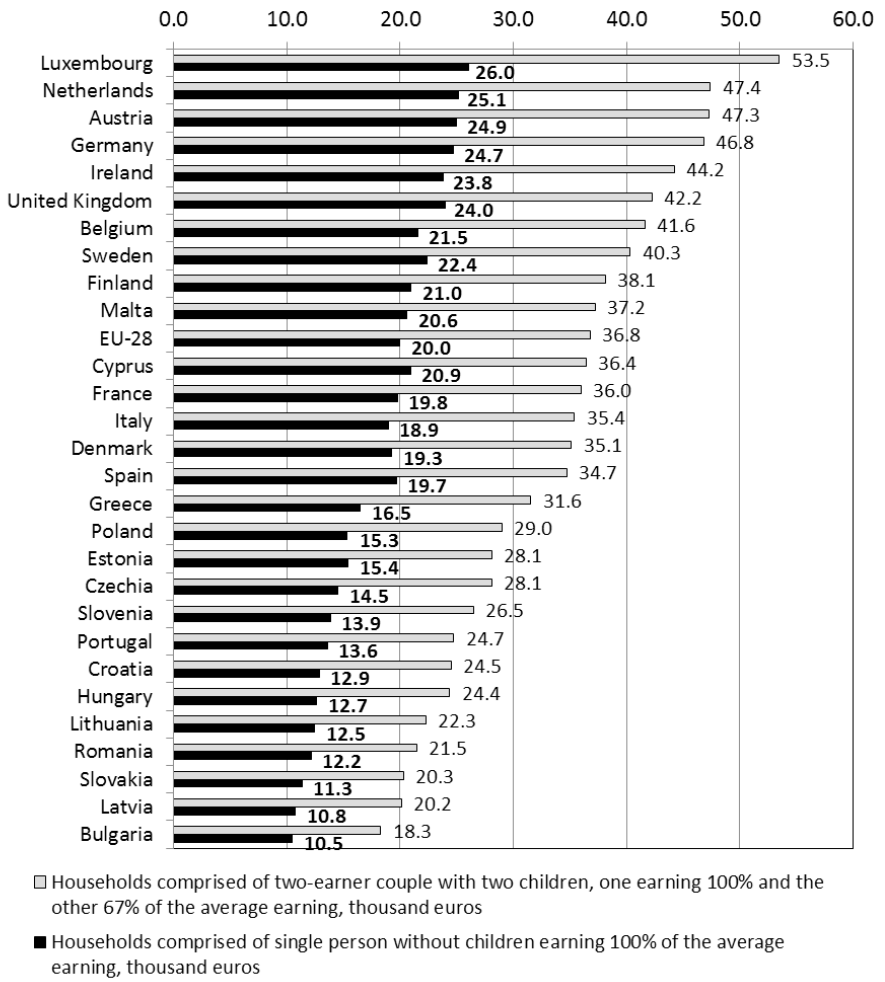

Fig. 7. Net earnings of two types of households adjusted for mortgage and rent costs in two types of households in the EU countries, 2018

Source: author's calculations based on the data from: Luxembourg, Eurostat, 2020, *Eurostat Database*, available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020); Housing Conditions, 2019, *OECD Affordable Housing Database*, Paris, OECD, available at: http://www.oecd.org/social/affordable-housing-database/housing-conditions/ (accessed 27.07.2020).

The technique that we proposed in this article allows us to determine more accurately the living standards in the CEE countries in comparison to the EU and the EU-15 averages (fig. 8 and fig. 9)[20]. The adjusted average income level of single-person households in Estonia stands at 77% of the EU-28 average (70%

[20] It should be noted that our adjustment for mortgage and rent costs reduces the values of net earnings for all the EU states. However, due a higher share of households paying a mortgage or renting their dwellings, the decrease for the EU-15 countries is a more pronounced one than for the EU-11 states.

at PPP and 55% at nominal prices), 76% in Poland (69% and 39% accordingly), 73% in Czechia (66% and 46%), 69% in Slovenia (64% and 53%), 65% in Croatia (57% and 38%), 63% in Hungary (57% and 35%), 62% in Lithuania (55% and 35%), 61% in Romania (53% and 27%), 57% in Slovakia (51% and 38%), 54% in Latvia (48% and 35%), and 53% of the EU-28 average in Bulgaria (46% at PPP and 23% at nominal prices).

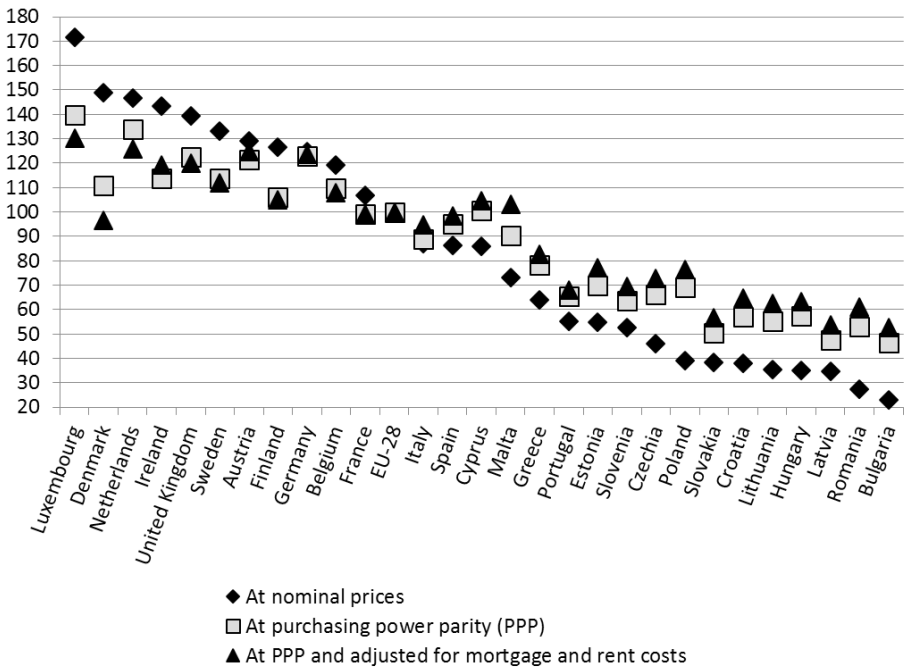

Fig. 8. Net earnings of households comprised of single person without children earning 100% of the national average earning at nominal prices, at PPP and adjusted for mortgage and rent costs (EU-28 = 100), 2018

Source: author's calculations based on the data from: Luxembourg, Eurostat, 2020, *Eurostat Database,* available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

Our calculations for four-person households show similar results, as the adjusted average net earnings in Poland achieve the level of 79% of the EU-28 average (71% at PPP and 40% at nominal prices), 76% in Estonia (69% and 55% accordingly), also 76% in Czechia (69% and 48%), 72% in Slovenia (66% and 54%), 67% in Croatia (59% and 39%), 66% in Hungary (60% and 37%), 61% in Lithuania (54% and 35%), 58% in Romania (51% and 26%), 55% in Slovakia (50% and 38%), 55% in Latvia (49% and 35%), and 50% of the EU-28 average in Bulgaria (44% at PPP and 22% at nominal prices).

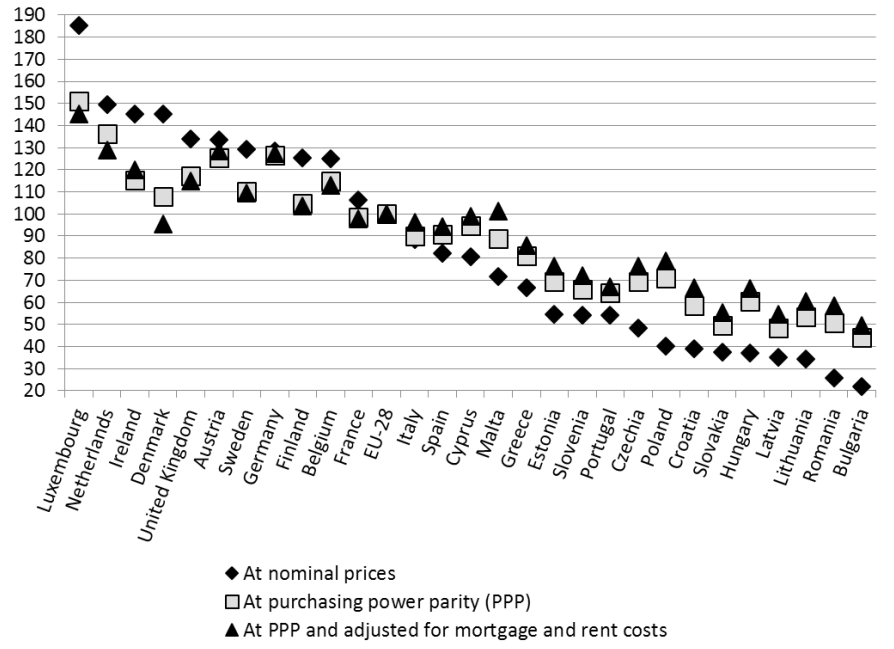

Fig. 9. Net earnings of households comprised of two-earner couple with two children, one earning 100% and the other 67% of the national average earning, at nominal prices, at PPP and adjusted for mortgage and rent costs (EU-28 = 100), 2018

Source: author's calculations based on the data from: Luxembourg, Eurostat, 2020, Eurostat Database, available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

We should also notice that the well-being of outright homeowners in the EU-11 is usually close to the national average, whereas households renting their dwellings have relatively lower incomes and are more likely to find themselves at risk of poverty or social exclusion, according to the Eurostat classification[21] (Figure 10). In turn, the wealthiest are households with a mortgage. Among the households from this group in Czechia, the share of families at risk of poverty or social exclusion is 6.6 times lower than in the group of households paying rent, 6.2 times lower in Romania, 5.5 times in Poland, 5.3 times in Slovenia, 5.0 times in Lithuania, 3.6 times in Latvia, 3.5 times in Croatia, 2.8 times in Estonia, 2.6 times in Slovakia, 1.5 times in Hungary and 1.4 times in Bulgaria. In addition, Czechia, Slovenia and Slovakia distinguish themselves as countries in the European Union with the lowest share of households at risk of poverty or social exclusion (12.2%, 16.2% and 16.3% accordingly).

[21] Luxembourg: Eurostat, 2020, Eurostat Database, available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

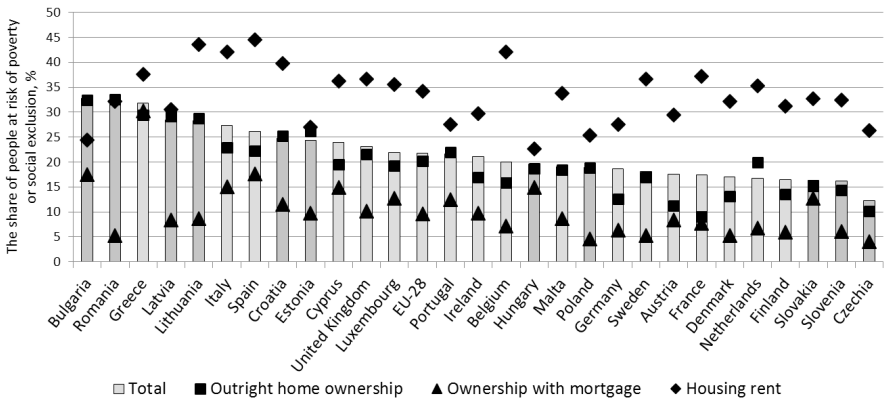

Fig. 10. The share of people at risk of poverty or social exclusion by tenure status, %age, 2018

Source: Luxembourg, Eurostat, 2020, *Eurostat Database,* available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

The comparison with cross-regional discrepancies within the European Union member states

The differences in the standard of living among the EU states turn out to be reasonably comparable with regional disparities within certain countries. For example, when we analyse the distribution of disposable income of households per capita across 275 NUTS-2 regions by the Eurostat classification (fig. 11)[22], we find out that the standard of living discrepancies between the EU-11 and EU-15 country groups adjusted for mortgage and rent costs are less significant than cross-regional disparities in the United Kingdom (3.1-times the difference between the regions with a maximum and minimum income level, as provided by the Eurostat[23]), in Romania (2.9 times), Bulgaria (2.1 times), Italy and Slovakia (twofold), Poland (1.8 times) and Spain (1.7-times difference).

In the other EU-11 countries, disposable income of households per capita in the richest region of Czechia is 50% higher than that of the poorest region in the country. Accordingly, it is 35% higher in Hungary, 24% higher in Lithuania, 4.0% higher in Slovenia, and 1.0% higher in Croatia. Two regions from the EU-11 countries can be found in the top 100 regions of the EU-28 in terms of disposable income of households per capita (ranked 63rd and 74th). The second 100 regions' cohort contains already six regions from the CEE region (ranked 101st, 125th, 164th, 192nd, 194th and 197th). The remaining 51 EU-11 regions are in the lower part of this list together with 24 regions from four countries of the EU-15 group (Spain, Italy, Portugal and Greece). The national capital regions of Romania, Slo-

[22] In our analysis, we use the latest available data provided by the Eurostat for 2017. The list contains 275 regions from all countries of the EU except Malta.

[23] In this case, we assume that the housing tenure structure within a country does not considerably affect the cross-regional disparities in living standards.

vakia, Poland and Czechia with the level of disposable income of households per capita at 19 700 euros, 19 300 euros and 17 700 euros accordingly, surpass the EU average of 16 800 euros (fig. 11).

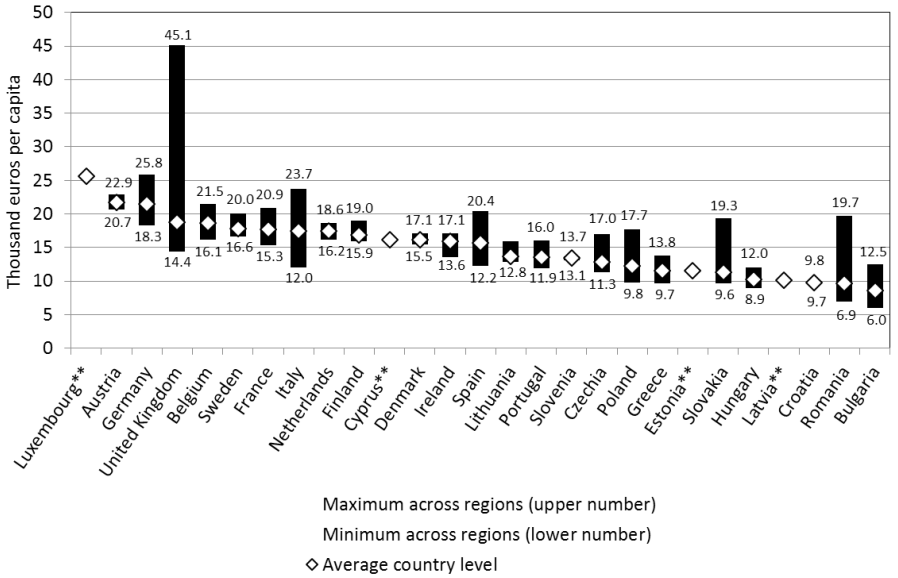

Fig. 11. Disparities in disposable household income per capita at PPP in the EU countries at regional NUTS-2 level, 2017 г.*

Notes: * — no data for Malta; ** — Luxembourg, Cyprus, Estonia and Latvia are not subdivided into NUTS-2 regions.

Source: author's calculations based on the data from: Luxembourg, Eurostat, 2020, *Eurostat Database,* available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

Having adjusted the net earnings values at PPP for the EU-11 and the EU-15 states by incorporating mortgage and rent costs, we can further adjust the Eurostat numbers on the disposable income of households in the NUTS-2 regions using (2). Taking this adjustment into account (fig. 12), five regions from the EU-11 can be found in the top 100 regions of the European Union. In addition to four national capital regions mentioned above (19 500 euros in the region of Bucuresti-Ilfov, 18 500 euros in Bratislavský kraj, 16 800 euros in Warszawski stoleczny region and 16 100 euros in the region of Praha), Sostines regionas (the capital region in Lithuania) with the adjusted disposable income of households per capita of 15 000 euros exceeds the EU average of 14 400 euros[24]. The second group of 100 NUTS-2 regions contains already eight regions from the EU-11

[24] In the capital region of Hungary (Budapest), the adjusted disposable income of households per capita amounts to 12 000 EUR, as provided by the Eurostat, and 11,400 euros with our adjustment. For the Yugozapaden region of Bulgaria that includes the national capital Sofia, the numbers are 12,500 euros and 12,100 euros, accordingly. No capital regions at the NUTS-2 level are distinguished in Latvia, Slovenia, Croatia and Estonia.

countries (ranked 179th, 181st, 184th, 189th, 192nd, 193rd, 195th and 196th), and the other 46 regions are at the bottom of the list accompanied by 29 regions from the EU-15 countries. Therefore, besides the income differentiation between the EU-15 and the EU-11 countries, regional income disparities within the CEE countries pose an even more severe problem (see also: [55]).

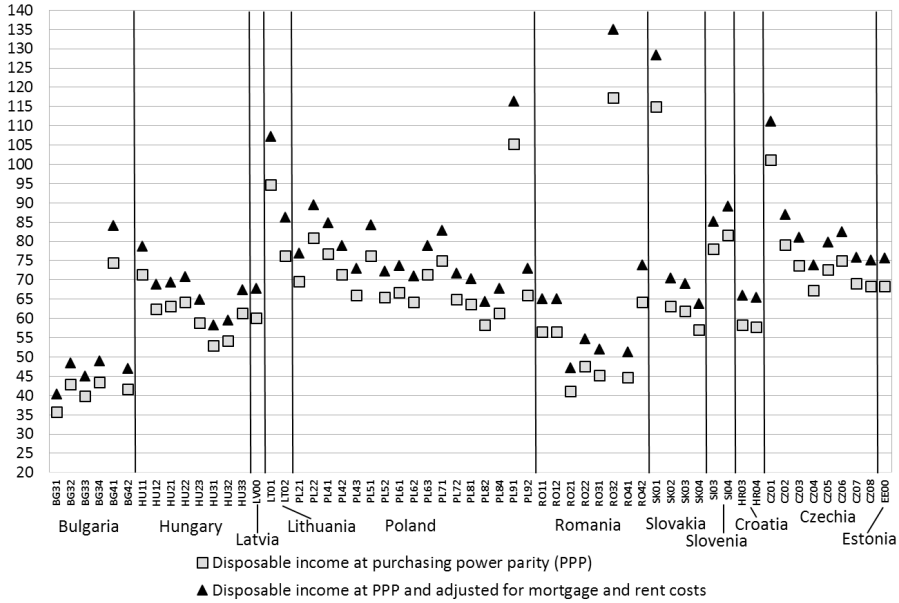

Fig. 12. Households' disposable income per capita at PPP and adjusted for mortgage and rent costs in the NUTS-2 regions of the EU-11 countries in comparison to the EU average (EU = 100), 2017*

Note: * — NUTS-2 regions of Bulgaria: BG31 — Severozapaden, BG32 — Severen tsentralen, BG33 — Severoiztochen, BG34 — Yugoiztochen, BG41 — Yugozapaden, BG42 — Yuzhen tsentralen; regions of Hungary: HU11 — Budapest, HU12 — Pest, HU21 — Közép-Dunántúl, HU22 — Nyugat-Dunántúl, HU23 — Dél-Dunántúl, HU31 — Észak-Magyarország, HU32 — Észak-Alföld, HU33 — Dél-Alföld; regions of Lithuania: LT01 — Sostines regionas, LT02 — Vidurio ir vakaru Lietuvos regionas; regions of Poland: PL21 — Malopolskie, PL22 — Slaskie, PL41 — Wielkopolskie, PL42 — Zachodniopomorskie, PL43 — Lubuskie, PL51 — Dolnoslaskie, PL52 — Opolskie, PL61 — Kujawsko-Pomorskie, PL62 — Warminsko-Mazurskie, PL63 — Pomorskie, PL71 — Lódzkie, PL72 — Swietokrzyskie, PL81 — Lubelskie, PL82 — Podkarpackie, PL84 — Podlaskie, PL91 — Warszawski stoleczny, PL92 — Mazowiecki regionalny; regions of Romania: RO11 — Nord-Vest, RO12 — Centru, RO21 — Nord-Est, RO22 — Sud-Est, RO31 — Sud-Muntenia, RO32 — Bucuresti-Ilfov, RO41 — Sud-Vest Oltenia, RO42 — Vest; regions of Slovakia: SK01 — Bratislavský kraj, SK02 — Bratislavský kraj, SK03 — Stredné Slovensko, SK04 — Východné Slovensko; regions of Slovenia: SI03 — Vzhodna Slovenija, SI04 — Zahodna Slovenija; regions of Croatia: HR03 — Jadranska Hrvatska, HR04 — Kontinentalna Hrvatska; regions of Czechia: CZ01 — Praha, CZ02 — Strední Cechy, CZ03 — Jihozápad, CZ04 — Severozápad, CZ05 — Severovýchod, CZ06 — Jihovýchod, CZ07 — Strední Morava, CZ08 — Moravskoslezsko; Latvia (LV00) and Estonia (EE00) are not subdivided into NUTS-2 regions.

Source: author's calculations based on the data from: Luxembourg, Eurostat, 2020, *Eurostat Database,* available at: https://ec.europa.eu/eurostat/data/database (accessed 25.07.2020).

Discussion

The technique that we have proposed helps refine estimations of the standard of living of households, and our calculations reveal a more even distribution of households' disposable income adjusted for mortgage and rent costs across the EU countries compared with the numbers at nominal prices and at PPP alone. Nevertheless, our computations are constrained by the statistical data available from the OECD and the Eurostat. In case some more detailed statistics become available, this method enables obtaining further refined calculations.

Firstly, the OECD provides the data on the share of mortgage and rent spending as an average for all the households from these two categories with no further elaboration on the size of families. Obviously, the income share spent on a mortgage or rent by single-person households can differ from that of multiple-person households with one child or more[25]. As this kind of data had not been yet provided, we used the same values for both households comprised of a single person and four persons.

Secondly, further differentiation of the Eurostat data at the NUTS-2 level by households' status (outright home ownership, housing rent and mortgage) will allow refining the calculations for regions of the EU-11 and the EU-15 countries. When we use the same adjusting coefficient for regions with higher and lower households' disposable income, the numbers are being adjusted more for the former, and less for the latter, as expected.

Thirdly, it would be interesting to compare the relative living standards in the EU countries for the households that rent social housing and those paying the market rent. In this article, we used the OECD indicator that incorporates both these categories of households. Though there is no standard definition of social housing yet neither at the EU level nor in several EU countries, social housing generally implies that vulnerable groups of people rent their dwellings at a reduced cost. This leads actually to closing some relative income gaps compared to wealthier households in a country[26].

Fourthly, it should be noted that housing-related expenditures other than mortgage or rent (electricity, water, gas, etc.) have increased in the past decades in real terms in the EU-11 countries and contributed considerably to the overall housing

[25] In Western European countries, residents with no children prefer to live in city centres, where total housing costs are often higher, and this can lead to an increasing portion of income spent on mortgage/rent payments. On the contrary, families with children tend to choose suburban areas, where housing costs are lower, and larger dwellings become more affordable (at the same time, transportation costs might rise).

[26] The share of social housing stock in the EU countries varies from 38% of the total housing stock in the Netherlands, 21% in Denmark, 20% in Austria and 17% in the United Kingdom to 11% in Finland and one to eight % in the EU-11 countries [Public Policies Towards Affordable Housing, 2019, *OECD Affordable Housing Database*, Paris, OECD,. available at: http://www.oecd.org/social/affordable-housing-database/housing-conditions/ (accessed 27.07.2020)].

cost burden[27] [56]. When the large portion of outright homeowners is yet taken into account, the total housing expenditures including mortgage/rent costs as well as electricity, water, gas and other fuel costs on average made up 25% of the final consumption expenditure of households in Czechia in 2017, 24% in Slovakia, 23% in Romania, 21% in Latvia and Poland, 20% in Bulgaria, 19% in Slovenia and Hungary, 18% in Estonia and 15% in Lithuania. Thus, improving the OECD statistics in terms of subdivision of the data into housing-related costs and mortgage/rent costs for different categories of households could further enhance estimations of the standard of living in the EU-11 and the EU-15 countries. In general, the Federation Housing Europe, which we mentioned above, identified in its 2019 report the rising share of housing costs in disposable income of less wealthy households in both the EU-11 countries and the EU-15 group as another negative factor for the social stability and housing affordability[28].

Private property restitution in the CEE countries that was actively implemented in the 1990s, notably in the Baltic states, Czechia, Slovakia and Slovenia, is another particular subject [57]. Aside from that, our analysis can be complemented by considering such a factor as housing quality, which is a topic for a special study associated more with the multi-faceted problem of the quality of life [58; 59]. The former socialist countries of the EU-11 traditionally rank behind the EU-15 countries by such parameters as the number of rooms and living space per capita, availability of sewerage[29], and housing overcrowding rates, as provided by the Eurostat and the OECD.

However, we should notice that there are/were slightly different housing quality criteria in the market and planned economies. In the socialist countries, the priority was given to the reliability of communal infrastructure including energy[30], water, gas supply and heating, durability and safety of housing structures, availability of children's playgrounds, kindergartens, comprehensive, music and other schools within walking distance, as well as to local green areas. At the same time, there were more cars per capita in the market economies, and therefore, on

[27] Housing Conditions, 2019, *OECD Affordable Housing Database*, Paris, OECD, available at: http://www.oecd.org/social/affordable-housing-database/housing-conditions/ (accessed 27.07.2020).

[28] The State of Housing in the EU 2019, 2019, *Housing Europe*, available at: https://www.housingeurope.eu/resource-1323/the-state-of-housing-in-the-eu-2019 (accessed 06.10.2020).

[29] Romania ranks the lowest, as 21% of households in the country with the income at 50% of the median equivalised disposable income or above did not have an exclusive flushing toilet in 2017. This number increases to 68% in the cohort of households with the income below 50% of the median equivalised disposable income [Housing Conditions, 2019, *OECD Affordable Housing Database*, Paris, OECD, available at: http://www.oecd.org/social/affordable-housing-database/housing-conditions/ (accessed 27.07.2020)].

[30] The official website of the European Commission contains a special webpage for the EU residents with tips on how to save energy, among which there is still such a recommendation as to replace single-glazed windows with double-glazed ones [available at: https://ec.europa.eu/clima/citizens/tips_en (accessed 06.10.2020)].

the one hand, households were more mobile there for dealing with their everyday issues but, on the other hand, they could bear higher time and transportation costs. In addition, in the Western cities and towns, leisure and outdoor activities are often concentrated around one central park and several secondary green space areas.

Likewise, at the beginning of the 1990s, multi-storey buildings constructed in the EU-11 countries during the planned economy were expected to experience a social decline soon. However, two or three decades later, the scholars underscored high social stability of this kind of housing [60; 61], *i.e.* its lower exposure to social degradation compared to the same type of housing in Western Europe. Moreover, a survey of residents in multi-storey buildings in several cities and towns of Poland revealed that 66% of respondents were happy with their current flats and did not plan to move to another place [60].

Moreover, the issue of indoor temperature during the cold season was unknown to most people in post-socialist countries, and only in the 2010s, it was put on the agenda in Western European countries primarily due to the launch of programmes aimed at improving energy efficiency [62]. Before that, the studies on this topic were carried out predominantly only in the United Kingdom[31]. As recent cross-country comparisons illustrated, there was no common standard in the European Union for indoor microclimate parameters [65]. Winter temperature limits in Western and Northern European countries varied from 18ºC in the Netherlands to 22ºC in Sweden., and a 6ºC to 8ºC difference in temperature in different rooms of the same flat or house was a normal situation[32] [66].

Hence, a proper comparison and an unbiased assessment of the quality of life in the EU-11 and the EU-15 warrants employing some criteria from the planned economy, which might complement well the standard analysis with the parameters typical for Western European states and deepen our understanding of peculiarities of the transition process in the CEE countries.

Main conclusions

1. Despite 30 years of market reforms, the influence among other things of a special price system inherited from the planned economy persisted in the former socialist countries, which became members of the European Union. As a result, the difference in single-person households' income level between the CEE and the EU-15 countries is reduced from 3.1 times when calculated at nominal prices to 1.8 times at purchasing power parity.

2. Not only the institutions from the planned economy such as individually-owned, cooperative and state housing, which became the private property of the majority of the EU-11 population, did mitigate the transition to a new economic

[31] The average temperature in houses/flats in the United Kingdom is 19.5 ºC during the cold season [63]. Moreover, usually, residents turn the heating on only in those rooms/areas where they currently are, while the whole heating system is off during the night [63; 64].

[32] In Western European countries, the intended temperature in living rooms is +20—21 °C, +16—17 °C in the bedroom, +18 °C in the kitchen, and + 24 °C in the bathroom [66].

system. The fact that 76% of households in the CEE countries are outright homeowners contributes to a further abatement of the standard of living disparities between the CEE countries and Western and Northern European states. In the latter, almost two-thirds of the population have a mortgage (30%) or pay rent (35%) spending on average 17% and 23% of their disposable income respectively.

3. Consequently, the mortgage market in the EU-15 countries is well-developed, but at the same time mortgage burden is high reaching 145—188% of households' disposable income in five countries. On the contrary, this indicator does not exceed on average 30% in the EU-11 states.

4. The technique that we proposed in this article enables incorporating in one indicator both the income level and households' spending patterns, which depend on the home ownership structure, and ensures a more accurate assessment of living standards in the countries considered. According to our calculations, there is only a 1.59-times difference between net earnings of single-person households in the EU-11 and the EU-15 countries at PPP adjusted for mortgage and rent spending. This indicator for the most advanced country in the EU-28 (Luxembourg) is 2.48 times higher than that of the most lagging one (Bulgaria) in comparison to a threefold difference when computed at PPP only.

5. Our computations evidence that the standard of living in the EU-11 countries reached 68% of the EU-28 average in 2018 compared to 61% calculated at PPP only. Due to relatively lower mortgage and housing rent expenditures, the standard of living in Romania for single-person households is 7.9% closer to the EU-28 average than in calculations at PPP alone. It is also closer to the European Union average by 7.6% in Estonia, by 7.5% in Croatia, by 7.4% in Lithuania, by 7.2% in Poland, by 6.6% in Czechia, by 6.2% in Slovakia, Latvia and Bulgaria, by 6.0% in Hungary, and by 5.7% in Slovenia.

6. Our calculations of the standard of living differences between the EU-11 and the EU-15 country groups turn out to be less considerable than disparities between the richest and poorest NUTS-2 regions in the United Kingdom, Romania, Bulgaria, Italy, Slovakia, Poland and Spain. Additionally, the living standards in the national capital regions of Czechia, Poland, Slovakia and Romania exceed the EU-28 average. When computed with our adjustment for mortgage and rent spending, the capital region of Lithuania is also found in this list.

7. The rising prices for electricity, water and gas supply negatively affect living standards in the CEE countries. The households that have a mortgage are on average the wealthiest ones, while the well-being of households with outright home ownership is usually close to the national average. The households renting their dwellings are at highest risk of possible poverty.

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The author

Dr Igor V. Pilipenko, Director, the Institute for Competitiveness and Integration (RICI), Russia.

E-mail: i-pilipenko@yandex.ru

https://orcid.org/0000-0002-8108-7253

BOOK REVIEW

"A NEW BREST" OR PARTIAL STABILISATION? REVIEW OF THE BOOK: ANATOLIY SMOLIN "NEW BREST". THE TREATY OF TARTU (SOVIET RUSSIA — FINLAND), 1920.

K. Khudoley

Saint Petersburg State University
7/9 University emb., embankment St Petersburg, 199034, Russia

World War I, the revolutions in Russia, Germany, and Austria-Hungary, and the fall and disintegration of the three empires led to the emergence of new states in Europe. The treaties signed at the Paris Peace Conference confirmed the outcome of the war but could not solve all the problems. New independent states found themselves in a tight place. Striving for international recognition, they had to both manoeuvre between great powers and settle disputes amongst themselves. The factors of instability included the civil war in Russia, the foreign intervention, and the Bolsheviks' vision of the world revolution. Several years had passed before the world achieved some stability. It was during that time that new treaties were signed. The agreements concluded by the RSFSR with Estonia, Latvia, Lithuania, Georgia, and Finland in 1920 had particular significance in those conditions. They did not mean the abandonment of the idea of world revolution. Rather, they signalled a change in the agenda. Signed 100 years ago, these treaties still spark off fierce public and academic debate. Russian researchers do not pay equal attention to all the agreements. Several publications explore the treaty with Finland, whilst very few analyse the agreements with the Baltic States. The treaty with Georgia is not mentioned even in textbooks on the history of international relations. Despite the considerable attention paid to the relations between the RSFSR and Finland, there is a definite need for a serious investigation and summarising. This is exactly at what the book under review attempts — and does so very effectively.

When reviewing Anatoly Smolin's book, one cannot but note its impressive list of references. The author is well acquainted with the materials of the Russian State Archive of the Navy, documents, periodicals, and memoirs. Some of the

archive documents are presented in a scholarly work for the very first time. The Baltic Fleet had a pivotal role in the events of 1917—1920 in Russia's North-West, and the archive documents offer a perspective on the Soviet-Finnish relations of the time that is entirely different from that provided by foreign policy materials. The annexes contain an interesting selection of documents, which are published for the first time. They cast light on the position of the Russian maritime command on ceding Pechenga to Finland (Socialist Finland at the time), was well as on some other border disputes. The materials demonstrate what tough and much-debated discussions these were. Yet, the book would paint a more comprehensive picture if the author had included publications from Finnish periodicals.

The first chapter, 'The Baltic Fleet after the Treaty of Brest-Litovsk and Finland', is the richest in archive materials. It concentrates on specific issues such as a demarcation line in the Gulf of Finland. The author stresses the difficulty of the negotiation, parties to which were not only the Soviet government and Finland but also Germany. The influence of the latter states increased substantially in the Baltic Sea region after the Treaty of Brest-Litovsk and the intervention in Finland. The highlight of the chapter is the description of the Soviet-German negotiation on the Baltic Sea issues, including the demarcation of the Gulf of Finland. The talks took place in January 1918 in Riga and autumn 1918 in Libava. The Russian Navy did everything it could to secure the interests of the country in the Baltic Sea. The literature has not examined this negotiation before. Moreover, it is very rarely mentioned.

The second chapter, 'The confrontation', focuses primarily on the Soviet policy on the Finnish civil war. Whilst there is research on the demarcation of the Soviet-Finnish border, the relations between the two socialist countries — Soviet Russian and the Finnish Socialist Workers' Republic — are still poorly understood. Smolin explores some aspects of these strained relations. Naturally, Soviet Russia was setting an example to socialist Finland, which was interested in supporting Russia but had a completely independent position on some issues. This aspect deserves more detailed examination, as does the Bolsheviks' frustration over the defeat of socialist Finland.

The following three chapters focus on the key stages and course of the negotiation, which led to the Treaty of Tartu (1920).

Although the book has many virtues — it tackles its subject in a logical and well-reasoned manner, — it is not free of controversial elements.

One of them is the setting of the problem, namely, the way it is formulated in the title. Smolin determinedly draws a similarity between the 1918 Treaty of Brest-Litovsk with Germany and the 1920 Treaty of Tartu, stressing that in both cases Soviet Russia temporarily ceded its territories to win more time, consolidate Bolshevik rule, and finally take back what had been lost. This comparison seems to be a considerable simplification. In 1918, the Bolsheviks had little doubt

about the forthcoming victory of the German revolution. The only thing left to discuss was whether it would happen in several weeks or months. In December 1920, the Bolsheviks' attitudes changed. Many of them felt dismayed when the Polish proletariat refused to support the Red Army, which was suffering a bitter defeat at Warsaw (Smolin mentions this fact). The notion of 'temporary and partial stabilisation' was coined later, but it was already evident that the old policy had to change to accommodate the new reality. Thus, the issue of border demarcation was off the agenda for many years to come.

Smolin aptly observes that the connection between the People's Commissariat for Foreign Affairs and the Comintern is not yet fully clear. Moreover, the relationship between them seems to be more complex than it has been assumed so far. The problem is correctly formulated. Soviet politics pursued two goals — forging intergovernmental relations with other countries and advancing the world revolution (later, it will be referred to as the 'world revolutionary process'). Sometimes one would take precedence over the other. Of course, relations between the Comintern and national communist parties were not always cordial, especially, in the early years of the communist movement. The Communist Party of Finland was no exception. Unfortunately, the book pays little attention to the Comintern. Since many documents from the Comintern and the Communist Party of Finland have made public, the relations between the two institutions might have been considered in greater detail. Although the documents rarely mention the Treaty of Tartu, they could have given a more comprehensive idea of the atmosphere in which the Soviet leadership had to act and their perspective on the processes taking place in Finland.

One of the most intriguing questions pertaining to the subject of the book is whether the treaties concluded by Soviet Russia and its western neighbours in 1920—1921 meant that the country had joined the Versailles-Washington system. There is no consensus on this point. I believe that Soviet Russia deemed struggle against the new international order its primary foreign policy goal. Signing agreements with the Baltic States, Finland, and even Poland did not change anything. A slight shift occurred in 1934 when the USSR joined the League of Nation. Smolin's position on this subject remains unclear.

Nor does the book explain to what degree the parties adhered to the treaty. Probably, the situation was more complex than it might seem, and the agreement was violated by both the RSFSR and Finland. Further research is needed to establish whether Finland fulfilled its obligations to suppress the White Guard on its territory. Another possible area of research is the appraisal of the funding of the Communist Party of Finland by the Soviet government through the Comintern while most Finnish communists lived in the RSFSR as émigrés and planned to overthrow the government in their country. Russian and international scholars have very different opinions on these subjects, and, regrettably, Smolin does not consider them in his book. The direct connection between the treaty of 1920 and

the wars of 1939 and 1941—1944 seems unfounded. The two wars were inalienable parts of World War II and had their own logic and dynamics, which often had little to do with the Soviet-Finnish relations of the 1920s-1930s.

What might be subject to criticism is the unfortunate use of the language of the 1920s-1930s propaganda. It is not entirely appropriate for a text written in the 21st century to call the legitimate government of Finland *byelofinny* (White Finns). There are other statements about Finnish policy borrowed from those decades without due revision.

Despite some debatable aspects and deficiencies, the book by Anatoly Smolin is an important step forward in exploring the complex problems of post-World War I international relations.

The author

Prof. Konstantin K. Khudoley, Head of the Department of European Studies, School of International Relations, Saint Petersburg State University, Russia.
E-mail: kkhudoley@gmail.com

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