FINANCIAL EQUALIZATION OF TERRITORIAL DEVELOPMENT EAST EUROPEAN COUNTRIES AND ITS IMPACT ON QUALITY OF LIFE

Abstract: Financial equalization of the development of the territories of Eastern European countries directly depends on the order of distribution of functions between public entities and the order of distribution of expenditures between states and individual territories. The studied countries of Eastern Europe belong to the less developed regions, whose GDP per capita is less than 75% of the EU average GDP. In the countries of Eastern Europe financial equalization is mainly based both on the functioning of funds (as an instrument of inter-budgetary balancing) and based on the analysis of tax revenues and expenditures of the territory. The dependence between equalization of expenditures of territories and socio-economic characteristics of their development. However, it is established that the quality of life is not significantly affected by financial subsidies. Improving the efficiency of the use of financial resources to increase the quality of life may be promising for further research.

Keywords: Financial Equalization; Intergovernmental Relations; Development of Territories; Transfers; Types of Financial Equalization.

1. Introduction

Depending on the characteristics of the national economy, each Eastern European country determines the instruments of financial equalization, which are contained in the budget legislation. The basis for building inter-budgetary relations in the EU member states is the European Charter of Local Self-Government, which states the need for financial equalization of territorial development.

Budget relations between state bodies characterize the administrative-territorial division, the type of government, and so on. Establishing inter-budgetary relations between the centers and territories, within the territories themselves reflects the level of financial decentralization and independence. This raises issues of forming a stable income base, equalization of income of the territories, as well as conditions and mechanisms for providing intergovernmental transfers (equalization grants; subventions; redistribution of tax revenues; additional grants, grants). The development of territories depends on the adequacy of financial resources, which determines economic and social relations.

It should be borne in mind that there is no ideal model of inter-budgetary relations for all states due to the influence of politics and historical traditions on the budget and tax system of different states. The financial component of intergovernmental relations depends on the type of tax system. Inter-
budgetary relations are based on models of budgetary federalism (cooperative and decentralized), according to which the system of tax-budgetary relations of various authorities at all stages of the budget process determines budgetary responsibility and authority in the field of expenditures, providing sources of income budgets of territories on the basis of the mechanism of transfers. Vertical alignment allows you to balance the amount of teeth obligations of each level of government on expenditures with the potential of its revenues and in case of disproportionate financing of a certain territory to transfer the fulfillment of part of the obligations at the expense of funds accumulated at the level of the state budget. However, this alone is not enough and there is a need for proportional distribution of tax revenues and subsidies between the territories to enable their development (horizontal alignment). Financial equalization of the development of territories ensures the further functioning of backward regions, the transformation of those areas where industry is declining, stimulates the development of rural areas. Financial equalization forms the basis of budgetary relations “state budget – territory”, ensuring elimination this alone is not enough and there is a need for proportional distribution of tax revenues and subsidies between the territories to enable their development (horizontal alignment). Financial equalization of territorial development ensures the further functioning of backward regions, the transformation of those areas where industry is declining, stimulates the development of rural areas. Financial equalization forms are the basis of budgetary relations “state budget-territory”, ensuring elimination disproportions in the development of territories caused by the action of natural and climatic, historical, geographical, socio-demographic, economic and many other factors through the transfer of available, primarily financial, state resources to problem regions. At the same time, the methods and mechanisms of financial equalization differ in different countries and require scientific research to develop an effective national policy in this area.

The aim of the research is to examine the impact of factors on the amount of financial costs for the development of territories and the impact of financial equalization on the quality of life.

Research tasks:

- Analyze the criteria for detection and investigate the existence of areas in need of financial equalization for their development in Eastern Europe.
- Describe the instruments of financial equalization and the peculiarities of their application in Eastern Europe.
- Investigate the relationship between the costs of financial equalization and the factors influencing their size on the example of Eastern Europe.
- Identify the impact of financial costs of EU countries on the quality of life of the population of the territories.

2. Literature Review

According to the European Union budget policy, the protection of financially weaker areas involves the introduction of budgetary equalization procedures or other measures to overcome the effects of unequal distribution of potential sources of funding and financial burden.

Financial equalization plays an important role in a high level of decentralization, because then there is a greater disproportion between
expenditures (ie production of public goods) and government revenues managed by a particular political-territorial unit. In turn, this requires a tool to reconcile the needs for funds (expenditures) and financial opportunities (revenues) at all levels of budget management. Fiscal imbalances lead to population migration, regional decline and large disparities in economic development (Jerkovic, 2017).

Martinez-Vazquez & Boex, (1999) identified basic models of financial equalization, in particular equalization of fiscal potential of state or local budgets; the level of budget services; opportunities to generate regional revenues, taking into account the territorial differentiation of expenditure needs.

Chudy & Farkas, (2000) propose an author's strategy of horizontal regional financial equalization (HRFE), which was based on an automated scheme of management of revenues and expenditures of territories, thus stimulating their further development. The main leitmotif of the study is solidarity with underdeveloped regions to enable them to function further and develop, but not by significantly reducing motivation for regions that are highly profitable.

A similar conclusion was reached Haraguchi, Ogawa (2018) which considered the asymmetric tax competition that arises from the implementation of fiscal equalization. As a result of intergovernmental transfers, tax competition changes, which reduces the interregional fiscal gap, but at the same time allocates financial resources inefficiently. Aristovnik (2012a) trying to assess the process of fiscal decentralization in market economies in Eastern Europe over the past 20 years noted the highest level of fiscal centralization among EU members of Eastern European countries in Estonia. In addition, the degree of fiscal decentralization is higher in developed OECD countries than in most Eastern European countries.

The OECD study provides a warning about the threat to budget stability in the implementation of financial equalization, which may be pro-cyclical. Therefore, some countries set equalization transfers as a fixed percentage of total tax revenues and / or introduced budget limits. Horizontal equalization is used most often due to the lack of participation of the state budget (Blöchliger & Charbit, 2018).

Another problem is to determine the types of intergovernmental transfers that are used for budget equalization. Different types of transfers correspond to different goals of fiscal policy. Thus, Boex & Martinez-Vazquez (2004) determine that in order to equalize the income opportunities of territories for the provision of basic budget services, it is usually carried out through non-targeted transfers (grants), while the distribution of investment financial assistance uses targeted (share) transfers.

In the study Boex & Martinez-Vazquez (2005) sought to elucidate the impact of regulatory policy, voter choice, and political economy arguments on intergovernmental transfers. However, it was concluded that political factors determine the distribution of intergovernmental transfers in order to equalize needs. Thus, the question arises about the formation of the state of the relationship between local economic development and the development and operation of intergovernmental transfers.

Martinez-Vazquez and Sepulveda (2018) substantiated the development of intergovernmental transfer programs based on the definition of the fiscal gap (the difference between expenditure needs and the fiscal capacity of the jurisdiction). They emphasize that the financial equalization should be used only to finance certain types and amounts of government expenditures (standard government expenditures), setting the marginal cost of funds.

Esteller-Moré et al., (2017) singled out such a phenomenon in financial equalization as lobbying. Thus, taxpayers can influence the level of tax burden on the economy, both at the local and central levels of government.

In particular, financial decentralization and
budgetary federalism in some EU countries in the period 1995-2016 are devoted to the work Szarowska (2018). The results show that the Czech Republic is the most decentralized, and Estonia has begun the process of centralization and is reforming the financial equalization model.

Examining financial equalization in Latvia, where the Equalization Fund operates, researchers noted the importance of state subsidies in the system of municipal finances equalization and proposes their indexation assessment of per capita income before and after municipal finances equalization (Martinez-Vazquez, 2000, Jansone & Šenfelde, 2012a, Jansone & Šenfelde, 2012b).

Gross & Bruņa (2012) noted that local governments (a study on the example of Latvia) offer increase the share of the national budget in the financial equalization fund. Local governments at the same level as those who receive funding make insufficient funding for the financial equalization fund leads to the implementation of only horizontal equalization, as the largest contribution. Thus, with the increase of subsidies from the state budget, it will be possible to implement vertical equalization, which will contradict the search for local sources of tax revenues by local authorities. All the above testifies to the opinion of the authors on balancing national priorities and directions of development.

Capkova & Roncakova (2014) considered the tax distribution system in Slovakia as a tool for horizontal equalization of budget imbalances. Local government revenues in Poland are supported by three main types of intergovernmental transfers: the share of taxes in direct taxes of the central government, general grants and specific (conditional) grants (Olejniczak, 2016). Standar and Kozera (2019) noted on the example of Poland the presence of the influence not only of sustainable regional differentiation, but also of internal polarization of levels of regional development, especially in rural areas. Thus, they justified the relationship between local public finances and the level of development of rural municipalities.

Herczyński (2018) conducted 5 case studies, including some Eastern European countries, and concluded that some country-specific characteristics of local government funding are tailored to different needs and reflect the specifics of the exercise of managerial and expenditure powers.

Thus, the studies of financial equalization in Eastern European countries are fragmentary, relate only to individual countries and require further investigation.

3. Methods

To conduct research and achieve the goals and objectives of the scientific article, there was used a set of general and special methods:

- analytical method (in the analysis of theoretical and methodological foundations of the study of financial equalization);
- comparative method (to assess the territories of Eastern Europe that need financial equalization);
- methods of analysis and synthesis (to test the hypotheses in the work);
- method of abstraction (to identify financial instruments);
- methods of induction and deduction (to determine the impact distribution of budget revenues on the features and effectiveness of the policy of financial equalization of regional development);
- graphical method (for interpreting the results of a study on financial equalization in Eastern Europe);
- multiple regression analysis (to establish the relationship between the cost of financing cohesion policy and the factors that influenced it);
- methods of systematization, grouping and logical generalization (for information processing, formation of conclusions and scientific proposals).
The survey was conducted taking into account the requirements of EU regional statistics. The object of the study are the countries of Eastern Europe, which are members of the EU and united by common goals and legal norms of the EU: Poland, Estonia, Lithuania, Latvia, Slovenia, Slovakia and Czech Republic.

4. Results

In the international arena, the European Union has long been a major center of economic potential, which significantly affects the geopolitical situation in the world. Despite the progressiveness and success of this association of countries, the nature of its development is uneven and characterized by significant socio-economic disparities between its member countries. This problem becomes especially relevant in the context of the negative economic trends caused by the Covid-19 pandemic, which requires a review of European regional policy in the context of ensuring the financial sustainability of EU member states.

While examining the normative and legal aspects of the structural and regional policy of the EU, it is necessary to single out the following program tasks, which provide for the balancing of territorial development within the association of countries:

1. Promoting the development and structural equalization of backward regions.
2. Transformation of regions suffering from industrial decline.
3. Stimulating the development and structural equalization of rural areas.
4. Stimulation of development and structural equalization of territorially remote countries.

One of the key aspects of eliminating imbalances in the development of member countries is financial equalization, which means a system of interrelated measures implemented through financial instruments through horizontal and vertical redistribution of resources between budgets at different levels to ensure sustainable development of regions. Today, there is no universal model of financial equalization within the EU, due to the peculiarities of the state system, budget, tax, investment policy, the level of decentralization and the ability of territorial units to financial self-sufficiency and guarantee compliance with minimum social standards for citizens. In order to divide into groups of Member States according to the EU NUTS and NUTS-2 classification, GDP per capita is used, which must be at least 75% of the EU average and the unemployment rate (the value of the indicator must be lower than the EU average). At the national level, in addition to the main indicators, other auxiliary criteria are used, which take into account the specifics of the development of each of the EU member states and are often not quantified.

Analyzing the dynamics of these indicators on the example of Eastern Europe, which is given in Table 1, it should be concluded that in 2014 all the countries of the study group can be attributed to the EU territories with low economic development in terms of GDP per capita. In 2019, there is a significant improvement in this indicator in all countries, and Slovenia has almost reached the level of 75% of GDP per capita in the EU.

While examining the unemployment rate in Eastern Europe in 2014, it should be noted that in Latvia and Slovakia it was higher than the EU average (Table 2). In 2019, the indicators of all countries and the EU as a completely improved significantly, which indicates positive social changes in the study region.

According to the results of the analysis, we can identify a cluster of countries that need the most financial support: Poland, Latvia, Lithuania, Slovak Republic (see figure 1).
Table 1. GDP per capita in Eastern Europe

<table>
<thead>
<tr>
<th>Countries</th>
<th>GDP per capita (current US$) 2014</th>
<th>Percentage of GDP per capita EU</th>
<th>GDP per capita (current US$) 2019</th>
<th>Percentage of GDP per capita EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia</td>
<td>20367.1</td>
<td>57.8</td>
<td>23723.31</td>
<td>67.9</td>
</tr>
<tr>
<td>Latvia</td>
<td>15713.54</td>
<td>44.6</td>
<td>17828.89</td>
<td>51.1</td>
</tr>
<tr>
<td>Lithuania</td>
<td>16564.96</td>
<td>47.0</td>
<td>19601.89</td>
<td>56.1</td>
</tr>
<tr>
<td>Slovenia</td>
<td>24214.92</td>
<td>68.7</td>
<td>25946.18</td>
<td>74.9</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>18674.34</td>
<td>52.9</td>
<td>19266.28</td>
<td>55.2</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>19890.92</td>
<td>56.4</td>
<td>23494.6</td>
<td>67.3</td>
</tr>
<tr>
<td>Poland</td>
<td>14271.31</td>
<td>40.5</td>
<td>15692.51</td>
<td>44.9</td>
</tr>
<tr>
<td>European Union</td>
<td>35242,19</td>
<td>100</td>
<td>34918.5</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: formed by the authors on the basis of World Bank data (2020); Eurostat (2020d)

Table 2. Unemployment rate in Eastern Europe

<table>
<thead>
<tr>
<th>Countries</th>
<th>Unemployment rate in December 2014, %</th>
<th>Deviation from the average unemployment rate in the EU</th>
<th>Unemployment rate in December 2019, %</th>
<th>Deviation from the average unemployment rate in the EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>8.0</td>
<td>-1.9</td>
<td>3.3</td>
<td>-2.9</td>
</tr>
<tr>
<td>Estonia</td>
<td>6.6</td>
<td>-3.3</td>
<td>4.3</td>
<td>-1.9</td>
</tr>
<tr>
<td>Lithuania</td>
<td>9.4</td>
<td>-0.5</td>
<td>6.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>Latvia</td>
<td>11.7</td>
<td>1.8</td>
<td>6.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Slovenia</td>
<td>9.7</td>
<td>-0.2</td>
<td>4.6</td>
<td>-1.6</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>12.5</td>
<td>2.6</td>
<td>5.7</td>
<td>-0.5</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>5.8</td>
<td>-4.1</td>
<td>2.0</td>
<td>-4.2</td>
</tr>
<tr>
<td>EU</td>
<td>9.9</td>
<td>-</td>
<td>6.2</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: calculated and generated by authors based on Eurostat data (2020a)

Figure 1. Cluster analysis of GDP per capita and Unemployment rate in Eastern Europe in 2014 and 2019

In general, it can be argued that the quality of Life Index during 2014-2019 increased in all states. We can assume that this increase was due to financial allocations to these areas. According to the quality of life index, Poland, Latvia, Lithuania, and the Slovak Republic need the most support (see figure 2).
Taking into account the values of GDP per capita and unemployment, Quality of Life Index it is possible to build a matrix of regional development of the studied countries (see Fig. 3).

Thus, from the obtained results it can be concluded that only Latvia during the study period according to these criteria remains in the group of countries characterized by destructive socio-economic changes and require active intervention by supranational authorities.

It should be noted that the EU’s regional policy is based on the following principles: subsidiarity, complementarity, transparency, competitiveness, programmability and partnership, which are implemented through the prism of financial equalization of EU development through subsidies, subsidies and investments of regions in need.

As a rule, such measures are implemented through the developed financial mechanisms of the European Social Fund, the European Regional Development Fund and the Financial Mechanism for Fisheries Development, the European Fund for Management and Guarantees for Agricultural
Production, and the Cohesion Fund, which directly form the national co-financing budget. In a generalized form, the structural content of the budget is shown in Fig. 4.

![Figure 4. National co-financing budget in the EU in 2014-2020 in terms of stock content](image)

Source: based on Eurostat data (2020c)

The data of fig. 4 indicate that the ERDF's share in financing EU regional policy is dominant. With regard to the regional distribution of financial allocations in Eastern Europe, for the purpose of financial equalization in 2014-2020, the financial resources of the ERDF and CF funds were most often-involved (Table 3).

At the same time, the main tools for implementing financial equalization of regional development in the EU are: investment grants; investments in the development of transport infrastructure; investment in human capital; investments in tourism; interest rate subsidies; tax benefits; tax depreciation discount; subsidies related to the use of labor; transport benefits, etc.

In Fig. 5 shows the areas of funding within the regional policy through additional investments from the funds. It should be noted that during 2014-2020, the largest share of funds was directed to improving the efficiency of economic development of regions, namely - ensuring the competitiveness of regions, infrastructure development, social needs and education and vocational training. Expenditures on environmental protection and environmental development are significant.

Table 3. Fund allocations in Eastern Europe 2014-2020, euros

<table>
<thead>
<tr>
<th>Countries</th>
<th>ERDF</th>
<th>CF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>40330978733</td>
<td>23139930966</td>
</tr>
<tr>
<td>Estonia</td>
<td>1861084020</td>
<td>1061534677</td>
</tr>
<tr>
<td>Lithuania</td>
<td>3405625484</td>
<td>2039817626</td>
</tr>
<tr>
<td>Latvia</td>
<td>2465883158</td>
<td>1246634592</td>
</tr>
<tr>
<td>Slovenia</td>
<td>1416685363</td>
<td>914046895</td>
</tr>
<tr>
<td>Slovakia</td>
<td>6931188741</td>
<td>3991001427</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>11700268631</td>
<td>6143946095</td>
</tr>
</tbody>
</table>

Source: formed by the authors based on data Eurostat (2020c)

Assistance from supranational structures in the EU is differentiated from 75% of compensation from the above-mentioned funds of the cost of a regional project for countries characterized by destructive changes; up to 25% for financially stable EU members.

Let us analyze the size of co-financing budgets and EU financial investments for regional development on the example of Eastern European countries (Table 4).

From the obtained results, it is expedient to draw conclusions that the studied countries are characterized by approximately parity expenditures for their regional development, as these countries are characterized by common trends in socio-economic development.

As already mentioned, the specificity and effectiveness of the policy of financial equalization of regional development largely depends on the level of decentralization in the distribution of budget revenues of EU member states. In addition, intergovernmental transfers are used to cover fiscal imbalances. Among the countries of Eastern Europe, the greatest transfer dependence was observed in Slovakia, with higher financial autonomy inherent in the Estonian economy.
It should be noted that along with the proven effectiveness of such a financial instrument, its excessive use could contribute to the development of economic passivity of EU member states and increase the financial burden on economically developed countries. Also, in Eastern Europe, there are countries (including Latvia, Lithuania and Poland), where within the framework of horizontal alignment there are funds whose donors are territories with higher fiscal potential, and recipients - territories in need of support. However, the existence of such funds does not increase tax revenues, is quite politicized, and the criteria for the distribution of financial equalization funds do not take into account a number of factors, which in turn does not allow to ensure financial equality of development.

From the point of view of studying financial equalization policy, it is expedient to analyze budget allocations for economic, social and territorial cohesion of EU member states.

![Figure 5. Directions of financing within the implementation of EU regional policy at the expense of fund resources in 2014-2020, euro](source: based on Eurostat data (2020b))

<table>
<thead>
<tr>
<th>Countries</th>
<th>Co-financing budget, euros</th>
<th>Financial investments for regional development, euros</th>
<th>Ratio of investments to the budget,%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>104938990398</td>
<td>52012655503</td>
<td>49.57</td>
</tr>
<tr>
<td>Estonia</td>
<td>5773529917</td>
<td>3341044867</td>
<td>57.87</td>
</tr>
<tr>
<td>Lithuania</td>
<td>9993394127</td>
<td>5860352900</td>
<td>58.64</td>
</tr>
<tr>
<td>Latvia</td>
<td>6907222382</td>
<td>4018653697</td>
<td>58.18</td>
</tr>
<tr>
<td>Slovenia</td>
<td>4953239700</td>
<td>2663460789</td>
<td>53.77</td>
</tr>
<tr>
<td>Slovakia</td>
<td>19133748058</td>
<td>8056803040</td>
<td>42.12</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>32282434080</td>
<td>16948511437</td>
<td>52.50</td>
</tr>
</tbody>
</table>

Source: calculated and generated by authors based on Eurostat data (2020b)
Table 5. Expenditures for financing cohesion policy in terms of Eastern European countries, thousand euros

<table>
<thead>
<tr>
<th>Countries</th>
<th>2018</th>
<th>2019</th>
<th>Growth rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>2777</td>
<td>3776.8</td>
<td>136.0</td>
</tr>
<tr>
<td>Estonia</td>
<td>375.2</td>
<td>726</td>
<td>193.5</td>
</tr>
<tr>
<td>Lithuania</td>
<td>650.7</td>
<td>772.3</td>
<td>118.7</td>
</tr>
<tr>
<td>Latvia</td>
<td>1187.9</td>
<td>728.9</td>
<td>61.4</td>
</tr>
<tr>
<td>Poland</td>
<td>11481.9</td>
<td>11307.8</td>
<td>98.5</td>
</tr>
<tr>
<td>Slovenia</td>
<td>550</td>
<td>526.1</td>
<td>95.7</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1614.3</td>
<td>1477.5</td>
<td>91.5</td>
</tr>
<tr>
<td>Total</td>
<td>46412.8</td>
<td>47423.9</td>
<td>102.2</td>
</tr>
</tbody>
</table>

Source: calculated and generated by the authors based on OECD data (2020)

From the data given in Table 5, it can be concluded that during the analyzed period the amount of expenditures for the implementation of cohesion policy measures increased insignificantly, including in the context of financing the Czech Republic, Estonia and Lithuania. At the same time, it is significant to reduce this item of expenditure in relation to Latvia, to a lesser extent Poland, Slovenia and Slovakia.

We will analyze with the help of regression analysis the impact on expenditures on financing the policy of cohesion of such indicators as: population in the country, non-tax revenues and transfers, gross domestic product. The calculations are based on the example of Poland, which receives significant allocations in the context of the implementation of cohesion policy. In 2014-2020, Poland managed 22 programs under the EU cohesion policy, 16 regional programs received funding from the European Regional Development Fund (ERDF) and the European Social Fund (ESF). The funds were distributed between less developed regions of the country and Mazowieckie region as more developed.

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The initial data for regression analysis are given in Table 6.

Table 6. Initial data for the analysis of the impact of factors on expenditures on cohesion policy (on the example of Poland)

<table>
<thead>
<tr>
<th>Years</th>
<th>Quality of Life Index by Country</th>
<th>Cohesion policy expenditure, thousand euros (y)</th>
<th>Population, million people. (x1)</th>
<th>Non-tax revenues and grants, million euros (x2)</th>
<th>GDP, million euros. (x3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>95.19</td>
<td>12074.9</td>
<td>38483</td>
<td>957</td>
<td>97.89224</td>
</tr>
<tr>
<td>2015</td>
<td>109.74</td>
<td>7985.6</td>
<td>38454</td>
<td>576</td>
<td>102.0393</td>
</tr>
<tr>
<td>2016</td>
<td>153.61</td>
<td>5502.2</td>
<td>38426</td>
<td>809</td>
<td>105.2451</td>
</tr>
<tr>
<td>2017</td>
<td>150.21</td>
<td>7514.4</td>
<td>38422</td>
<td>346</td>
<td>110.3291</td>
</tr>
<tr>
<td>2018</td>
<td>146.58</td>
<td>11481.9</td>
<td>38413</td>
<td>139</td>
<td>116.2358</td>
</tr>
</tbody>
</table>

The linear regression equation will look like this:

\[ y = -9715991.593 + 249.854x1 + 4.574x2 + 1109.7x3 \]

The obtained results indicate the presence of a close correlation between the selected study factors. That is, an increase in population, non-tax revenues, grants (transfers) and gross domestic product leads to an increase in expenditures for the implementation of cohesion policy. The value of the multiple...
correlation coefficient indicates that the obtained econometric model adequately describes the studied economic dependence. 99% of variations in the change in the performance indicator depend on factorial characteristics and only 1% - on random factors.

Let's perform a correlation analysis when $y$ - Quality of Life Index by Country; $x_1$ - Cohesion policy expenditure, thousand euros; $x_2$ - Population, million people; $x_3$ - Non-tax revenues and grants, million euros; $x_4$ - GDP, million euros (see table 7).

Table 7. Pairwise correlation coefficient matrix $R$ ($p < 0.05$)

<table>
<thead>
<tr>
<th></th>
<th>$y$</th>
<th>$x_1$</th>
<th>$x_2$</th>
<th>$x_3$</th>
<th>$x_4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y$</td>
<td>1</td>
<td>-0.5287</td>
<td>-0.952</td>
<td>-0.551</td>
<td>0.7895</td>
</tr>
<tr>
<td>$x_1$</td>
<td>-0.5287</td>
<td>1</td>
<td>0.3957</td>
<td>-0.1055</td>
<td>-0.01524</td>
</tr>
<tr>
<td>$x_2$</td>
<td>-0.952</td>
<td>0.3957</td>
<td>1</td>
<td>0.7605</td>
<td>-0.9184</td>
</tr>
<tr>
<td>$x_3$</td>
<td>-0.551</td>
<td>-0.1055</td>
<td>0.7605</td>
<td>1</td>
<td>-0.9197</td>
</tr>
<tr>
<td>$x_4$</td>
<td>0.7895</td>
<td>-0.01524</td>
<td>-0.9184</td>
<td>-0.9197</td>
<td>1</td>
</tr>
</tbody>
</table>

As a result of calculations, a multiple regression equation was obtained:

$$Y = -414178.3129 - 0.04224X_1 + 10.6338X_2 + 0.3176X_3 + 54.2362X_4$$

An economic interpretation of the model parameters is possible: an increase in $X_1$ by 1 unit of measure, leads to a decrease in $Y$ by an average of 0.0422 units; increase in $X_2$ by 1 unit, leads to an increase in $Y$ by an average of 10.634 units; increase $X_3$ by 1 unit, leads to an increase in $Y$ by an average of 0.318 units; increase $X_4$ by 1 unit, leads to an increase in $Y$ by an average of 54.236 units. Based on the maximum coefficient $\beta_4 = 14.843$, we conclude that the factor $X_4$ has the greatest influence on the result $Y$. This means that the financial costs of the European Union do not significantly affect the Quality of Life of the population of these territories. This means that it is necessary to increase the efficiency of financial resources.

5. Discussion

The distribution of financial resources between different budget levels in the EU, including in Eastern Europe, is considered in the context of financial equalization. In determining the principles and criteria for providing financial assistance, supranational and national levels of regulation of intergovernmental relations are taken into account. Vilka (2015) pointed to the need to develop new criteria for calculating expenditure needs to improve the fairness of financial equalization. In order to improve the monitoring and assessment of regional development, it proposes to use the data of the Central Statistical Bureau of Latvia on the population in the calculations of the system of equalization of local government finances. The research proves that during the study period, according to the criteria of GDP per capita and unemployment, Latvia remains in the group of countries characterized by destructive socio-economic changes and require active intervention by supranational authorities.

Aristovnik (2012) notes that the choice of financial equalization model depends on the financial decentralization of the state due to the presence of demographic, ethnic, historical and political differences. Thus, countries with a larger population, like Poland, need a higher level of decentralization and vice versa (for example, Baltic countries). The diversity of ethnic composition (like in Slovenia), accession to the EU, also necessitates decentralization, in contrast to the cooperative model of budget federalism. The survey shows that almost half
of all EU resources for investment purposes are allocated to less developed regions, whose GDP per capita is less than 75% of the EU average GDP. At the same time, at the national level, in addition to the main indicators of financial equalization, other auxiliary criteria are used, which take into account the specifics of the development of each EU member state and are often not quantified.

Storonyanska & Benovska (2019) studying the equalization models used in European countries, in particular Eastern Europe, concluded that the equalization of budget revenues prevails when using some elements of expenditure equalization. The obtained results indicate a close correlation between the expenditures for the implementation of cohesion policy in the EU countries and the population, non-tax revenues, grants (transfers) and gross domestic product.

At the same time, the system of equalization of expenditures should be based on innovative standards of social services, which requires further research and reform of public administration. Thus, the issue of balancing the development of territories in economic and social aspects with the characteristics of budget expenditures and approaches to their formation is debatable.

6. Conclusions

Within Eastern European countries, for the purpose of financial equalization, mixed models are usually used, which provide for both horizontal and vertical balancing of revenues and expenditures in the context of the development of individual territorial units. Given that most Eastern European countries are socially oriented, it is fair to assume that financial equalization should include components such as social equalization (declining unemployment, population growth), and economic equalization (GDP per capita, GDP, tax and non-tax revenues). At the same time, the policy of cohesion, which is mostly implemented through financial equalization, should be aimed at effective use of the potential of each of the countries of Eastern Europe and stimulate the increase of their socio-economic development.

The study proves that intensification of the development of territories is directly related to the formation of budget expenditures and leads to an increase in expenditures for the implementation of cohesion policy. In this case, the majority of Eastern European countries use mixed methods of financial equalization, which are based on both fiscal potential and budgetary needs of the territory, usually based on population.

At the same time, the improvement of financial assets does not lead to an increase in the quality of the life of the population in this territories.

Prospects for scientific research are the study of the relationship between the size of jurisdiction and intergovernmental transfers per capita.

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Olena Ivanenko
Taras Shevchenko National University of Kyiv, Kyiv, Ukraine
natfili@online.ua

Vita Bugaychuk
Polissia National University, Zhytomyr, Ukraine
bugaychuk@meta.ua

Svitlana Belei
Yuriy Fedkovych Chernivtsi National University, Chernivtsi, Ukraine
s.belei@chnu.edu.ua

Nataliia Grychuk
National Academy for Public Administration under the President of Ukraine, Kyiv, Ukraine
grynchuknm@gmail.com

Tetiana Kulinich
Lviv Polytechnic National University, Lviv, Ukraine
topden2020@gmail.com