METHODOLOGICAL APPROACHES TO ASSESSMENT OF BUDGET CAPACITY IN THE CONTEXT OF DECENTRALIZATION

Abstract. Assessment of the budget capacity of a region is an important tool for identifying its actual level as well as searching for reserves to build up and ways to solve local problems. The purpose of the article is to improve the methodological approaches to a comprehensive assessment of the region’s budget capacity. The purpose of the article is to improve the methodological approaches to a comprehensive assessment of the region’s budget capacity. The methodological approaches to assessing the budget capacity of the region, based on the implementation of four main stages and commissioning an analytical study in three areas (assessment of budgetary sufficiency of the region; assessment of budgetary efficiency of the region; assessment of budgetary independence of the region) are proposed in the article. Methodology for calculating the integral index of the region’s budget capacity is considered in the article. The types of budget capacity of the region according to the levels of budget sufficiency, capacity and independence are defined. The indicators of the region’s budget capacity grouped on three areas of exploration, which describe in details the level of budget capacity of the region in the context of decentralization, are systematized. To ensure a visibility of the obtained results, at the next stage, authors offer to make a graphical-analytical model of the region’s budget capacity based on the display of a triangle, the vertices of which will form the vectors of budget sufficiency, budget independency and budget efficiency. Further research should focus on forming an actual tools for increasing the budget capacity of the region.

Keywords: budget capacity, assessing the budget capacity, budgetary sufficiency, budgetary efficiency, budgetary independence, region.

JEL Classification G18, G19, H72, O18, R22

Formulas: 0; fig.: 3; tabl.: 3; bibl.: 11.
локаціїних проблем. Метою дослідження є удосконалення методичних підходів до комплексної оцінки бюджетної спроможності регіону. Запропоновано методичний підхід до оцінки бюджетної спроможності регіону, що ґрунтується на реалізації чотирьох основних етапів і проведенні аналітичного дослідження й оцінки за трьома напрямами: 1) аналіз та оцінка бюджетної достатності регіону; 2) аналіз та оцінка бюджетної ефективності регіону; 3) аналіз та оцінка бюджетної самостійності регіону. Наведено методику розрахунку інтегрального індексу бюджетної спроможності регіону. Визначено типи бюджетної спроможності регіону відповідно до фактичних рівнів бюджетної достатності, бюджетної ефективності та бюджетної самостійності. Систематизовано індикатори бюджетної спроможності регіону за трьома напрямами дослідження, що деталізовано орієнтовано рівень бюджетної спроможності регіону в умовах дезцентралізації. З метою забезпечення наочності отриманих результатів запропоновано здійснювати побудову графоаналітичної моделі бюджетної спроможності регіону на основі зображення трикутника бюджетної спроможності регіону, вершини якого формуватимуть вектори бюджетної достатності, бюджетної ефективності та бюджетної самостійності. Подальші дослідження варто сфокусувати у напрямі формування і реалізації дієвих інших інструментів підвищення рівня бюджетної спроможності регіону. 

Ключові слова: бюджетна спроможність, оцінка бюджетної спроможності, бюджетна достатність, бюджетна ефективність, бюджетна самостійність, регіон.

Формул: 0; рис.: 3; табл.: 3; бібл.: 11.

Introduction. Due to the evolution of the self-government, increasing attention to sustainable development of communities, the implementation of decentralization provisions, the transferring of responsibility to the regional and local levels of the socio-economic development of territories, there has been a dawning realization of the impossibility of stable and dynamic development of the country without the formation of budget-capable territories.

The budget capacity of the region comprehensively characterizes the financial capabilities of local self-government bodies, the efficiency of regional finance and remains a priority task of the decentralization policy. Therefore, there is an objective need to increase the actual level of the budget capacity for each region of the country. At the same time, the organization of assessing the budget capacity of the region is seen as an important and real tool for identifying the level of the budget capacity of the region, and in the future as a search of reserves for its increasing and ways to solve local problems. This suggests a need for research the methodological approaches in this area.

Analysis of recent research and problem statement. The problem of identifying the conceptual foundations of the budget capacity of the region, methodological approaches to its assessment, the formation and implementation of mechanisms for increasing the budget potential of the territories is quite actively studied by Ukrainian and foreign scientists-economists and financiers. In particular, such domestic scientists as Baranovskyi O., Vasylyk O., Vasiutynska L., Zahorodnii A., Karlin M., Kovaliuk O., Kozoriz M., Lunina I., Oparin V., Pavliuk K., Pasichnyk Yu., Storonianska I., Taranhul L., Fedosov V., Chumachenko M., Yurii S. and many others. However, today the regions of Ukraine face qualitatively new problems of socio-economic unevenness, regional asymmetries, decentralization, an increase in budgetary powers of local governments, globalization and integration processes.

The issue of justifying the concept and methodology for determining budget capacity of the region of Ukraine should be considered in close correlation with global integration processes, as well as with internal, national processes, in particular the processes of decentralization and implementation of administrative-territory reform. The reform of local self-government based on the decentralization of power, changes in public administration system, transformation of the role of budget and tax policy, have changed the emphasis and actualize the rethinking of the conceptual foundations of the budget capacity of the region, methodological approaches to its assessment and tools for its provision to stimulate the socio-economic development of the country’s regions. As a result, it is worth noting the need to deepen research of methodological approaches for organizing an assessment of a level of the region’s budget capacity as a premise for the formation and implementation of an optimal budget strategy for the socio-economic development of the region,
modernization of regional development budgeting models, and increasing the efficiency of the territory’s budgetary policy.

The purpose of the article is improvement of methodological approaches to a comprehensive assessment of the region’s budget capacity.

Research results. The use of scientifically grounded conceptual and methodological foundations for determining the budget capacity of the region will allow the authorities to obtain information of the efficient implementation of budgetary processes and management of the budgetary area of the territory.

The budget capacity of the region is a challenging, complex and multidimensional category. In a broad sense, the budget capacity is the ability of the region to resist the destabilizers of development based on the provision of a sufficient amount of budget funds, their optimal distribution and use, provided such a structure of sources for the formation of the regional budget, which guarantees the stable development of the region for a long period of time. According to the above it is possible to identify three substantive characteristics (criteria) of the region’s budget capacity:

– budgetary sufficiency of the region;
– budgetary efficiency of the region;
– budgetary independence of the region.

Evidently, the continuous development of society makes adjustment to the content, criteria and parameters for assessing the budget capacity of the region.

According to studies carried out by scientists around this topic [1—11], as well as deepening and improving such studies, we offer a methodology for an integrated assessment of the budget capacity of the region, covers four stages, as presented in Fig. 1.

![Fig. 1. Algorithm for an integrated analysis and assessment of the budget capacity of the region](image)

Source: created by authors.

The offered algorithm for an integrated assessment of the region’s budget capacity is going to indicate its actual level as well as the outlook for the future.
We believe that it is advisable to analyze and assess the level of the region’s budget capacity according to a system of indicators characterizing it from three positions:
1) as a budgetary sufficiency of the region;
2) as a budgetary efficiency of the region;
3) as a budgetary independence of the region.

We believe that it is advisable to calculate the integral index of the region’s budgetary capacity according to the methodology presented in Table 1.

### Table 1
Methodology for calculating the integral index of the region’s budget capacity

| Calculation formula | Description |
|---------------------|-------------|
| 1. Determination of partial indicators and formation of matrices of the input data | |
| 2. Baseline standardization (calculation of standardized values of partial indicators) | |

#### Indicators-stimulants
- **Budget sufficiency**
  \[ a_{ij}^s = \frac{x_{ij}}{\max x_{ij}} \]
  where \( x_{ij} \) — indicator \( i \) of the budgetary sufficiency of region \( j \);
  \( \max x_{ij} \) — maximum indicator values respectively.

#### Indicators-destimulators
- **Budget efficiency**
  \[ a_{ij}^d = \frac{\min x_{ij}}{x_{ij}} \]
  where \( y_{ij} \) — indicator \( i \) of the budgetary efficiency of region \( j \);
  \( \min x_{ij} \) — minimum indicator values respectively.

- **Budget independency**
  \[ a_{ij}^d = \frac{z_{ij}}{\max z_{ij}} \]
  where \( z_{ij} \) — indicator \( i \) of the budgetary independency of region \( j \);
  \( \min z_{ij} \) — minimum and maximum indicator values respectively.

- **Integral index of the region’s budget capacity**
  \[ I = \sqrt{X \times Y \times Z} \]
  where \( X \) — generalizing index of the region’s budgetary sufficiency
  \( Y \) — generalizing index of the region’s budgetary efficiency
  \( Z \) — generalizing index of the region’s budgetary independency

#### Grouping regions by levels of budget capacity
- **Low level of budget capacity**
  \[ I \leq (I_{\text{min}} + \nu) \]
- **Average level of budget capacity**
  \( (I_{\text{min}} + \nu) < I < (I_{\text{max}} - \nu) \)
- **High level of budget capacity**
  \[ I \geq (I_{\text{max}} - \nu) \]

**Source:** created by authors.

According to the results of the integral index of the budget capacity of the country’s regions, it seems possible to carry out their typology based on the achieved levels of budget sufficiency, budget efficiency and budget independence (Table 2).
Table 2

Types of budget capacity of the region according to the levels of budgetary sufficiency, efficiency and independence

| Possible scenarios | The level of the generalizing index of the region’s budgetary sufficiency ($X$) | The level of the generalizing index of the region’s budgetary efficiency ($Y$) | The level of the generalizing index of the region’s budgetary independence ($Z$) | Types of budget capacity of the region |
|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| 1                  | high                              | high                              | high                              | Absolute budget capacity of the region |
| 2                  | low                               | high                              | high                              | Problems involving 1st criteria |
| 3                  | high                              | low                               | high                              | Problems involving 2nd criteria |
| 4                  | high                              | high                              | low                               | Problems involving 3rd criteria |
| 5                  | high                              | low                               | low                               | Problems involving 2nd and 3rd criteria |
| 6                  | low                               | high                              | low                               | Problems involving 1st and 3rd criteria |
| 7                  | low                               | low                               | high                              | Problems involving 1st and 2nd criteria |
| 8                  | low                               | low                               | low                               | Budget incapacity |

*Source: created by authors.*

Based on the works of scientists and a critical approach to their author’s positions on the formation of an initial indicators system of the region’s budget capacity, can be identified the key ones (*Table 3*). These indicators are quite informative in general and detailed terms. This system of indicators help to identify the level of the region’s budget capacity in the context of decentralization.

Table 3

Indicators of the region’s budget capacity

| Groups of indicators | Symbols | Indicators | Normative value |
|----------------------|---------|------------|-----------------|
| Indicators of the region’s budgetary sufficiency | $X_1$ | Average level of region budget revenue per inhabitant (excluding transfers from state budget) | Growth |
|                      | $X_2$ | Average level of region budget expenditures per inhabitant (excluding transfers) | Growth |
|                      | $X_3$ | Total revenue of the region budget to GVA (Gross value added) | $>20\%$ |
|                      | $X_4$ | Total expenditure of the region budget to GVA (Gross value added) | $>20\%$ |
|                      | $X_5$ | Tax revenues of the region budget to GRP (Gross Regional Product) | $\geq35\%$ |
|                      | $X_6$ | Surplus (+) or deficit (-) of the region budget to GRP (Gross Regional Product) | $\geq3.5\%$ |
|                      | $X_7$ | Surplus (+) or deficit (-) of the region budget to Region budget revenue (excluding transfers) | $\geq10\%$ |
|                      | $X_8$ | Region budget revenue (excluding transfers) to region budget expenditures (excluding transfers) | $>1$ |
|                      | $X_9$ | Region budget revenue (including transfers) to region budget expenditures (including transfers) | $>1$ |
|                      | $X_{10}$ | Region budget expenditures (including interbudgetary transfers) to taxes collected in the region | $<100\%$ |
| Indicators of the region’s budgetary efficiency | $Y_1$ | GRP to region budget expenditures (including transfers) | Growth |
|                      | $Y_2$ | Volume of construction production to region budget expenditures for construction development | Growth |
|                      | $Y_3$ | Volume of agricultural production to region budget expenditures for development of agriculture, forestry, hunting and fishing | Growth |
|                      | $Y_4$ | GVA by transport and communication region budget expenditures for transport and communication development | Growth |
|                      | $Y_5$ | Number of people who were in medical institutions to region budget expenditures for health | Growth |
|                      | $Y_6$ | Number of pupils who study at general education schools to region budget expenditures for secondary education | Growth |
### Table 3 (continued)

| Groups of indicators | Symbols | Indicators                                                                 | Normative value |
|----------------------|---------|---------------------------------------------------------------------------|-----------------|
|                      |         | **Y₇** Growth (reduction) rate of region budget revenue per inhabitant (excluding transfers from state budget) | Growth          |
|                      |         | **Y₈** Growth (reduction) rate of region budget expenditures per inhabitant (excluding interbudgetary transfers) | Growth          |
|                      |         | **Y₉** Growth (reduction) rate of GRP to growth (reduction) rate of region budget revenue (excluding transfers from state budget) | Growth          |
|                      |         | **Y₁₀** Funds transferred to the State budget to region budget revenue (including transfers) | Growth          |
| Indicators of the region’s budgetary independence | **Z₁** Revenue of the local budget (excluding transfers) to region budget revenue (including transfers) | >0.80           |
|                      | **Z₂** Official transfers from governments to region budget revenue (including transfers) | ≤10%            |
|                      | **Z₃** Official transfers from governments to revenue of the local budget (excluding transfers) | <0.3            |
|                      | **Z₄** Tax revenues of the region budget to revenue of the local budget (excluding transfers) | ≥0.80           |
|                      | **Z₅** Total expenditure of the region budget to tax revenues of the region budget | <2              |
|                      | **Z₆** Transfers (from regional budget to state budget) to official transfers from governments | ≥50%            |
|                      | **Z₇** Subsidies to official transfers from governments | <60%            |

*Source*: created by authors.

To ensure a visibility of the obtained results, at the next stage, we offer to make a graphical-analytical model of the region’s budget capacity based on the image of a triangle, the vertices of which will form the vectors of budget sufficiency, budget independence and budget efficiency (*Fig. 2*). Each vector complies with the estimated level of the three main substantive characteristics of budget capacity. The lengths of the vectors of the region’s budget capacity are equal to the integral indices of budget sufficiency, efficiency and independence.

![Fig. 2. The triangle of the region’s budget capacity](image)

*OX — vector of the region’s budgetary sufficiency;*

*OY — vector of the region’s budgetary efficiency;*

*OZ — vector of the region’s budgetary independence.*

*Source*: created by authors.

The values of the lengths of these vectors are given in such way that they are in the range from 0 to $+\infty$. The triangle formed from vectors, with length equal to 1 characterizes the threshold of the region’s budget capacity.
Actual triangles of budget capacity for each of the country’s regions will have different side lengths, characterized by unequal levels of budget sufficiency, efficiency and independence.

The graphic-analytical model has the advantages of the results visualization and allows to quickly obtain the information about the problematic aspects of the budget capacity of a certain region (Fig. 3). As a result of the graphic display, we have an opportunity to compare the budget capacity with its threshold level and also to clearly see the differences in the levels of its budget sufficiency, efficiency and independence. It is also possible to trace if the sufficiency of budget funds is always accompanied by the efficiency of their use and contributes to the budget independence of the region. At the same time it is possible to identify the budget requirement, missed opportunities and budget dependence of the region.

![Fig. 3. Graph-analytical display of the level of region’s budget capacity](image)

*Source: created by authors.*

The area of the figure, bounded by the sides of budget capacity triangle of a particular region, the lengths of which are less than 1, and the sides if equilateral threshold triangle of the territory budget capacity, formed from the lengths of vectors equal to 1, is a strategic budget gap of a particular region.

The area of the figure, formed by the sides if equilateral threshold triangle of the region’s budget capacity, with vectors lengths equal to 1 and the sides of the budget capacity triangle of a particular region, the length of one, two or three vectors which is greater than 1, identifies the zone of region’s budget strength.

We consider that the lengths of the parts of the vectors $X$, $Y$ and $Z$, which are limited by the threshold and actual values of the vectors identify the budget requirement, the missed opportunities and the dependence of the region. So, the length of the segment, end points of which are the lengths
of the financial sufficiency vector and threshold value of the vector length (1), identifies the budget requirement of the region. The length of the segment, end points of which are the length of the budget efficiency vector and threshold value of the vector length (1), identifies the budget missed opportunities of the region. And the length of the segment, end points of which are the length of the vector of budget independence and threshold value of the length of the vector (1), identifies the budget dependence of the region.

Conclusions. Based on the results of the assessment, it seems possible to identify the significance of a particular region in ensuring the budget capacity of the country in general. 

The offered methodology for assessing the region’s budget capacity allows:
- to assess the actual level of the budget capacity of the region in comparison with other regions of the state and in comparison with that region of the country which has the highest level of the budget capacity;
- to identify the existing problems, strengths and weaknesses of the budget capacity of the region;
- to identify interregional asymmetries in the levels of budgetary sufficiency, budgetary efficiency, budgetary independence and budgetary capacity in general;
- to identify deviations of individual indicators of the region’s budget capacity, find reserves for its growth and new opportunities for budget support to the socio-economic development of the region;
- to identify the ways to increase the level of the region’s budget capacity and substantiate adequate management decisions on the level of a particular region.

The obtained results of the assessment can be used in the formation of a budget strategy and forecasting indicators of the budget capacity for both medium and long terms.

Further research should focus on forming an actual tools for increasing the budget capacity of the region, substantiating the mechanism for the formation and implementation of policies and strategies for increasing the budget potential of the region and also ensuring its high level of budget capacity.

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